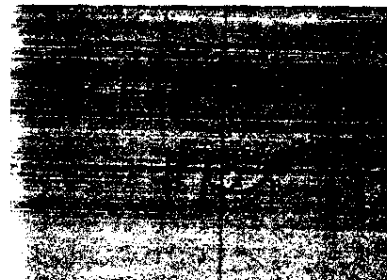




Refining, North America

Conoco Inc.
P.O. Box 37
Westlake, LA 70669
(318) 491-5211

June 29, 1990



Louisiana Emergency Response Commission
Office Of State Police
Hazardous Substance Control Section
Right-To-Know Unit
P. O. Box 66614
Baton Rouge, LA 70896

SUBMITTAL OF MSDS UPDATES - SECOND QUARTER 1990

Dear Sir:

Enclosed you will find Material Safety Data Sheet Updates for the second quarter of 1990, for the Conoco Refinery, Westlake, Louisiana. This information is being provided to you in accordance with the update requirements of Section 311 of Community Right-To-Know Act.

If you have any questions concerning this submittal, please contact Dave Tinker at 318-491-5543.

Sincerely,

D. R. Unruh
Plant Manager
Lake Charles Refinery

am
att

cc w/o att: W. O. Lukens (Conoco)
P. B. Butler (Conoco)
D. L. Tinker (Conoco)

DLT: MSDS.DOC

SAL 000006346

PART: 92180 PRODUCT NAME: PREMIER ETP CUTTING FLUID AERO PAGE 3 OF 3
***** SECTION VIII - SAFE HANDLING AND PROTECTION INFORMATION *****
RESPIRATORY PROTECTION: USE ONLY IN WELL VENTILATED AREAS.

CS580

✓ VENTILATION-LOCAL: RECOMMENDED
MECHANICAL: REQUIRED

SPECIAL: N/A
OTHER: N/A

PROTECTIVE GLOVES: SOLVENT RESISTANT
OTHER PROTECTIVE EQUIPMENT:

EYE PROTECTION: SAFETY GOGGLES

IF VENTILATION IS INADEQUATE, WEAR APPROVED RESPIRATORY EQUIPMENT.

ESTIMATED LD50, MG/KG: YES ORAL RAT 13000; DERMAL RABBIT 2000.

ESTIMATED LC50, PPM: YES INHALATION MAN 10000

SENSITIZATION: NO

IRRITANT: NO

SYNERGISTIC AGENTS: NO

***** SECTION IX - SPECIAL PRECAUTIONS *****
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

KEEP IN A COOL PLACE. KEEP AWAY FROM HEAT, SPARKS, FLAMES, OR SOURCES OF
IGNITION. AVOID PROLONGED OR REPEATED BREATHING OF GAS, FUMES, VAPOR OR
SPRAY MIST. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WASH THOROUGHLY
AFTER USING.

OTHER PRECAUTIONS:

DO NOT PUNCTURE, INCINERATE (OR BURN) CONTAINERS. KEEP OUT OF REACH OF
CHILDREN. ALWAYS READ AND FOLLOW DIRECTIONS ON PRODUCT LABEL. IN CASE OF
ACCIDENT OR ILLNESS, SEEK PHYSICIAN IMMEDIATELY, SHOW LABEL OR MSDS.
ADDITIONAL TECHNICAL DATA SHEETS AND/OR MATERIAL SAFETY DATA SHEETS (MSDS)
ARE AVAILABLE UPON REQUEST. FOR PROFESSIONAL AND INDUSTRIAL USE ONLY.

THE INFORMATION AND RECOMMENDATIONS PROVIDED HEREIN ARE BELIEVED TO BE ACCURATE
AS OF THE DATE HEREOF. HOWEVER, SUCH INFORMATION AND RECOMMENDATIONS ARE
PROVIDED WITHOUT WARRANTY OF ANY KIND AND PREMIER INDUSTRIAL CORPORATION
DISCLAIMS ANY AND ALL LIABILITY OR LEGAL RESPONSIBILITY FOR USE OR RELIANCE
UPON SAME.

Page	Shaded Areas for Purchasing Dept. Use Only	RO Loc 316	Requisition No. 257738
of			

Vendor Information		Priority	RLOC	Department	Ship Via	Date Req'd at Dest	Order Type	Previous F
			REB	Refining		NORMAL		
C T ENGINEERING			Ship To Conoco Inc. Refinery Warehouse Old Spanish Trail P.O. Box 37 Westlake, LA 70669		Tagging Instructions			
					F.O.B. Point		Freight Te	
					Carrier			
					Project ID		Clauses	
Attn: PAUL 318-988-2441					Payment Terms		AFE Reportin	
Requisitioner		Date	Distribution Charge					
RACHELLE		3/8/90	7411-3-1240-152-14-4103					
Tax Status		Special Instructions						
Charge	Exempt							
6%								

Ticket	Date	Control W/O	Equip No	Inst	Stat	Time Ordered	Time Req'd	Unit Code	Date Required
257738	3/8/90	R4103		ET	44	1005	NOR	152	
									7411-3-1240-152-14-4103
Card	Stock No	Description	Item No	Quantity Ordered	Units of Issue	Price	Qty. Issued		
		EIP Cutting Fluid	1	12	cans				
APPROVED: D R BROUSSARD									
CONFIRMED ORDER TO C T ENGINEERING									
DO NOT DUP									

Approvals - Operating Dept

Approval - Purchasing Dept.

8-196 X2, 11-48

05-Feb-90

Page 1

Conoco Material Safety Data Sheet

RECD
MAY 16 1990

MATERIAL IDENTIFICATION

NUMBER : GASCO059
NAME : CONOCO XP-14W SOLVENT
CHEMICAL FAMILY : Mixed Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Paraffinic/Naphthenic Solvent
CAS NUMBER : 64742-47-8
NFPA RATING : Health: 0 Flammability: 2 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number	%
Paraffinic & Naphthenic Hydrocarbons	Mixture	100%

Hazardous Physical Properties:
Class IIIA Combustible Liquid, NFPA 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard 29 CFR 1910.1200. Refer to the Regulatory Information Section of this MSDS for federal and state regulatory information.

PHYSICAL DATA

Boiling Point : 350 to 460 deg F
Vapor Pressure : 2 mm Hg at 100 deg F
Vapor Density : 6.2 (Air = 1.0)
% Volatiles : Nil
Evaporation Rate : Not Applicable
Solubility in Water : Insoluble
Odor : Hydrocarbon
Form : Liquid
Color : Clear, colorless
Specific Gravity : (H2O=1) 0.80-0.81

CP038

HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Composition Products: Combustion products will include carbon dioxide and possibly carbon monoxide.

Conditions to Avoid: Excessive heat, flame and oxidizing materials.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point : 140 deg F

Method : TCC

Flammable Limits in Air, % by Vol.

LEL : 1.0

UEL : 6.0

FIRE AND EXPLOSION HAZARDS

Class IIIA Combustible Liquid (NFPA).

EXTINGUISHING MEDIA

Water Spray. Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Route(s) of Exposure/Entry: Skin, inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness and other nervous system effects; greater exposure may cause

CP038

(HEALTH HAZARD INFORMATION - CONTINUED)

dizziness, slurred speech, flushed face, unconsciousness or convulsions.

The product contains petroleum hydrocarbons and, as with many petroleum products, it may cause irritation to the eyes, lungs or skin after prolonged or repeated exposure.

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for CONOCO XP-14W SOLVENT

TLV • (ACGIH) : None Established
PEL (OSHA) : None Established
Other : PEL: Petroleum Distillates
400 ppm; 1600 mg/m3

* TLV is a registered trademark.

Safety Precautions

Wash thoroughly after handling.

FIRST AID

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

(FIRST AID - CONTINUED)

CP038

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: General mechanical ventilation normally adequate.

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection where necessary to maintain exposures below the acceptable limits in the Health Hazard Information Section. Proper respiratory selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure, and published respiratory protection factors.

Protective gloves: Should be worn when any potential exists for skin contact. NBR or neoprene recommended.

Eye Protection: Chemical splash goggles or face shield recommended where splashing can occur.

Other Protective Equipment: Sufficient to minimize skin exposure. Coveralls with long sleeves if splashing is probable. Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

In Case of Spill or Leak: All sparks, flames and ignition sources must be restricted from the area. Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming, followed by recovering residual fluids using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

SAL 000006404

(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

CP038

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

Recycle as much of the recoverable product as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Petroleum Distillate
Hazard Class : Combustible Liquid
UN/NA No. : UN 1268
DOT Label(s) : None
DOT Placard : Combustible

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302

The material does not contain ingredient(s) subject to the Act.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986,
TITLE III - SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances, 40 CFR
355

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements, 40 CFR 370

The material should be reported under the following EPA hazard categories:

- x Immediate (Acute Health Hazard)
- Delayed (Chronic Health Hazard)
- x Fire
- Sudden Release of Pressure

(REGULATORY INFORMATION - CONTINUED)

CP038

Reactive
Not Applicable

Note: See the Hazard Determination Section for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals, 40 CFR 372
The material does not contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710
The material is in the TSCA Inventory of Chemical Substances (40 CFR 710) and/or is otherwise in compliance with TSCA.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116, Section 311
The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient	Reportable Quantity
Petroleum Hydrocarbon	Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178
The material does not contain ingredient(s) subject to the Regulations.

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT

05-Feb-90

Conoco Material Safety Data Sheet

Page 7
MSDS No: GAS0005

(REGULATORY INFORMATION - CONTINUED)

CP038

OF 1986 ("PROPOSITION 65")

The material does not contain ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

To the best of our knowledge the material is not sold or produced in Pennsylvania. Please notify Conoco at the telephone number noted below if the material results in Pennsylvania commerce.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/12/07
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006407

DISTRIBUTED BY



Magnolia CHEMICALS & SOLVENTS, INC.
Industrial Chemicals
(RED)

FMC

MATERIAL SAFETY DATA

7558

80 7

MONOSODIUM PHOSPHATE
MONOSORB (R) MONOSODIUM PHOSPHATE
XP-4 (R) FEED SUPPLEMENT

NFPA Designation 704

POST OFFICE BOX 1027
NEW ORLEANS, LA. 70185-0278

DEGREE OF HAZARD

4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = INSIGNIFICANT

HEALTH
(BLUE)

REACTIVITY
(YELLOW)

SPECIAL
HAZARD

GS 225

EMERGENCY TELEPHONES:

PLANTS: (913) 749-8103 LAWRENCE, KS
(201) 541-4171 CARTERET, NJ
CHEMTREC: (800) 424-9300 TRANSPORTATION
MEDICAL: (303) 595-9048 ROCKY MTN

REVISION: 2

EFFECTIVE: 05/27/87

PRINTED: 10/12/87

PREPARED FOR USE BY.....

AUTO CHLOR
2801 PEACH STREET
NEW ORLEANS LA 70185

IDENTIFICATION

INFORMATION PROVIDED BY...

FMC CORPORATION
2030 MARKET STREET
PHILADELPHIA, PA 19103

PRODUCT INFORMATION

SYNONYMS.....
SHIPPING NAME - DOT.....
IATA.....
IMC.....
FORMULA.....
CHEMICAL FAMILY.....

SODIUM PHOSPHATE, MONOBASIC; MSP
MONOSODIUM PHOSPHATE
MONOSODIUM PHOSPHATE
MONOSODIUM PHOSPHATE
NAH₂PO₄
PHOSPHATE

PRECAUTIONARY INFORMATION

PRECAUTIONARY STATEMENT...:
(PLEASE USE THIS STATEMENT
TO SATISFY THE IN-PLANT
LABELING REQUIREMENTS
OF THE OSHA HAZARD
COMMUNICATIONS STANDARD
29CFR 1910.1200)

NO PRECAUTIONARY STATEMENT REQUIRED.
MONOSODIUM PHOSPHATE, MONOSORB (R), AND
XP-4 (R) WERE NOT FOUND TO BE HAZARDOUS BY
OSHA CRITERIA.

INGREDIENTS

CAS# AND COMPONENT.....

MATERIAL OR COMPONENT: MONOSODIUM PHOSPHATE
PERCENT : 100
CAS# : 7558-80-7

SAL 000006408

MATERIAL SAFETY DATA

7558

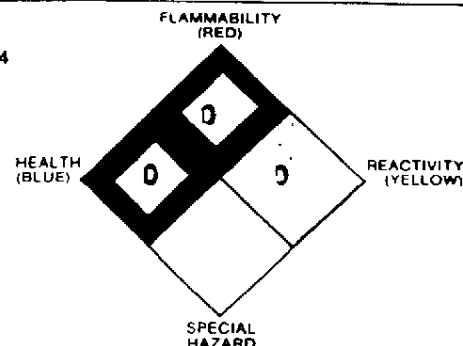
30 7

NFPA Designation 704

MONOSODIUM PHOSPHATE
MONOSORB (R) MONOSODIUM PHOSPHATE
XP-4 (R) FEED SUPPLEMENT

DEGREE OF HAZARD

4 = EXTREME
3 = HIGH
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1 = SLIGHT
0 = INSIGNIFICANT



EMERGENCY TELEPHONES:

PLANTS: (913) 749-8100 LAWRENCE, KS

(201) 541-4171 CARTERET, NJ

CHEMTREC: (800) 424-9303 TRANSPORTATION

MEDICAL: (303) 595-9048 ROCKY MTN

REVISION: 2

EFFECTIVE: 05/27/87

PRINTED: 10/12/87

===== PHYSICAL DATA =====

MELTING POINT.....: -H2O/180C
BOILING POINT.....: NOT APPLICABLE
VAPOR PRESSURE.....: NON-VOLATILE
VAPOR DENSITY (AIR = 1)....: NON-VOLATILE
ROOM TEMPERATURE
 APPEARANCE AND STATE: WHITE GRANULES OR POWDER
ODOR.....: NONE
SPECIFIC GRAVITY (H2O = 1): BULK DENSITY 1.0 G/ML
SOLUBILITY IN H2O % BY WT: 48 @ 25C
% VOLATILES BY VOLUME.....: NON-VOLATILE
EVAPORATION RATE
 (BUTYL ACETATE = 1)....: NON-VOLATILE
PH (AS IS).....: NOT APPLICABLE
PH (1% SOLUTION).....: 4.5

===== FIRE, EXPLOSION AND REACTIVITY DATA =====

FLASH POINT.....: NON COMBUSTIBLE
AUTOIGNITION TEMPERATURE.: NON COMBUSTIBLE
FLAMMABLE LIMITS UPPER...: NOT APPLICABLE
 (AIR) LOWER...: NOT APPLICABLE
EXTINGUISHING MEDIA.....: NOT APPLICABLE
SPECIAL FIREFIGHTING.....: NOT APPLICABLE
 PROCEDURES
DEGREE OF FIRE AND: NONE
 EXPLOSION HAZARD
STABILITY.....: STABLE
HAZARDOUS POLYMERIZATION.: WILL NOT OCCUR
CONDITIONS TO AVOID.....: NONE
MAJOR CONTAMINANTS THAT...: NONE
CONTRIBUTE TO INSTABILITY
INCOMPATIBILITY.....: NONE
HAZARDOUS DECOMPOSITION...: NONE
 PRODUCTS

SAL 000006409

GS 225

FMC

MATERIAL SAFETY DATA

7558

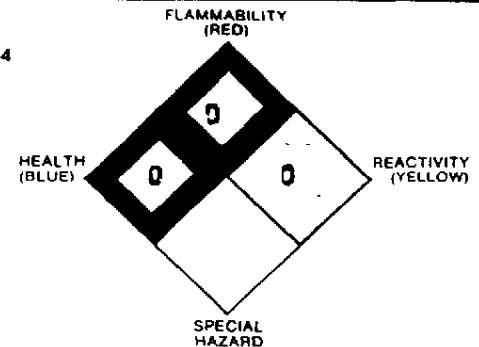
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NFPA Designation 704

MONOSODIUM PHOSPHATE
MONOSORB (R) MONOSODIUM PHOSPHATE
XP-A (R) FEED SUPPLEMENT

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EMERGENCY TELEPHONES:

PLANTS: (913) 749-8100 LAWRENCE, KS

(201) 561-4171 CARTERET, NJ

CHEMTREC: (800) 424-9300 TRANSPORTATION

MEDICAL: (303) 595-9048 ROCKY MTN

REVISION: 2

EFFECTIVE: 05/27/87

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----- ROUTES OF EXPOSURE -----

EYE CONTACT.....: MINIMAL IRRITANT TO UNWASHED EYES; PRACTICALLY
NON-IRRITATING TO WASHED EYES (RABBIT).
SOURCE: FMC STUDY I86-923
DATE: 1986

SKIN CONTACT.....: NO PUBLISHED DATA

SKIN ABSORPTION.....: NO PUBLISHED DATA

INHALATION.....: NO PUBLISHED DATA

INGESTION.....: NO SIGNIFICANT HAZARD EXPECTED.
SOURCE: FED. REG. 44(244): 74854
DATE: 1979

----- EXPOSURE LIMITS -----

NONE PROMULGATED

----- EFFECTS OF OVEREXPOSURE -----

ACUTE EXPOSURE.....: NO HUMAN DATA AVAILABLE. ANIMAL EYE IRRITATION
STUDIES NOTE THIS MATERIAL IS A MINIMAL IRRITANT
TO UNWASHED EYES AND NON-IRRITANT TO WASHED
EYES.

CHRONIC EXPOSURE.....: HUMAN INDUSTRIAL EXPERIENCE HAS SHOWN
NO SIGNIFICANT INHALATION HAZARD OR SKIN
IRRITATION WHEN GOOD PERSONAL HYGIENE
PRACTICES ARE FOLLOWED.

----- EMERGENCY AND FIRST AID PROCEDURES -----

EYES.....: FLUSH THOROUGHLY WITH WATER. IF IRRITATION
OCCURS AND PERSISTS, OBTAIN MEDICAL ATTENTION.

SKIN.....: WASH OFF WITH WATER.

INHALATION.....: REMOVE FROM EXPOSURE.

INGESTION.....: RINSE MOUTH WITH WATER. GIVE WATER TO CAUSE
DILUTION IN THE STOMACH. IF DISCOMFORT
OCCURS, OBTAIN MEDICAL ATTENTION.

DECONTAMINATION PROCEDURE: WASH WITH WATER.

SAL 000006410

PAGE 03

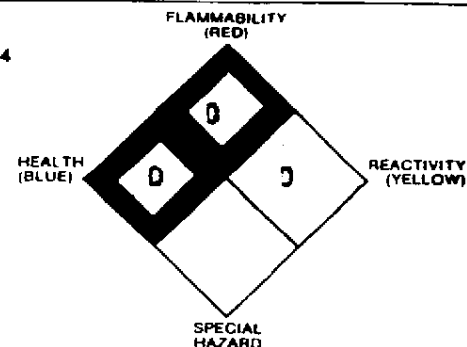
MATERIAL SAFETY DATA 7558 30 7

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REVISION: 2 EFFECTIVE: 05/27/87 PRINTED: 10/12/87

----- EMERGENCY AND FIRST AID PROCEDURES -----

NOTES TO PHYSICIAN.....: INGESTION OF LARGE DOSE (E.G. 20G) MAY CAUSE NAUSEA AND VOMITING. IF VOMITING IS NOT SPONTANEOUS, DO NOT INDUCE. PHOSPHATES ARE LAXATIVES. TREATMENT IS SYMPTOMATIC AND SUPPORTIVE.

----- SPECIAL PROTECTION -----

VENTILATION REQUIREMENTS.: NO SPECIAL REQUIREMENT
RECOMMENDED PERSONAL.....: NO SPECIAL REQUIREMENT
PROTECTIVE EQUIPMENT
RESPIRATORY.....: USE NIOSH/MSHA APPROVED RESPIRATORY PROTECTION WHEN AIRBORNE DUST IS EXPECTED.
EYES.....: WEAR CHEMICAL GOGGLES, WHEN AIRBORNE DUST IS EXPECTED.
GLOVES.....: NO SPECIAL REQUIREMENT
SPECIAL CLOTHING...: NO SPECIAL REQUIREMENT
AND EQUIPMENT

----- STORAGE AND HANDLING -----

(PLEASE USE THIS STATEMENT TO SATISFY THE IN-PLANT LABELING REQUIREMENTS OF THE OSHA HAZARD COMMUNICATIONS STANDARD 29CFR 1910.1200)
USE NIOSH/MSHA APPROVED RESPIRATORY PROTECTION WHEN AIRBORNE DUST IS EXPECTED.
STORE IN DRY AREA, FOR PRODUCT QUALITY ASSURANCE.

----- DISPOSAL, SPILL OR LEAK PROCEDURES -----

PROCEDURE FOR RELEASE.....: MATERIAL SHOULD BE SWEEPED UP FOR SALVAGE OR DISPOSAL.
OR SPILL
WASTE DISPOSAL METHOD.....: IF MATERIAL CAN NOT BE SALVAGED, A METHOD OF DISPOSAL IS IN A LANDFILL IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

SAL 000006411

68228

FMC

MATERIAL SAFETY DATA

7558

30 7

NFPA Designation 704

MONOSODIUM PHOSPHATE
 MONOSORB (R) MONOSODIUM PHOSPHATE
 XP-4 (R) FEED SUPPLEMENT

DEGREE OF HAZARD

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 1 = SLIGHT
 0 = INSIGNIFICANT

HEALTH
(BLUE)FLAMMABILITY
(RED)REACTIVITY
(YELLOW)SPECIAL
HAZARD

EMERGENCY TELEPHONES:

PLANTS: (913) 749-8100 LAWRENCE, KS
 (201) 541-4171 CARTERET, NJ
 CHEMTREC: (800) 424-9300 TRANSPORTATION
 MEDICAL: (303) 595-9048 ROCKY MTN

REVISION: 2

EFFECTIVE: 05/27/87

PRINTED: 10/12/87

TRANSPORTATION DATA

DOT PROPER SHIPPING NAME.: MONOSODIUM PHOSPHATE
 DOT CLASSIFICATION.....: NOT REGULATED
 DOT LABELS.....: NOT REQUIRED
 DOT MARKING.....: NOT REQUIRED
 DOT PLACARD.....: NOT REQUIRED
 UN NUMBER.....: NONE
 HAZARDOUS SUBSTANCE/RQ...: NOT LISTED
 49 STCC NUMBER.....: NONE
 EMERGENCY ACCIDENT
 PRECAUTIONS AND PROCEDURE: NOT HAZARDOUS BY OSHA CRITERIA; SEE INSTRUCTIONS
 ABOVE FOR RELEASE OR SPILL.
 PRECAUTIONS TO BE TAKEN...: NONE
 IN TRANSPORTATION
 CMA CHEMCARD NUMBER.....: NONE
 TYPE PACKAGES.....: MULTIWALL PAPER BAGS.
 OTHER SHIPPING IDS.....: NONE

ADDITIONAL REGULATORY INFORMATION

MATERIAL IS REPORTED IN
 EPA TSCA INVENTORY LIST? YES
 MATERIAL IS LISTED AS A
 CARCINOGEN/POTENTIAL
 CARCINOGEN IN FOLLOWING
 NTP ANNUAL REPORT... ? NO
 IARC MONOGRAPHS..... ? NO
 OSHA 29CFR PART 1910
 SUBPART Z ? NO
 FDA GRAS LIST; PERMITTED IN FOOD.
 USDA PERMITTED IN MEATS.

SAL 000006412

PAGE 05



**BETZ PROCESS
CHEMICALS, INC.**

**P.O. BOX 4300
The Woodlands, Texas 77387
(713) 367-2442**

MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

GS364

PRODUCT: PHILMPLUS 5K10

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS * PRIMARY ROUTE OF EXPOSURE**

MODERATELY IRRITATING TO THE SKIN. MAY CAUSE DERMATITIS.

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS * PRIMARY ROUTE OF EXPOSURE**

VAPORS, GASES, MISTS OR AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT. PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED EXPOSURE MAY CAUSE CNS DEPRESSION; MAY CAUSE DEFATTING-TYPE DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

EXCESSIVE DERMAL EXPOSURE CAUSES DEFATTING AND DRYING OF SKIN; EXCESSIVE INHALATION OF VAPORS CAUSES DIZZINESS, HEADACHE AND NAUSEA.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

**DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER**

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

**VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
REMOVE IGNITION SOURCES. FLUSH AREA WITH WATER. SPREAD SAND/GRIT.**

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

**FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER**

SAL 000006413



**BETZ PROCESS
CHEMICALS, INC.**

**P.O. BOX 4300
The Woodlands, Texas 77387
(713) 367-2442**

NFPA/HMIS : HEALTH - MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) (215) 355-3300

65364

DISTRIBUTED: APR-17-1990

PRODUCT : PHILMPLUS 5K10

**(PAGE 1 OF 3)
EFFECTIVE DATE 05-18-89
PRINTED: 10-Apr-1990**

REVISIONS TO SECTIONS: 3

**PRODUCT APPLICATION : A BLEND OF FILMING INHIBITORS IN HEAVY AROMATIC NAPHTHA.
-----SECTION 1-----HAZARDOUS INGREDIENTS-----**

**INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC
PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE
LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE
AND CHRONIC HAZARDS OF THIS FORMULATION.**

HEAVY AROMATIC NAPHTHA;*CAS#64742-06-9;COMBUSTIBLE LIQUID;IRRITANT(EYE);
MANUFACTURERS SUGGESTED EXPOSURE LIMIT:100PPM;PEL:NONE;TLV:NONE.**

TRADE SECRET INGREDIENT(021);IRRITANT;PEL/TLV:25PPM-C. TSRN 125438 - 5179P

**TRADE SECRET INGREDIENT(E082);EYE IRRITANT;PEL:NONE;TLV:NONE.THIS CHEMICAL
IS NOT ON ANY STATE RIGHT-TO-KNOW LIST. TSRN 125438 - 5065P**

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 50% EXTRACT (APPROX.) 9.5	ODOR: AROMATIC
FL.PT.(DEG.F): 152 SETA(CC)	SP.GR.(70F)OR DENSITY: 7.5LBS/GAL
VAPOR PRESSURE(mmHG): ND	VAPOR DENSITY(AIR=1): ND
VISC cps70F: 11	%SOLUBILITY(WATER): 0
EVAP.RATE: ND WATER=1	APPEARANCE: AMBER-GREEN
PHYSICAL STATE: LIQUID	FREEZE POINT(DEG.F): <-30

-----SECTION 3-----REACTIVITY DATA-----

**STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
CLEAN-OUT CATEGORY 'B'**

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

SAL 000006414



BETZ PROCESS
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(713) 367-2442

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

GS364

PRODUCT: PHILMPLUS 5K10

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

NEOPRENE GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

KEEP AWAY FROM FLAMES OR SPARKS

HANDLING INSTRUCTIONS***

COMBUSTIBLE

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

TREAT AS OIL SPILL

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: COMBUSTIBLE LIQUID NA1993/#27

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE), DELAYED(CHRONIC) AND FIRE

...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

NEPA/HMIS : HEALTH - 2 ; FIRE - 2 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

SAL 000006415



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NFPA/HMIS : HEALTH - MATERIAL SAFETY DATA SHEET

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GS365

DISTRIBUTED: APR-17-1990

PRODUCT : PROCHEM 4H3

(PAGE 1 OF 3)
EFFECTIVE DATE 01-05-90
PRINTED: 10-Apr-1990

REVISIONS TO SECTIONS: -;EDIT:8

PRODUCT APPLICATION : A BLEND OF NEUTRALIZING AMINES IN WATER.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

TRADE SECRET INGREDIENT(018);COMBUSTIBLE;CORROSIVE;IRRITANT;
PEL/TLV:3PPM(6PPM-STEL). TSRN 125438 - 5177P

TRADE SECRET INGREDIENT(071);COMBUSTIBLE;CORROSIVE;SKIN AND RESPIRATORY
SENSITIZER;POTENTIAL LIVER,KIDNEY AND LUNG TOXIN;PEL:10 PPM;TLV:10 PPM.
TSRN 125438 - 5196P

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 12.7	ODOR: AMINE
FL PT.(DEG.F):	>200 SETA(CC)	SP.GR.(70F)OR DENSITY: 8.4LBS/GAL
VAPOR PRESSURE(mmHG):	ND	VAPOR DENSITY(AIR=1): ND
VISC cps70F:	7.5	%SOLUBILITY(WATER): 100
EVAP.RATE:	<1 ETHER=1	APPEARANCE: COLORLESS TO YELLOW
PHYSICAL STATE:	LIQUID	FREEZE POINT(DEG.F): -6

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

SAL 000006416



**BETZ PROCESS
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MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

GS365

PRODUCT: PROCHEM 4H3

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS * PRIMARY ROUTE OF EXPOSURE**

SEVERE IRRITANT TO THE SKIN.ABSORBED BY SKIN.SKIN SENSITIZER.

ACUTE EYE EFFECTS ***

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS * PRIMARY ROUTE OF EXPOSURE**

VAPORS,GASES,MISTS AND/OR AEROSOLS CAUSE IRRITATION TO UPPER

RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

**PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY AND MAY
CAUSE LUNG DAMAGE.**

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

**INHALATION MAY CAUSE EYE,NOSE,THROAT AND LUNG IRRITATION AND POSSIBLE
RESPIRATORY SENSITIZATION OR ASTHMA;SKIN CONTACT MAY CAUSE MODERATE
IRRITATION TO SEVERE BURNS AND SENSITIZATION OR ALLERGIC REPONSE (RASH).**

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ABSORBED THROUGH SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

**REMOVE CLOTHING.WASH AREA WITH LARGE AMOUNTS OF SOAP SOLUTION OR WATER
FOR 15 MIN.IMMEDIATELY CONTACT PHYSICIAN**

EYE CONTACT***

**IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A
PHYSICIAN FOR ADDITIONAL TREATMENT**

INHALATION EXPOSURE***

**REMOVE VICTIM FROM CONTAMINATED AREA.APPLY NECESSARY FIRST AID
TREATMENT.IMMEDIATELY CONTACT A PHYSICIAN.**

INGESTION***

**DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF
STOMACH USING 3-4 GLASSES MILK OR WATER**

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

**VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB
ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE
CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,
SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD
SAND/GRIT.**

DISPOSAL INSTRUCTIONS***

**WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
PRODUCT(AS IS)-**

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

**FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA:
DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER**

SAL 000006417



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(713) 367-2442

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

GS365

PRODUCT: PROCHEM 4H3

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***
ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***
GAUNTLET-TYPE RUBBER GLOVES, CHEMICAL RESISTANT APRON
WASH OFF AFTER EACH USE, REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***
SPLASH PROOF CHEMICAL GOGGLES, FACE SHIELD

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.
PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***
ALKALINE, CORROSIVE (EYES). DO NOT MIX WITH ACIDIC MATERIAL.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:
1,082 GALLONS DUE TO ETHYLENE DIAMINE
...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D002-CORROSIVE (PH)
...DOT HAZARD/UN#/ER GUIDE# IS: ORM-E (WHEN CONTAINER > RQ) NA9188/#31
...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
...SARA SECTION 312 HAZARD CLASS: IMMEDIATE (ACUTE) AND DELAYED (CHRONIC)
...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS
NFPA/HMIS : HEALTH - 3 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE - D

SAL 000006418

SAL 000006419

14964

MATERIAL SAFETY DATA SHEET

 259/84
 POB: 316-LPA 259184
 HACH ORDER# 688884

 MSDS DATE: 5/16/90
 CHANGE NO.: 6276

 For Assistance, Contact:
 Regulatory Affairs Dept.
 PO Box 987 Ames, IA 50018
 (800) 227-4224

 HACH COMPANY
 PO BOX 987
 AMES, IA 50018

 Emergency Telephone #
 Rocky Mountain Poison Ctr.
 (303) 623-5716

GS 48

I. PRODUCT IDENTIFICATION

 CATALOG NO.: 14964 PRODUCT NAME: DPD Total Chlorine Reagent
 CAS NO.: NA CHEMICAL NAME: Not applicable
 FORMULA: Not applicable CHEMICAL FAMILY: Not applicable

 Avoid prolonged or repeated contact with skin.
 Do not breathe dust.
 Wash thoroughly after handling.
 PROTECTIVE EQUIPMENT: adequate ventilation, safety glasses, disposable gloves

II. INGREDIENTS

 Organic Salt (Trade Secret)
 PCT: <50 CAS NO.: ConfidentialSARA: NOT LISTED
 TLV: Not established PEL: Not established
 HAZARD: Toxicity unknown

 Sodium Phosphate, Dibasic, Anhydrous
 PCT: <50 CAS NO.: 7558-79-4 SARA: NOT LISTED
 TLV: Not established PEL: Not established
 HAZARD: Moderately toxic; may cause irritation

 Potassium Iodide
 PCT: <50 CAS NO.: 7681-11-9 SARA: NOT LISTED
 TLV: Not established PEL: Not established
 HAZARD: May cause irritation

 DPD Salt (Trade Secret)
 PCT: <5 CAS NO.: ConfidentialSARA: NOT LISTED
 TLV: Not established PEL: Not established
 HAZARD: Moderately toxic; may cause skin sensitization

 Other component
 PCT: <1 CAS NO.: NA SARA: NOT LISTED
 TLV: Not applicable PEL: Not applicable
 HAZARD: Not applicable

Any component of this mixture not specifically listed (e.g., "other components") is not considered to present a carcinogen hazard.

III. PHYSICAL DATA

 STATE: solid APPEARANCE: White to pale pink powder ODOR: None
 SOLUBILITY IN: WATER: Soluble ACID: Soluble OTHER: Not determined
 BOILING POINT: NA MELTING PT.: ND SPEC GRAVITY: ND pH: Not determined
 VAPOR PRESSURE: Not applicable VAPOR DENSITY (air=1): NA
 EVAPORATION RATE: NA METAL CORROSIVITY - ALUMINUM: ND STEEL: ND
 STABILITY: Stable
 STORAGE PRECAUTIONS: Store in a cool, dry, dark place.

IV. FIRE, EXPLOSION HAZARD AND REACTIVITY DATA

 FLASH PT.: Not applicable METHOD: NA
 FLAMMABILITY LIMITS - LOWER: NA UPPER: NA
 SUSCEPTIBILITY TO SPONTANEOUS HEATING: None
 SHOCK SENSITIVITY: None AUTOIGNITION PT.: ND
 EXTINGUISHING MEDIA: water, dry chemical, alcohol foam or carbon dioxide
 FIRE/EXPLOSION HAZARDS: May emit toxic fumes in fire
 HAZARDOUS DECOMP. PRODUCTS: May emit toxic fumes of phosphorus oxides, iodine, iodine compounds in fire
 OXIDIZER: No NFPA Codes: Health: 1 Flammability: 1 Reactivity: 0
 CONDITIONS TO AVOID: Extreme temperatures, excess moisture, exposure to light

V. HEALTH HAZARD DATA

 THIS PRODUCT MAY BE: Irritating to eyes and respiratory tract, and may cause allergic skin reaction.
 ACUTE TOXICITY: Moderately toxic
 ROUTES OF EXPOSURE: Ingestion, Inhalation
 TARGET ORGANS: Not determined
 CHRONIC TOXICITY: Not determined
 ROUTES OF EXPOSURE: Ingestion, Inhalation
 TARGET ORGANS: Not determined
 CANCER INFORMATION: Not determined
 ROUTES OF EXPOSURE: Not determined
 TARGET ORGANS: Not determined
 OVEREXPOSURE: Contact may cause irritation, skin sensitization. May cause chronic "iodism": skin rash, conjunctivitis, runny nose, sneezing, bronchitis, headache, fever, irritation of mucous membranes.
 MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Allergy or sensitivity to salts of N,N-Diethyl-p-Phenylenediamine

VI. PRECAUTIONARY MEASURES

Avoid contact with eyes.

VII. FIRST AID

 EYE AND SKIN CONTACT: Immediately flush eyes with water for 15 minutes
 physician. Remove contaminated clothing. Wash skin with soap and pl.
 water.
 INGESTION: Give large quantities of water or milk. Call physician
 immediately.
 INHALATION: Remove to fresh air.

VIII. SPILL AND DISPOSAL PROCEDURES

 IN CASE OF SPILL OR RELEASE: Sweep up powder. Avoid breathing material.
 Dissolve in water. Flush down the drain with excess water.
 DISPOSE OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATION.

IX. TRANSPORTATION DATA

 D.O.T. PROPER SHIPPING NAME: Not Currently Regulated
 HAZARD CLASS: Not applicable ID: NA

 I.C.A.O. PROPER SHIPPING NAME: Not Currently Regulated
 HAZARD CLASS: NA ID: NA GROUP: NA

 I.M.D. PROPER SHIPPING NAME: Not Currently Regulated
 HAZARD CLASS: NA ID: NA GROUP: NA

X. REFERENCES

- 1) TLV's Threshold Limit Values and Biological Exposure Indices for 1989. American Conference of Governmental Industrial Hygienists, 1989.
- 2) Air Contaminants, Federal Register, Vol. 54, No. 12, Thursday, Jan. 19, 1989, pp. 2332-2983.
- 3) In-house information
- 4) Technical judgment

SPECIAL NOTE: This product may only be used as an analytical reagent for determination of chlorine in water due to requirements of the Toxic Substances Control Act (TSCA).

SAL 000006420

GS516

MATERIAL SAFETY DATA SHEET

RUST BLOCK AEROSOL

PAGE : 01

(045039-0444M - EDO16293-5081

) DATE OF ISSUE
03/08/90SUPERSEDES
03/08/90

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS N/A	TRADE NAME & SYNONYMS RUST BLOCK AEROSOL
CHEMICAL FAMILY RUST PREVENTIVE - HEAVY DUTY	FORMULA ---MIXTURE
MANUFACTURERS NAME: NATIONAL CHEMSEARCH DIV. OF NCH CORP.	
ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE) BOX 152170 IRVING, TEXAS 75015	
PREPARED BY: KELLY SEALS/T.S.CHEMIST	PRODUCT CODE NUMBER 5081
EMERGENCY TELEPHONE NUMBER 214-438-1381	

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
ALIPHATIC PETROLEUM DISTILLATE	COMBUST.	100PPM 1	500PPM 1	8052-32-41
1,1,1-TRICHLOROETHANE	IRRITANT	350PPM	350PPM	71-55-6
PROPANE	ASPHYXIAN	N/E	1000PPM	74-98-6
ISOBUTANE	FLAMM.	N/E	N/E	75-28-5

SECTION IIIA - NON-HAZARDOUS INGREDIENTS

NON-HAZARDOUS INGREDIENT NAMES AND CAS NUMBERS ARE PROTECTED UNDER NJ TRADE

RUST BLOCK AEROSOL

(CONTINUED)

SECTION IIIA - NON-HAZARDOUS INGREDIENTS

PAGE : 02

SECRET REGISTRY # 409363-5283P

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	160	SPEC GRAVITY (H2O=1)	1.010
VAPOR PRESSURE (MM HG)	100	COLOR	BLUE-BROWN
VAPOR DENSITY (AIR=1)	4.2	ODOR	CHLOR. HYDROCARB
PH @ 100%	N/A	CLARITY	HAZY
PERCENT VOLATILE BY VOLUME (%)	77	EVAPORATION RATE (BU AC = 1)	0.75
SOLUBILITY IN WATER	NEGLECTIBLE		
VISCOSITY	VISCIDUS		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED) 150 F. T.C.C.	FLAMMABLE LIMITS	LEL	UEL
		N/A	N/A
EXTINGUISHING MEDIA "ALCOHOL"	DRY	WATER	
X---FOAM	X---CO2	X---CHEMICAL	X---SPRAY
			X---OTHER
SPECIAL FIRE FIGHTING PROCEDURES AS WITH ALL FIRES INVOLVING CHEMICALS. USE SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR.			

UNUSUAL FIRE & EXPLOSION HAZARDS
SPRAY AEROSOL CONTAINERS WITH WATER TO COOL THEM AND PREVENT RUPTURING.
UNDER SPECIFIC CONDITIONS PHOSGENE CAN FORM.
FLAME EXTENTION: 12" BURNBACK: NONE

LEVEL 2 AEROSOL (NFPA 30B)

NFPA HAZARD RATING (0=INSIGNIFICANT; 1=SLIGHT; 2=MODERATE; 3=HIGH; 4=EXTREME):
3 ---HEALTH 2 ---FLAMMABILITY 0 ---REACTIVITY ---SPECIAL

SECTION V - HEALTH HAZARD DATA

SAL 000006421

GS516

RUST BLOCK AEROSOL

(CONTINUED)

SECTION V - HEALTH HAZARD DATA

PAGE : 03

THRESHOLD LIMIT VALUE :

NOT ESTABLISHED FOR MIXTURE. SEE SECTION II.

EFFECTS OF OVEREXPOSURE

OVEREXPOSURE CAN CAUSE DIZZINESS - ACUTE - (SHORT TERM EXPOSURE)
UNCONSCIOUSNESS AND EVEN DEATH AT EXTREME DOSES. ABSORPTION THROUGH
SKIN IS NOT A SIGNIFICANT ROUTE OF EXPOSURE - MILDLY IRRITATING ON
CONTACT. INGESTION IS AN UNLIKELY ROUTE OF EXPOSURE BECAUSE THE
PRODUCT IS AN AEROSOL. INGESTION OF SMALL QUANTITIES IS NOT LIKELY
TO BE TOXIC. OVEREXPOSURE TO EYES CAN CAUSE MILD IRRITATION, BUT
NOT CORNEAL INJURY LIKELY.

INHALATION IF THE MAJOR ROUTE OF EXPOSURE - LOW SYSTEMIC TOXICITY.
ACUTE EXPOSURES IN THE 1000 PPM RANGE CAUSE NARCOSIS, PROLONGED OR
REPEATED SKIN CONTACT CAN CAUSE DERMATITIS THROUGH DEFATTING OF SKIN.
IN EYES, OVEREXPOSURE MAY CAUSE CONJUNCTIVITIS.

PRIMARY ROUTE OF ENTRY: X<-- INHALATION <-- INGESTION <-- ABSORPTION

EMERGENCY & FIRST AID PROCEDURES

INHALATION:
MOVE TO FRESH AIR AND TREAT SYMPTOMATICALLY. GIVE OXYGEN IF BREATHING
IS DIFFICULT. GIVE ARTIFICIAL RESPIRATION IF BREATHING STOPS.
GET MEDICAL HELP.

EYE CONTACT:
FLUSH WITH WATER HOLDING EYELIDS APART FOR 15 MINUTES. SEE A PHYSICIAN
IF IRRITATION PERSISTS.

SKIN CONTACT:
REMOVE CONTAMINATED CLOTHING AND FLUSH EXPOSED AREAS WITH WATER FOR 5
TO 10 MINUTES.

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF WATER OR
CITRUS JUICE IF AVAILABLE. SEEK MEDICAL ATTENTION IMMEDIATELY. NEVER
GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTES TO PHYSICIAN:
BECAUSE RAPID ABSORPTION MAY OCCUR THROUGH LUNGS, THE DECISION OF
WHETHER TO INDUCE VOMITING OR NOT SHOULD BE MADE BY A PHYSICIAN. IF
LAVAGE IS PERFORMED, SUGGEST ENDOTRACHEAL AND/OR ESOPHAGEAL CONTROL.
DANGER MUST BE WEIGHED AGAINST TOXICITY. NO SPECIFIC ANTIDOTE.
SUPPORTIVE CARE. TREATMENT BASED ON JUDGMENT OF THE PHYSICIAN IN
RESPONSE TO REACTIONS OF THE PATIENT.

SECTION VI - TOXICITY INFORMATION

PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	<--YES	NTP	<--YES	DSHA	<--YES	ACGIH	<--YES	OTHER	<--YES
	X<--NO		X<--NO		X<--NO		X<--NO		X<--NO

RUST BLOCK AEROSOL

(CONTINUED)

SECTION VI - TOXICITY INFORMATION

PAGE : 04

1,1,1 TRICHLOROETHANE
OEL-HMN TDLO: 670MG/KG TFX: CN 3.
INH-HMN TCLO: 920PPM/MG TFX: CSN 3.
OEL-RAT LD50: 10,300 MG/KG 3.
ALIPHATIC PETROLEUM DISTILLATE
EYE-HMN 470PPM/15 MINUTES 3.
INH-HMN TCLO: 1470MG/KG 3.
IPR-RAT LDLO: 8560MG/KG 3.
THIS INGREDIENT MAY CONTAIN CONTAMINENTS WHICH ARE LISTED BY CALIFORNIA
PROPOSITION 65 AS CARCINOGENS.

SECTION VII - REACTIVITY DATA

STABILITY	X<--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
	AVOID OPEN FLAMES OR OTHER HIGH TEMPERATURE SOURCES WHICH INDUCE THERMAL DECOMPOSITION.		

INCOMPATIBILITY (MATERIALS TO AVOID)

N/A

HAZARDOUS DECOMPOSITION PRODUCTS
CAN AT DECOMPOSITION AND TEMPERATURES CARBON MONOXIDE, HYDROGEN
CHLORIDE, PHOSGENE

HAZARDOUS	WILL NOT X <--OCCUR	MAY <--OCCUR	CONDITIONS TO AVOID
POLYMERIZATION			

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
REMOVE ALL SOURCES OF IGNITION. PREVENT FROM ENTERING SEWER OR WATER
SOURCES. VENTILATE ENCLOSED SPACE. WEAR RESPIRATOR. CLEAN UP (ANY
ELECTRIC CLEANING EQUIPMENT - MUST BE EXPLOSION PROOF) OR SOAK UP WITH
SAND, COTTON WASTE OR OTHER ABSORBANT MATERIAL.

WASTE DISPOSAL METHOD
WRAP EMPTY AEROSOL CANS WITH SEVERAL LAYERS OF NEWSPAPER AND DISCARD IN
TRASH.

NEUTRALIZING AGENT

N/A

SAL 000006422

G5516

REQUIRED VENTILATION
GENERAL EXHAUST IS MORE THAN ADEQUATE TO PROTECT WORKER FROM EXPOSURE TO
LEVELS ABOVE PERMISSIBLE EXPOSURE LIMITS.

RESPIRATORY PROTECTION
APPROVED ORGANIC VAPOR-TYPE RESPIRATOR REQUIRED IN ABSENCE OF PROPER
ENVIRONMENTAL CONTROL. FOR EMERGENCIES, A POSITIVE-PRESSURE BREATHING
APPARATUS FOR A FULL-FACE RESPIRATOR WITH AN APPROVED ORGANIC VAPOR
CONISTER IS RECOMMENDED. DUE TO AEROSOL PACKAGING, NEED FOR ABOVE IS
HIGHLY UNLIKELY.

PROTECTIVE GLOVES
NITRONG, NEOPRENE, OR POLYVINYL ALCOHOL (FOR
FREQUENT OR PROLONGED CONTACT)

EYE PROTECTION
SAFETY GLASSES. IT IS RECOMMENDED THAN AN
EYE-WASH STATION BE AVAILABLE.

OTHER PROTECTION
APRON DEPENDING UPON THE EXTENT AND SEVERITY
OF EXPOSURE LIKELY.

SECTION X - STORAGE AND HANDLING INFORMATION

STORAGE TEMPERATURE	INDOOR	HEATED	REFRIGERATED	OUTDOOR
120 F. <--MAX 30 F. <--MIN	X			

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
FOLLOW LABEL DIRECTIONS.

OTHER PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN.

SECTION XI - REGULATORY INFORMATION

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
1,1,1-TRICHLOROETHANE	71-55-6	50

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF
312 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF
1986 AND 40 CFR PART 372.
IF USE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT
FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE
JANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS
MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND

RUST BLOCK AEROSOL

(CONTINUED)

SECTION XI - REGULATORY INFORMATION

PAGE : 06

LABELED FOR MAINTAINING MOTOR VEHICLES.

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS	<--49 CFR	<--IMCO	<--TARIFF 6 D	<--IATA	<--MILITARY AIR (AFR 71-4)
SHIPPING NAME					

HAZARD CLASS	IC NUMBER	REPORT QTY

LABELS	LIMITED QTY

UNIT CONTAINER

DDT	SPS CONTAINER	NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

SECTION XIII - REFERENCES

1. VENDOR'S MSDS.
2. THRESHOLD LIMIT VALUE FOR CHEMICAL SUBSTANCES IN THE WORK
ENVIRONMENT, 2ND EDITION, ACGIH, 1985.
3. NIOSH REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES 1982.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED
ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY
IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA
OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

NATIONAL CHEMSEARCH DIV. OF NCH CORP. ASSUMES NO RESPONSIBILITY
FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE
OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE
PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH
UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

SAL 000006423



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NFPA/HMIS : HEALTH - MATERIAL SAFETY DATA SHEET

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GS595

DISTRIBUTED: APR-17-1990

PRODUCT : EMBREAK 2W122

(PAGE 1 OF 3)
EFFECTIVE DATE 12-13-89
PRINTED: 10-Apr-1990

REVISIONS TO SECTIONS: APPENDIX/9

PRODUCT APPLICATION : AN OIL BASED EMULSION BREAKER.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

HEAVY AROMATIC NAPHTHA;***CAS#64742-06-9;COMBUSTIBLE LIQUID;IRRITANT(EYE);
MANUFACTURERS SUGGESTED EXPOSURE LIMIT:100PPM;PEL:NONE;TLV:NONE.

TRADE SECRET INGREDIENT(162);FLAMMABLE LIQUID;IRRITANT;CNS DEPRESSANT;
PEL/TLV:50PPM-C(SKIN). TSRN 125438 - 5224P

TRADE SECRET INGREDIENT(372);POTENTIAL EYE,SKIN AND INHALATION IRRITANT ;
PEL:400 PPM;TLV:NONE. TSRN 125438 - 5252P

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% EMULSION (APPROX.) 10.7	ODOR: HYDROCARBON
FL.PT.(DEG.F): 118 P-M(CC)	SP.GR.(70F)OR DENSITY: 7.8 LBS/GAL
VAPOR PRESSURE(mmHG): <10	VAPOR DENSITY(AIR=1): >1
VISC cps70F: 23	%SOLUBILITY(WATER): 0
EVAP.RATE: ND WATER=1	APPEARANCE: AMBER
PHYSICAL STATE: LIQUID	FREEZE POINT(DEG.F): <-30

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

SAL 000006424



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MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

GS595

PRODUCT: EMBREAK 2W122

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN. MAY CAUSE DERMATITIS.

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS, GASES, MISTS OR AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT. PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY, MAY CAUSE CNS DEPRESSION, OR MAY CAUSE DEFATTING-TYPE DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

EXCESSIVE DERMAL EXPOSURE CAUSES DEFATTING AND DRYING OF SKIN; EXCESSIVE INHALATION OF VAPORS CAUSES DIZZINESS, HEADACHE AND NAUSEA.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING. WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES. IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR. APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING. IMMEDIATELY CONTACT PHYSICIAN. DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL, DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA, USE SPECIFIED PROTECTIVE EQUIPMENT. CONTAIN AND ABSORB ON ABSORBENT MATERIAL. PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL, OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
REMOVE IGNITION SOURCES. FLUSH AREA WITH WATER. SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY, IN ACCORDANCE WITH ANY LOCAL AGREEMENT, A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT (AS IS) -

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS (FULL FACE-PIECE TYPE). PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM OR WATER

SAL 000006425



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MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

6S595

PRODUCT: EMBREAK 2W122

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

NEOPRENE GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS***

COMBUSTIBLE. DO NOT USE AROUND SPARKS OR FLAMES. BOND CONTAINERS
DURING FILLING OR DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR
ABOVE THE PRODUCT FLASH POINT.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

TREAT AS OIL SPILL

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D001=IGNITABLE

...DOT HAZARD/UN#/ER GUIDE# IS: COMBUSTIBLE LIQUID NA1993/#27

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: TRADE SECRET(162)--ALIPHATIC ALCOHOL, 2.0-5.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE), DELAYED(CHRONIC) AND FIRE

...MICHIGAN CRITICAL MATERIALS: TRADE SECRET(162)--ALIPHATIC ALCOHOL ;

NFPA/HMIS : HEALTH - 2 ; FIRE - 2 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

SAL 000006426



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68597

DISTRIBUTED: APR-17-1990

PRODUCT : EMBREAK 2W154

(PAGE 1 OF 3)
EFFECTIVE DATE 12-12-89
PRINTED: 10-Apr-1990

REVISIONS TO SECTIONS: APPENDIX/9

PRODUCT APPLICATION : AN OIL BASED EMULSION BREAKER.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

HEAVY AROMATIC NAPHTHA;***CAS#64742-06-9;COMBUSTIBLE LIQUID;IRRITANT(EYE);
MANUFACTURERS SUGGESTED EXPOSURE LIMIT:100PPM;PEL:NONE;TLV:NONE.

TRADE SECRET INGREDIENT(028);COMBUSTIBLE;POTENTIAL TOXIN TO
BLOOD,LIVER,KIDNEY AND REPRODUCTIVE SYSTEM;PEL:25PPM(SKIN);TLV:5PPM(SKIN).
TSRN 125438 - 5182P

TRADE SECRET INGREDIENT(078);FLAMMABLE;POTENTIAL LIVER AND KIDNEY TOXIN;
CNS DEPRESSANT;PEL/TLV:100 PPM(150PPM-STEL). TSRN 125438 - 5200P

TRADE SECRET INGREDIENT(002);COMBUSTIBLE;POTENTIAL BLOOD TOXIN,LIVER TOXIN
OR KIDNEY TOXIN;TOXIC(INHALATION);PEL:50PPM(SKIN);TLV:25PPM(SKIN). TSRN
125438 - 5173P

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 50% DISP. (APPROX.) 10.2	ODOR: HYDROCARBON
FL.PT.(DEG.F): 116 SETA(CC)	SP.GR.(70F)OR DENSITY: 7.9 LBS/GAL
VAPOR PRESSURE(mmHG): ND	VAPOR DENSITY(AIR=1): ND
VISC cps70F: 20.0	%SOLUBILITY(WATER): 0
EVAP.RATE: <1 ETHER=1	APPEARANCE: AMBER
PHYSICAL STATE: LIQUID	FREEZE POINT(DEG.F): <-30

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

SAL 000006427



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MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

GS597

PRODUCT: EMBREAK 2W154

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN.MAY CAUSE DERMATITIS.

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS,GASES,MISTS AND/OR AEROSOLS CAUSE IRRITATION TO UPPER RESPIRATORY TRACT. PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY.MAY CAUSE BLOOD CELL DAMAGE OR IMPAIRMENT OF FUNCTION,MAY CAUSE REPRODUCTIVE SYSTEM TOXICITY,OR MAY CAUSE DEFATTING-TYPE DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

EXCESSIVE DERMAL EXPOSURE CAUSES DEFATTING AND DRYING OF SKIN;EXCESSIVE INHALATION OF VAPORS CAUSES DIZZINESS,HEADACHE AND NAUSEA.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ABSORBED THROUGH SKIN OR INHALED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS. REMOVE IGNITION SOURCES.FLUSH AREA WITH WATER.SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA: DRY CHEMICAL/CO2/FOAM OR WATER. SLIPPERY CONDITION. USE SAND/GRIT

SAL 000006428



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MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

CS597

PRODUCT: EMBREAK 2W154

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

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RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

NITRILE GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS***

COMBUSTIBLE. DO NOT USE AROUND SPARKS OR FLAMES. BOND CONTAINERS
DURING FILLING OR DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR
ABOVE THE PRODUCT FLASH POINT.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

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ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

TREAT AS OIL SPILL

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D001-IGNITABLE

...DOT HAZARD/UN#/ER GUIDE# IS: COMBUSTIBLE LIQUID NA1993/#27

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: TRADE SECRET(028)--GLYCOL ETHER, 6.0-10.0% ;

TRADE SECRET(078)--ALKYL AROMATIC, 2.0-5.0% ; TRADE SECRET(002)--GLYCOL ETHER,
2.0-5.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE), DELAYED(CHRONIC) AND FIRE

...MICHIGAN CRITICAL MATERIALS: TRADE SECRET(078)--ALKYL AROMATIC ;

NFPA/HMIS : HEALTH - 2 ; FIRE - 2 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

SAL 000006429



UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.
Solvents & Coatings Materials Division



MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 08/03/89

GS600

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

PRODUCT NAME: ANHYDROL SOLVENT SPECIAL, PM-4081, 190 Proof

CHEMICAL NAME: Denatured Ethanol

CHEMICAL FAMILY: Alcohols

FORMULA: N/A (mixture)

MOLECULAR WEIGHT: N/A (mixture)

SYNONYMS: Special Industrial Solvent, Government Formula AI

CAS NAME: N/A (mixture)

II. PHYSICAL DATA

BOILING POINT, 760 mm Hg: 79 C (174 F)

FREEZING POINT: -90 C (-130 F)

SPECIFIC GRAVITY (H₂O = 1):
0.8090 at 20/20 C

VAPOR PRESSURE AT 20°C:
30 mm Hg

VAPOR DENSITY (air = 1):
1.4

SOLUBILITY IN WATER by wt:
Complete at 20 C

EVAPORATION RATE
(Butyl Acetate = 1): 2.2

APPEARANCE AND ODOR: Water-white liquid; nonresidual odor

PERCENT VOLATILES (BY VOLUME): 100

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UNION CARBIDE is a trademark of Union Carbide Corporation
ANHYDROL is a trademark of Union Carbide Chemicals & Plastics Tech. Corp.
EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.
Solvents & Coatings Materials Division
39 Old Ridgebury Road, Danbury, CT. 06817-0001

SAL 000006430

III. INGREDIENTS

<u>MATERIAL</u>	<u>%</u>	<u>EXPOSURE LIMITS</u>	<u>HAZARD</u>
Ethanol (CAS# 64-17-5)	82	See Section V	Flammable
Methanol (CAS #67-56-1)	4	See Section V	Toxic, flammable
Methyl Isobutyl Ketone (CAS #108-10-1)	1	See Section V	Harmful if inhaled, irritant
Water (CAS# 7732-18-5)	4	None	None
Isopropanol (CAS # 67-63-0)	9	See Section V	Flammable

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 61 F (16 C), Tag Closed Cup; 74 F (23 C), Tag Open Cup

FLAMMABLE LIMITS IN AIR,
% by volume: **LOWER:** 3.3 (Ethyl Alcohol)
UPPER: 19.0 (Ethyl Alcohol)

EXTINGUISHING MEDIA: Use water spray, carbon dioxide, dry chemical, alcohol-type, or universal-type foams applied by manufacturers' recommended techniques.

SPECIAL FIRE FIGHTING PROCEDURES: Use water spray to cool fire exposed containers and structures. Use self-contained breathing apparatus, and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Vapors form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, sparks, heaters, electrical equipment, static discharges or other ignition sources at locations distant from product handling point.

V. HEALTH HAZARD DATA

TLV AND SOURCE: Ethanol, 1000 ppm TWA OSHA & ACGIH
Isopropanol, 400 ppm TWA OSHA & ACGIH
500 ppm STEL OSHA & ACGIH
Methyl Isobutyl Ketone, 50 ppm TWA OSHA & ACGIH
75 ppm STEL OSHA & ACGIH
Methanol, 200 ppm TWA skin OSHA & ACGIH
250 ppm STEL skin OSHA & ACGIH
Values from OSHA 29 CFR 1910.1000 Table Z-1-A & ACGIH 1989-90

EFFECTS OF ACUTE OVEREXPOSURE:

SWALLOWING: Causes dizziness, drowsiness, decreased reaction, euphoria, nausea, vomiting, staggering gait, and coma.

SKIN ABSORPTION: No evidence of adverse effects from available information.

INHALATION: May cause dizziness, drowsiness, nausea, and vomiting.

PRODUCT NAME: ANHYDROL SOLVENT SPECIAL, PM-4081, 190 Proof

PAGE 3

65600

SKIN CONTACT: No evidence of adverse effects from available information.

EYE CONTACT: Minor irritation.

EFFECTS OF REPEATED OVEREXPOSURE:
No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: Give two glasses of water and induce vomiting. Get medical help.

SKIN: Flush with water.

INHALATION: Remove to fresh air. Call a physician.

EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

NOTES TO PHYSICIAN: Ingestion of a large quantity of this material will result in methyl alcohol poisoning. In such a case, treatment should include the following: hemodialysis; the intravenous administration of ethanol (10 ml per hour) to interfere with the metabolism of methyl alcohol; and the administration of sodium bicarbonate to correct acidosis.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: Heat, sparks, flames

INCOMPATIBILITY (materials to avoid):
None

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:
Burning can produce carbon monoxide and/or carbon dioxide.
Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None

VII. SPILL OR LEAK PROCEDURES

SAL 000006432

PRODUCT NAME: ANHYDROL SOLVENT SPECIAL, PM-4081, 190 Proof

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Extinguish and do not turn on any ignition source until area is determined to be free from explosion or fire hazards. Collect large spills for disposal. Flush small spills with water.

WASTE DISPOSAL METHOD: Incinerate in a furnace where permitted under appropriate Federal, State and local regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Self-contained breathing apparatus in high concentrations.

VENTILATION:

This product should be confined within closed equipment, in which case general (mechanical) room ventilation should be satisfactory. Special, local ventilation is needed at points where vapors are expected to escape to the workplace air.

PROTECTIVE GLOVES:

Neoprene

EYE PROTECTION:

Safety glasses

OTHER PROTECTIVE EQUIPMENT:

Eye bath, safety shower

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Do not take internally.
Keep away from heat, sparks, and flame.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Avoid breathing vapors.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS:

WARNING: Hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below those published in the literature as "autoignition" or "ignition" temperatures. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time, and are influenced by pressure changes.

Ignition may occur at typical elevated-temperature process conditions, especially in processes operating under vacuum if subjected to sudden ingress of air, or outside process equipment operating under elevated pressure if sudden escape of vapors or mists to the atmosphere occurs.

Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained.

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

SAL 000006433

PRODUCT NAME: ANHYDROL SOLVENT SPECIAL, PM-4081, 190 Proof

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Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
To be determined		

**Superfund Amendments and Reauthorization
Act of 1986 (SARA) Title III**

requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
To be determined		

**Superfund Amendments and Reauthorization
Act of 1986 (SARA) Title III**

requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Methyl Isobutyl Ketone	108-10-1	1
Methanol	67-56-1	4

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

None

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

EXTRAORDINARILY HAZARDOUS SUBSTANCES (>= 0.0001%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
To be determined		

HAZARDOUS SUBSTANCES (>= 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
To be determined		

PENNSYLVANIA Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

SPECIAL HAZARDOUS SUBSTANCES (>= 0.01%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
To be determined		

HAZARDOUS SUBSTANCES (>= 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
To be determined		

SAL 000006434

PRODUCT NAME: ANHYDROL SOLVENT SPECIAL, PM-4081, 190 Proof

Toxic Substances Control Act(TSCA) STATUS:

The ingredients of this product are on the TSCA inventory.

CALIFORNIA SCAQMD RULE 443.1 VOC'S:

VOC 801 g/l; Vapor pressure 30 mm Hg @ 20 C

OTHER REGULATORY INFORMATION:

NEW YORK STATE BULK STORAGE REGULATIONS (GNYSRR Parts 595-599)
This product is covered by GNYSRR for Bulk Storage and Release Reporting and Response. Technical guidance and recommended practices are as follows:

MATERIALS OF CONSTRUCTION

Suitable materials of construction are: Steel, stainless steel, baked phenolic lined steel, galvanized steel, copper, and copper alloy.

Materials not to be used: Aluminum. Plastics are not recommended for flammable liquids.

STORAGE SYSTEM DESIGN

Design should comply with applicable industry, Federal, and local codes for a Class IB Flammable liquid with regards to mechanical, electrical, safety and health components. Should also comply with NYS/DEC Chemical Bulk Storage proposed regulations Parts 589.3 to 589.6 (for existing tanks) or Parts 599.2 and 599.7 (for new or substantially modified tanks).

CONDITIONS FOR STORAGE

Store at normal ambient temperatures.

INSPECTION AND MAINTENANCE

A testing/inspection program which ensures structural integrity and proper system operation should be established. Inspection and maintenance procedures and testing of equipment should comply with NYS/DEC proposed regulations Parts 598.7 to 598.10.

TRANSFER AND UNLOADING

These operations should comply with NYS/DEC proposed regulations, Part 598.5.

NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Chemicals and Plastics Company. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Chemicals and Plastics Company, it is the user's obligation to determine the conditions of safe use of the product.

REVISED SECTIONS:

Section IX: VAPOR IGNITION HAZARD WARNING

PC: 32688

F NUMBER: C0052A

SAL 000006435



BETZ PROCESS
CHEMICALS, INC.

P.O. BOX 4300
The Woodlands, Texas 77387
(713) 367-2442

MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

GS601

PRODUCT: EMBREAK 2W157

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----
USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE
RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

NEOPRENE GLOVES

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----
STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION. STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS***

COMBUSTIBLE. DO NOT USE AROUND SPARKS OR FLAMES. BOND CONTAINERS
DURING FILLING OR DISCHARGE WHEN PERFORMED AT TEMPERATURES AT OR
ABOVE THE PRODUCT FLASH POINT.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD
HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

12,500 GALLONS DUE TO N-BUTYL ALCOHOL; TREAT AS OIL SPILL

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D001-IGNITABLE

...DOT HAZARD/UN#/ER GUIDE# IS: COMBUSTIBLE LIQUID NA1993/#27

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: BUTYL ALCOHOL(71-36-3), 2.0-5.0% ;

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE), DELAYED(CHRONIC) AND FIRE

...MICHIGAN CRITICAL MATERIALS: BUTYL ALCOHOL(71-36-3) ;

NFPA/HMIS : HEALTH - 2 ; FIRE - 2 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B

SAL 000006436



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NEPA/HMIS : HEALTH - MATERIAL SAFETY DATA SHEET

24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) (215) 355-3300

GS601

DISTRIBUTED: APR-17-1990

PRODUCT : EMBREAK 2W157

(PAGE 1 OF 3)
EFFECTIVE DATE 03-26-90
PRINTED: 10-Apr-1990

REVISIONS TO SECTIONS: 1,4,APPENDIX/9

PRODUCT APPLICATION : AN OIL BASED EMULSION BREAKER.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

HEAVY AROMATIC NAPHTHA;***CAS#64742-06-9;COMBUSTIBLE LIQUID;IRRITANT(EYE);
MANUFACTURERS SUGGESTED EXPOSURE LIMIT:100PPM;PEL:NONE;TLV:NONE.

TRADE SECRET INGREDIENT(E076);EYE IRRITANT;PEL:NONE;TLV:NONE.THIS CHEMICAL
IS NOT ON ANY STATE RIGHT-TO-KNOW LIST. TSRN 125438 - 5059P

N-BUTYL ALCOHOL*** (1-BUTANOL);CAS#71-36-3;FLAMMABLE LIQUID;IRRITANT;CNS
DEPRESSANT;PEL/TLV:50PPM-C(SKIN).

TRADE SECRET INGREDIENT(E038);EYE AND SKIN IRRITANT;TOXIC(ORAL INGESTION);
PEL:NONE;TLV:NONE.THIS CHEMICAL IS NOT ON ANY STATE RIGHT-TO-KNOW LIST.
TSRN 125438 - 5026P

PETROLEUM DISTILLATES*** (NAPHTHA);CAS#8002-05-9;POTENTIAL EYE,SKIN AND
INHALATION IRRITANT;COMBUSTIBLE LIQUID;PEL:400 PPM;TLV:NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 5% DISP. (APPROX.)	3.0	ODOR: HYDROCARBON
FL.PT.(DEG.F): 111	P-M(CC)	SP.GR.(70F)OR DENSITY: 8.0 LBS/GAL
VAPOR PRESSURE(mmHG): <10		VAPOR DENSITY(AIR=1): >1
VISC cps70F: 73		%SOLUBILITY(WATER): 0
EVAP.RATE: ND	WATER=1	APPEARANCE: AMBER
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): <-30

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

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MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

CS601

PRODUCT: EMBREAK 2W157

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

MODERATELY IRRITATING TO THE SKIN.MAY CAUSE DERMATITIS.

ACUTE EYE EFFECTS ***

SEVERE IRRITANT TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS,GASES,MISTS OR AEROSOLS MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT.PROLONGED EXPOSURE MAY CAUSE DIZZINESS AND HEADACHE.

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED EXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY,MAY CAUSE CNS DEPRESSION,OR MAY CAUSE DEFATTING-TYPE DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

EXCESSIVE DERMAL EXPOSURE CAUSES DEFATTING AND DRYING OF SKIN;EXCESSIVE INHALATION OF VAPORS CAUSES DIZZINESS,HEADACHE AND NAUSEA.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ORALLY INGESTED OR INHALED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL, SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
REMOVE IGNITION SOURCES.FLUSH AREA WITH WATER.SPREAD SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA:
DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

SAL 000006438

MATERIAC SAFETY DATA SHEET



Since 1961

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SECTION I - PRODUCT IDENTIFICATION

DATE: REVISED 11/20/89

CHEMICAL NAME AND SYNONYMS:

TRADE NAME AND SYNONYMS: ALPHACHEN 2063 DEGREASER

CHEMICAL FAMILY:

FORMULA: PROPRIETARY

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	OTHER INGREDIENTS	%	TLV (Units)
Solvents					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
HEAVY AROMATIC NAPHTHA		25 ppm
LIGHT AROMATIC SOLVENT NAPHTHA		50 ppm
SOLVENT NAPHTHA (PETROLEUM) HEAVY AROMATIC		NOT ESTABLISHED

SECTION III - PHYSICAL DATA

BOILING POINT (F.)	APPROX. 212 Degrees F	SPECIFIC GRAVITY (H2O=1):	.968
VAPOR PRESSURE (mm Hg.):	UNK.	PERCENT. VOLATILE	UNK.
VAPOR DENSITY (AIR=1)	UNK.	BY VOLUME (X)	
SOLUBILITY IN WATER:	MISCIBLE	EVAPORATION RATE	UNK.
APPEARANCE AND ODOR:	LIGHT AMBER LIQUID WITH HYDROCARBON ODOR.	(_____ =1)	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used): NONE AT B.P. OF 212 Degrees F (PMCC) FLAMMABLE LIMITS
Lel: Uel:

EXTINGUISHING MEDIA: WATER SPRAY, FOAM, DRY CHEMICAL., CO2.

SPECIAL FIRE FIGHTING PROCEDURES: AIR SUPPLIED RESCUE EQUIPMENT. COOL EXPOSED CONTAINERS WITH WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS: DO NOT STORE OR MIX WITH STRONG OXIDANTS.

SAL 000006439

MATERIAL SAFETY DATA SHEET

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SECTION V - HEALTH HAZARD DATA ALPHACHEM 2063 DEGREASER

THRESHOLD LIMIT VALUE UNDETERMINED (SEE SECTION II)

EFFECTS OF OVEREXPOSURE: EYES: IRRITANT. SKIN: MODERATE IRRITANT. MAY CAUSE DRYING. INGESTION: MAY HAVE TOXIC EFFECTS IF SWALLOWED. INHALATION: CENTRAL NERVOUS SYSTEM MALFUNCTION. POSSIBLY CONVULSIONS.

EMERGENCY AND FIRST AID PROCEDURES: EYES: FLUSH WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION. SKIN: WASH WITH SOAP AND WATER. IF IRRITATION PERSISTS CALL PHYSICIAN. INGESTION: DO NOT INDUCE VOMITING. MAY GIVE OLIVE OIL TO RETARD ABSORPTION. KEEP WARM AND QUIET. GET IMMEDIATE MEDICAL ATTENTION. INHALATION: REMOVE FROM EXPOSURE. GIVE OXYGEN OR ARTIFICIAL RESPIRATION IF NEEDED. GET MEDICAL ATTENTION.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID: HEAT, SPARKS, OPEN FLAME
	STABLE	XXX	

INCOMPATIBILITY (Materials to avoid): STRONG OXIDIZING AGENTS, STRONG ALKALI OR CAUSTIC
HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, AMMONIA, OXIDES OF NITROGEN, SULFUR DIOXIDE, HYDROGEN SULFIDE.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID:
	WILL NOT OCCUR	XXX	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: ELIMINATE IGNITION SOURCES. EVACUATE ALL PERSONS NOT EQUIPPED WITH PROTECTIVE GEAR FROM SPILLAGE AREA. STOP SPILL AT SOURCE AND DIKE TO PREVENT SPREADING. PUMP LIQUID TO SALVAGE TANKS. ABSORB THE REMAINDER WITH INERT ABSORBENT.

WASTE DISPOSAL METHOD: DISPOSE OF IN APPROVED INCINERATOR OR LANDFILL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type): NIOSH/NESA APPROVED RESPIRATOR

VENTILATION	LOCAL EXHAUST	RECOMMENDED	SPECIAL
	MECHANICAL (General) EXPLOSION-PROOF VENTILATION EQUIPMENT		

PROTECTIVE GLOVES: RUBBER GLOVES EYE PROTECTION: CHEMICAL GOGGLES OR FULL FACE SHIELD

OTHER PROTECTIVE EQUIPMENT: IMPERVIOUS CLOTHING AND BOOTS TO PREVENT SKIN CONTACT.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: STORE IN CLOSED CONTAINERS IN WELL VENTILATED AREAS AWAY FROM EXTREME HEAT OR OPEN FLAMES. AVOID BREATHING VAPORS. AVOID CONTACT WITH EYES AND SKIN. DO NOT INGEST.
OTHER PRECAUTIONS: REPEATED CONTACT OF SIMILAR MATERIALS ON LABORATORY ANIMALS HAS RESULTED IN THE INDUCTION OF TUMORS.

SAL 000006440

MATERIAL SAFETY DATA SHEET

CS 137

APR 03 1989

PRODUCT NAME	Cable Clean (Aerosol) #02069	#MSDSO 2069
MANUFACTURED BY:	CRC Industries, Inc.	Phone (215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974		

1. INGREDIENTS	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
• 1,1,1 Trichloroethane	71-55-6	350	350		91.0
1,3 Dioxolane	646-06-0	NA	NA		3.0
* 2-Butanol	78-92-2	100	100		2.0
Carbon Dioxide	124-38-9	5000	10000		4.0
These chemicals are listed in the Toxic Chemical List found in Section 313 of the Emergency Planning and Community-Right-To-Know Act (SARA Title III) and are subject to release inventory reporting under that act.					

2. PHYSICAL DATA (does not include carbon dioxide propellant)

Specific Gravity 1.293 (70°F)	Vapor Pressure 100 mm @ 20°C	% Volatile 100%
Boiling Point 164°F	Evaporation Rate Rapid	
Freezing Point N/A	Vapor Density 4.55 (air = 1)	
Appearance and Odor	Colorless liquid - irritating odor at high concentrations	
Solubility	Slight solubility in water - good solvent for many organic materials	

3. FIRE AND EXPLOSION DATA

Flashpoint None	Method TCC, COC, TOC	Flammable Limits
Extinguishing Media	Water, fog	LEL 6 UEL 16.7
Unusual Hazards	Aerosol cans may explode if their temperature exceeds 130° F	

4. REACTIVITY AND STABILITY

Stability	Good - avoid exposures to open flames, arcs, and high temperatures.	
Hazardous decomposition products	Thermal - Hydrogen chloride, chlorine and some phosgene	
Materials to avoid	Avoid storage in aluminum containers or contact with aluminum and/or zinc powder.	

5. PROTECTION INFORMATION

Ventilation	Maintain vapor concentration below TLV - Use mechanical means if necessary.	
Respiratory	Above TLV use self contained breathing apparatus (air mask or vapor mask).	
Gloves solvent resistant	Eye & Face	safety glasses
Other Protective Equipment	Not normally required for aerosol product usage.	

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65137

MSDS 00 2069

6. HEALTH HAZARD DATA

Primary Routes of Entry Inhalation and skin contact

Signs and Symptoms of Exposure

1. Acute Overexposure Inhalation - headaches, dizziness, anesthesia, unconsciousness.
Eyes - causes pain and some irritation. Skin - irritation on repeated exposures.

2. Chronic Overexposure Repeated overexposures may cause liver and kidney effects.

Medical Conditions Generally Aggravated by Exposure High levels (8000 ppm +) of vapor may cause cardiac arrhythmias

Chemical Listed as Carcinogen or Potential Carcinogen

National Toxicology Program

Yes ☐
No ☒

IARC Monographs

Yes ☐
No ☒

OSHA

Yes ☐
No ☒

Emergency and First Aid Procedures (If symptoms persist, call a physician)

1. Inhalation Remove to fresh air, apply artificial respiration if necessary.

2. Eyes Flush for 15 minutes with large amounts of water.

3. Skin Remove contaminated clothing, wash exposed area with soap and water.

4. Ingestion DO NOT induce vomiting - call physician

7. SPILL OR LEAK PROCEDURES

Precautions to be taken in Handling and Storage

Store in a cool, dry place.

Steps to be taken in case Materials is released or spilled

Usually not a problem with aerosols. Area should be ventilated and absorbent used to pick up excess material.

Waste Disposal Discarded full cans or partially filled cans are considered Hazardous Waste - Dispose of in conformance with Local, State and Federal regulation

8. SPECIAL PRECAUTIONS AND USE DIRECTIONS

Avoid skin contact or breathing of vapors. Since vapors are heavier than air, aerosols should not be used in confined areas or low spots without adequate ventilation. If vapors are suspected in a low area, do not enter unless special breathing apparatus is used and an observer is present for assistance.
Keep aerosols away from heat.

PREPARED BY: Allen B. Reed

ORIGINAL DATE OR DATE OF REVISION

3-90

SAL 000006442

MATERIAL SAFETY DATA SHEET

CS 140

PRODUCT NAME	Electrical Quality Silicone (Aerosol)	#	MSDS002094
MANUFACTURED BY:	CRC CHEMICALS	#2094	Phone (215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974			

1. INGREDIENTS	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
Dimethyl polysiloxane	63148-62-9	NA	NA		3
** 1,1,1 Trichloroethane	71-55-6	350	350		51
Petroleum Naphtha	64742-89-8	NA	500	100	42
*Carbon dioxide	124-38-9	5000	10000		4
*Carbon dioxide functions as propellant for this product. Pressure of aerosol is 85 psia at 70°F.					
**This chemical found on the Toxic Chemical List found in Section 313 of the Emergency Planning and Community Right-To-Know Act, (SARA Title III) and is subject to release inventory reporting under the Act.					

2. PHYSICAL DATA (Propellant not included)

Specific Gravity	0.9268	Vapor Pressure	NA	% Volatile	97
Boiling Point	152°F (Initial)	Evaporation Rate	Rapid		
Freezing Point	NA	Vapor Density	Heavier than air		
Appearance and Odor	Clear water white liquid - solvent odor				
Solubility	Not soluble in water				

3. FIRE AND EXPLOSION DATA

Flashpoint	<20°F	Method	TCC	Flammable Limits	NA
Extinguishing Media	Foam, Carbon dioxide, Dry chemicals			LEL	UEL
Unusual Hazards	Aerosol cans may explode when heated above 130°F.				

4. REACTIVITY AND STABILITY

Stability	Stable				
Hazardous decomposition products	Thermal (Carbon monoxide, hydrogen chloride, and phosphene)				
Materials to avoid	Strong oxidizers.				

5. PROTECTION INFORMATION

Ventilation	Required in a confined area to maintain vapor below TLV.		
Respiratory	Self contained breathing apparatus		
Gloves	Solvent resistant	Eye & Face	Safety Goggles
Other Protective Equipment	Not normally required for aerosol use.		

GS 140.

MSDS002094

6. HEALTH HAZARD DATA

Primary Routes of Entry Inhalation and Skin

Signs and Symptoms of Exposure

1. Acute Overexposure Inhalation - Headache, dizziness, nausea, anesthesia & unconsciousness. Eyes - may be irritating to eyes. Skin - may be irritating to skin.

2. Chronic Overexposure - Prolonged high levels of the petroleum naphtha may damage nerve tissue - high levels of 1,1,1 trichloroethane may affect liver and kidneys

Medical Conditions Generally Aggravated by Exposure

Chemical Listed as Carcinogen
or Potential Carcinogen

National Toxicology
Program

Yes ☐
No ☒

IARC
Monographs

Yes ☐
No ☒

OSHA

Yes ☐
No ☒

Emergency and First Aid Procedures (If symptoms persist, call a physician)

1. Inhalation Remove to fresh air - apply artificial respiration if needed.

2. Eyes Flush with large amounts of water.

3. Skin Wash with soap and water - Remove contaminated clothing.

4. Ingestion Do not induce vomiting.

7. SPILL OR LEAK PROCEDURES

Precautions to be taken in
Handling and Storage Store in a cool dry area.

Steps to be taken in case

Materials is released or spilled Remove sources of ignition, ventilate area. Absorb liquid and put in a vapor tight container.

Waste Disposal Partially used and unused aerosols are hazardous waste if discarded. Dispose in conformance with Federal, State & local regulations

8. SPECIAL PRECAUTIONS AND USE DIRECTIONS

Aerosols may explode if exposed to temperatures over 130°F.

PREPARED BY: A.R. Reed

ORIGINAL DATE OR DATE OF REVISION

3-90

SAL 000006444

Material Safety Data Sheet

FILE NO. 920:405-922WA-3

UNIQUE IDENTIFIER

Common Name: (used on label and list)

41000 Green Concentrate

8 S 1 6 7

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910.1200. Standard must be consulted for specific requirements.

SECTION 1 -

Manufacturer's Name

Meriam Instruments

Address

10920 Madison Ave.

Emergency Telephone No.

(216) 281-1100

City, State, and ZIP

Cleveland, Ohio 44102

Other Information Calls

(216) 281-1100

Signature of Person Responsible for Preparation (Optional)

[Signature]

Date Prepared

2-23-90

SECTION 2 - HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical & common name(s))	OSHA PEL	ACGIH TLV	Other Exposure Limits	% (optional)	CAS NO.
Butyl Cellosolve (CAS#111-76-2)	50ppm (air)	50ppm (air)	N.A.	63.7	
Ethylene Glycol (CAS#107-21-1)	N.A.	100ppm (vapor)	N.A.	10.3	
Water (CAS#7732-18-5)	—	—	—	25.7	
Aerosol OT Solution (CAS#577-11-7)	N.A.	N.A.	N.A.	0.3	
Sodium Bicarbonate (CAS#144-55-8)	N.A.	N.A.	N.A.	Trace	
Green Dye (CAS#518-47-8)	N.A.	N.A.	N.A.	Trace	
Green Dye (CAS#19381-50-1)	N.A.	N.A.	N.A.	Trace	

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point	310°F	Specific Gravity (H ₂ O=1)	1.0	Vapor Pressure (mm Hg)	20
Vapor Density (Air = 1) < 1					
Solubility in Water	Completely miscible	Reactivity in Water	Nil		
Appearance and Odor	Green, odorless	Melting Point			

SECTION 4 - FIRE & EXPLOSION DATA

Flash Point	NON	Method Used	Flammable Limits in Air % by Volume	LEL Lower	UEL Upper
Flashing				N.A.	N.A.
Auto-Ignition Temperature	N.A.	Extinguisher Media	CO ₂ , Dry Chem.		
Special Fire Fighting Procedures	None				

Unusual Fire and Explosion Hazards None

SAL 000006445

SECTION 5 - PHYSICAL HAZARDS (REACTIVITY DATA)

68181

Stability ☒ Unstable ☐ Conditions ☐ Stable ☒ to Avoid N.A.Incompatibility
(Materials to Avoid) Oxidizing agents and alkaliesHazardous
Decomposition Products N.A.Hazardous Polymerization ☐ May Occur ☒ Conditions ☐ Will Not Occur ☒ to Avoid N.A.**SECTION 6 - HEALTH HAZARDS**

1. Acute Headaches, nausea, narcosis 2. Chronic N.A.

Signs and
Symptoms of ExposureMedical Conditions Generally
Aggravated by Exposure N.A.Chemical Listed as Carcinogen
or Potential CarcinogenNational Toxicology
Program Yes ☐
No ☒IARC
Monographs Yes ☐
No ☒OSHA Yes ☐
No ☒Emergency and
First Aid Procedures

ROUTES OF ENTRY	1. Inhalation	Remove to fresh air, consult physician.
	2. Eyes	Flush with water, consult physician.
	3. Skin	Wash with water.
	4. Ingestion	Drink large quantities of water, induce vomiting, consult physician.

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURESPrecautions to be Taken
in Handling and Storage Keep container closed.Other
Precautions N.A.Steps to be Taken in Case
Material is Released or Spilled Flush with water, clean up with absorbent.Waste Disposal
Methods (Consult federal, state, and local regulations) Incineration**SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES**Respiratory Protection
(Specify Type) None

Ventilation Yes Local Exhaust N.A. Mechanical (General) N.A. Special N.A. Other N.A.

Protective
Gloves Rubber gloves Eye
Protection Safety glassesOther Protective
Clothing or Equipment N.A.

Work Hygienic Practices

SAL 000006446

IMPORTANT

Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so indicate.

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MORPHOLINE

REVISION OF: 01-04-90

65226

SHIP TO:

45000RM2
CORP. ID. INC.
REF ID: A6
P.O. BOX 47
WEST AVE

LA JOLLA

ORDER NO: 461505988
PROD NO: 04420886VAN WATERS & RUHRS INC., SUBSIDIARY OF UNIVAN
1400 BURTON RD. SE. SEATTLE, WA 98104-1564 (408) 435-8700

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTEC (800) 424-9800

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & RUHRS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: MORPHOLINE
COMMON NAMES/SYNONYMS: ETHYLENE
OXYLIDE; DIETHYLENIMIDE; OXALIC TETRAHYDRO-
1,4-DIHYDROCAS NO: 110-91-8
VWR CODE: P1241FORMULA: C4 H9 N O
HAZARD RATING (NFPA 704)
HEALTH: 2
FLAM: 3
REACTIVITY: 0
SPECIAL: NONEDATE ISSUED: 08/89
SUPERCEDES: 09/87
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	Z PPM	EXPOSURE LIMITS, PPM			HAZARD FLAMMABLE, CORROSIVE
		OSHA TWA	AUGHI TLV	OTHER LIMIT 30 (SKIN, AUGHI STEL)	
MORPHOLINE		20 (SKIN)	20 (SKIN)	30 (SKIN, AUGHI STEL)	

-----PHYSICAL PROPERTIES-----

MELTING POINT, DEG F: 248	VAPOR PRESSURE, MM HG/20 DEG C: 7-10
BOILING POINT, DEG F: 228	VAPOR DENSITY (AIR=1): 3.0
SPECIFIC GRAVITY (WATER=1): 1.0	WATER SOLUBILITY, %: 100
APPEARANCE AND ODOR: CLEAR	EVAPORATION RATE (ETYL ACETATE=1): NONE
COLORLESS OILY LIQUID, CORROSIVE TO SKIN	

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

ON SKIN OR CLOTHING: IMMEDIATELY FLUSH EYES WITH LOTION OF RUNNING WATER FOR 30 MINUTES. IF ON FACE, NECK AND LOWER EYES, OCCASIONALLY, GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SWALLOWING: IMMEDIATELY FLUSH MOUTH WITH LOTION OF RUNNING

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WATER FOR 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH CLOTHING BEFORE REUSE; DISCARD CONTAMINATED LEATHER ARTICLES. GET IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT, INHALATION, SWALLOW.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS ARE EXTREMELY CORROSIVE TO THE NOSE, THROAT, AND MUCOUS MEMBRANES. BRONCHITIS, PULMONARY EDEMA, AND CHEMICAL PNEUMONITIS MAY OCCUR. IRRITATION, COUGHING, CHEST PAIN, AND DIFFICULTY IN BREATHING MAY OCCUR WITH BRIEF EXPOSURE WHILE PROLONGED EXPOSURE MAY RESULT IN VISUAL DISTURBANCES, MORE SEVERE IRRITATION AND LUNG DAMAGE. BREATHING HIGH CONCENTRATIONS MAY RESULT IN DEATH.

EYE CONTACT: VAPORS, LIQUID, AND MISTS ARE EXTREMELY CORROSIVE TO THE EYES. BRIEF CONTACT OF THE VAPORS WILL BE SEVERELY IRRITATING. BRIEF CONTACT OF THE LIQUID OR MISTS WILL SEVERELY DAMAGE THE EYES AND PROLONGED CONTACT MAY CAUSE PERMANENT EYE INJURY WHICH MAY BE FOLLOWED BY BLINDNESS.

SKIN CONTACT: BRIEF CONTACT MAY CAUSE BURNS. PROLONGED CONTACT CAUSES SEVERE BURNS. MAY BE ABSORBED THROUGH THE SKIN AND CAUSE TOXIC EFFECTS.

SWALLOWED: VAPORS, MISTS, AND LIQUID ARE EXTREMELY CORROSIVE TO THE MOUTH AND THROAT. SWALLOWING THE LIQUID BURNS THE TISSUES, CAUSES SEVERE OROPHARYNGEAL PAIN, NAUSEA, VOMITING, AND COLLAPSE. SWALLOWING LARGE QUANTITIES CAN CAUSE DEATH.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE, BUT PROLONGED EXPOSURE HAS CAUSED KIDNEY AND LIVER DAMAGE IN EXPERIMENTAL ANIMALS.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

-----TOXICITY DATA-----

ORAL: HUMAN LD50 = 50 MG/KG

DERMAL: RABBIT LD50 = 504 MG/KG

INHALATION: RAT LD50 = 8000 PPM/8 HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

OTHER DATA: ALKYL SUBSTITUTED N-NITROSAMINES, KNOWN TO BE POTENT CARCINOGENS, MAY BE FORMED WHEN THIS PRODUCT COMES IN CONTACT WITH NITROUS ACID, INORGANIC AND ORGANIC NITRITES OR ATMOSPHERES WITH HIGH NITROUS OXIDE CONCENTRATIONS. USE NITRITE / NITRATE FREE WATER WHEN PREPARING AQUEOUS SOLUTIONS.

-----PERSONAL PROTECTION-----

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING CONCENTRATIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE VAPORS OR MISTS, OR IF A FULLY CAPTURED RESPIRATOR APPROPRIATE FOR THOSE EXPOSURE LEVELS. AN APPROPRIATE RESPIRATOR MAY BE A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR, DESIGNED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS, OR THE PRESSURE DEMAND RULE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECT. GOGS: CHEMICAL GOGGLES AND FULL FACESHIELD UNLESS A FULL

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FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, BUTYL RUBBER BOOTS, BUTYL RUBBER GLOVES, AND BUTYL RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT: DEG F: 75
METHOD USED: TCC

FLAMMABLE LIMITS IN AIR, %
LOWER: 1.2 UPPER: 10.8

EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, ALCOHOL FOAM, OR CO₂.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION BECAUSE VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL TO IGNITION SOURCES AND FLASH BACK. ABOVE 95 DEG F. EXPLOSIVE AIR-VAPOR MIXTURE MAY FORM.

HAZARDOUS REACTIVITY

STABILITY: STABLE. POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAME.

MAINTAINS AN AUTOX: ACIDS, OXIDIZING MATERIALS, HALOGEN COMPOUNDS, COPPER, ZINC AND GALVANIZED METALS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, AMMONIA, OXIDES OF NITROGEN, AND FORMALDEHYDE AND ACETALDEHYDE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING BUTYL RUBBER BOOTS, GLOVES, APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDING. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SOLVENT MATERIAL. PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF RIVERS, STORM DRAINS, SURFACE WATERS, AND SOIL. THIS MATERIAL IS RESISTANT TO BIODEGRADATION IN WASTEWATER TREATMENT PLANTS AND IS EXPECTED TO BE HIGHLY TOXIC TO AQUATIC LIFE. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

GENERAL DIRECTIONS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO DETERMINE PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND SHIPMENT PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MAKE SURE IT REMAINS UNDER POSITIVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT USED HANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER

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TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. THIS PRODUCT CORRODES COPPER, ZINC, AND GALVANIZED SURFACES. MATERIALS FOR CONTAINMENT SHOULD BE CONSTRUCTED OF IRON, STEEL, OR ALUMINUM.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL IN OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS USE PROPER HAZARD WARNING AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS, INC.
DURING BUSINESS HOURS, FACTORY LINE (800) 485-8700

-----NOTICE-----

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-----REVISION-----

09/87: ADDED OTHER PERSONNEL EXPOSURE LIMIT.

08/89: CHANGED HEADING AND CONTACT INFORMATION.

**** E N D O F M S D S ****

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SAL 000006450



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 19 PULV OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

68228

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 19 PULV OXYGEN SCAVENGER

DESCRIPTION: A blend of sodium metabisulfite, sodium sulfite and cobalt sulfate*

NFPA 704M/HMIS RATING: 1/1 HEALTH 0/0 FLAMMABILITY 0/0 REACTIVITY 0 OTHER*

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX.%
Sodium metabisulfite	7681-57-4	1-5

SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: May cause irritation to skin and eyes. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Avoid breathing dust. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. Call a physician.
SKIN: Flush with water for 15 minutes.
INGESTION: Induce vomiting. Give water. Call a physician.
INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: Can cause transient irritation.



65228

MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 19 PULV OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 5 HEALTH EFFECTS INFORMATION

(CONTINUED)

SKIN CONTACT: May cause irritation with prolonged contact. *
INGESTION: Can be harmful. *
INHALATION: May cause irritation to the respiratory tract and lungs. *

SYMPTOMS OF EXPOSURE: Sodium sulfite. Ingestion is believed to cause an asthmatic, allergic reaction in susceptible individuals. *

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions. *

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have not been conducted on this product, but toxicity studies of the ingredient(s) in Section 2 have been reviewed. The results are shown below. *

ACUTE ORAL TOXICITY (ALBINO RATS):
Sodium bisulfite LD₅₀ = 2,000 mg/kg *

OTHER TOXICITY RESULTS: Sodium bisulfite.
Intraperitoneal LD₅₀ (rat) = 650 mg/kg *

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Tan/grey	FORM: Powder	ODOR: Sweet
BULK DENSITY:	90 lbs/ft ³	
SOLUBILITY IN WATER:	Completely	
pH (AT 5%) =	7.6 - 8.2	ASTM E-70
FLASH POINT:	None	

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: None *

EXTINGUISHING MEDIA: Not applicable *

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve SO_x under fire conditions. *

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which *



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 19 PULV OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

CS228

SECTION 9 REACTIVITY INFORMATION

(CONTINUED)

can generate heat, fires, explosions and the release of toxic fumes.

Avoid contact with strong acids (eg. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) which can generate heat, splattering or boiling and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion SO_x may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection not normally needed. If significant dusting occurs, wear a NIOSH approved or equivalent dust respirator, (ANSI Z 88.2, 1980 for requirements and selection).

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: If significant dusting occurs, local exhaust ventilation is recommended.

PROTECTIVE EQUIPMENT: No special precautions. Avoid eye and skin contact, and inhalation of dust.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Solid spills: Sweep or vacuum up and reclaim into recovery or salvage drums for disposal. Wear the protective equipment specified in Section 10. Refer to CERCLA in Section 14.

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, (i.e. D001 through D017) nor is it listed under Subpart D.



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MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 19 PULV OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

As a non-hazardous solid waste, it can be disposed of in an industrial waste landfill in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

AQUATIC DATA:

96 hour static acute LC₅₀ to Bluegill Sunfish = Greater than 10 ppm, less than 100 ppm (1% solution)

96 hour static acute LC₅₀ to Rainbow Trout = Greater than 100 ppm (1% solution)

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

Sodium metabisulfite = TWA 5 mg/m³ ACGIH/TLV

Sodium metabisulfite = TWA 5 mg/m³ OSHA/PEL

CERCLA, 40 CFR 117, 302:

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

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MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 19 PULV OXYGEN SCAVENGER

Emergency Telephone Number
Medical (708) 920-1510 (24 hours)

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SECTION 14 REGULATORY INFORMATION

(CONTINUED)

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found this product to be hazardous. The product
should be reported under the following EPA hazard categories:

- XX Immediate (acute) health hazard
- Delayed (chronic) health hazard
- Fire hazard
- Sudden release of pressure hazard
- Reactive hazard

Under Section 311, submittal of MSDS's or a list of product names to the local
emergency planning commission, state emergency response commission and local
fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever
is less, of an extremely hazardous substance.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product does not contain ingredients (at a level of 1% or greater) on the
List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List
(40 CFR 710).

FOOD AND DRUG ADMINISTRATION (FDA):

Federal Food, Drug and Cosmetic Act:

When use situations necessitate compliance with FDA regulations, this
product is acceptable under 21 CFR 173.310 Boiler Water Additive.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:

If this product becomes a waste, it does not meet the criteria of a
hazardous waste.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15

(formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):
None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:



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MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 19 PULV OXYGEN SCAVENGER

Emergency Telephone NumberMedical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

CALIFORNIA PROPOSITION 65:

None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:

This product contains the following substance(s) identified on the Michigan Critical Materials Register:

Cobalt sulfate

STATE RIGHT TO KNOW LAWS:

The following ingredients shown are disclosed for compliance with State Right To Know Laws:

Cobalt sulfate	10124-43-3
Sodium metabisulfite	7681-57-4
Sodium sulfite	7757-83-7

INTERNATIONAL REGULATIONS:

This is a WHMIS controlled product under The House of Commons of Canada Bill C-70. The product contains the following substance(s), from the Ingredient Disclosure List or has been evaluated based on its toxicological properties, to contain the following hazardous ingredient(s):

Chemical Name	CAS #	% Concentration Range
Sodium metabisulfite	7681-57-4	1-5

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 19 PULV OXYGEN SCAVENGE

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

GS228

SECTION 17 BIBLIOGRAPHY

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REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

Information on this MSDS has changed. The changes are indicated by asterisks on the right side of only the changed sections. This is an updated MSDS as required by OSHA's Hazard Communication Rule 29 CFR 1910.1200.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist

DATE CHANGED: 02/22/90

DATE PRINTED: 04/28/90



MATERIAL SAFETY DATA SHEET

PRODUCT

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SAL 000006458



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

65237

APR 08 1990

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 5163 CORROSION INHIBITOR

DESCRIPTION: An alkyl amine condensate in a hydrocarbon solvent

NFPA 704M/HMIS RATING: 2/2 HEALTH 2/2 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX.%
Ethylbenzene	100-41-4	10-20
Naphthalene	91-20-3	1-5
Xylene	1330-20-7	5-10
Heavy aromatic naphtha	68603-08-7	40-70

SECTION 3 PRECAUTIONARY LABEL INFORMATION

WARNING: Causes irritation to skin and eyes. Combustible. Prolonged inhalation of vapor may be harmful. Do not get in eyes, on skin or on clothing. Wear goggles and face shield when handling. Avoid prolonged or repeated breathing of vapor. Use with adequate ventilation. Do not take internally. Keep away from heat and open flame. Keep container closed when not in use.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Immediately flush with water for at least 15 minutes while holding eyelids open. Call a physician at once.

SKIN: Wash thoroughly with soap and rinse with water. Call a physician.

INGESTION: Do not induce vomiting. Give water. Call a physician.

INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.



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MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 4 FIRST AID INFORMATION

(CONTINUED)

CAUTION: If unconscious, having trouble breathing or in convulsions,
do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: May cause moderate irritation.

SKIN CONTACT: May cause moderate irritation.

INHALATION: Prolonged inhalation of vapor may be harmful.

SYMPTOMS OF EXPOSURE:

ACUTE: Inhalation of high concentrations of product can cause nausea,
dizziness, vomiting, stupor or unconsciousness.CHRONIC: Prolonged skin contact with product can cause dry skin and defatting
resulting in irritation and dermatitis.AGGRAVATION OF EXISTING CONDITIONS: A review of available data does
not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: No toxicity studies have been conducted on
this product.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Opaque dark amber FORM: Liquid

ODOR: Hydrocarbon

DENSITY: 7.7 lbs/gal.

SOLUBILITY IN WATER: Insoluble

SPECIFIC GRAVITY: 0.92 @ 60 Degrees F

ASTM D-1298

FLASH POINT: Minimum 120 Degrees F (PMCC)

ASTM D-93

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: Minimum 120 Degrees F (PMCC) ASTM D-93

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, alcohol foam,
carbon dioxide or other extinguishing agent suitable for Class B fires. Use
water to cool containers exposed to fire. For large fires, use water spray or
fog, thoroughly drenching the burning material.



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

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SECTION 8 FIRE AND EXPLOSION INFORMATION

(CONTINUED)

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NO_x under fire conditions. Containers exposed in a fire should be cooled with water to prevent vapor pressure buildup leading to a rupture.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, NO_x may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low. If significant vapors, mists or aerosols are generated, wear a NIOSH approved or equivalent respirator, (ANSI Z 88.2, 1980 for requirements and selection).

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with chemical splash goggles (ANSI Z 87.1 requirements and selection of gloves, goggles, shoes, etc.). A full slicker suit is recommended if gross exposure is possible.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:



GS287

MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 10.

Keep the spill away from heat, sparks, flames and welding operations. Ventilate area and evacuate employees from exposure if the airborne concentration exceeds the TLV. Refer to Section 14.

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous Waste D001.

As a hazardous liquid waste, it must be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to a licensed industrial waste landfill (Hazardous Waste Treatment, Storage and Disposal facility). A hazardous liquid waste can also be incinerated in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - COMBUSTIBLE LIQUID, N.O.S.
COMBUSTIBLE LIQUID NA 1993
CONTAINS - XYLENE, NAPHTHALENE

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

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SECTION 14 REGULATORY INFORMATION

(CONTINUED)

Based on our hazard evaluation, the following ingredients in this product are hazardous and the reasons are shown below.

Heavy aromatic naptha - Skin irritant, combustible
Ethylbenzene - Eye irritant
Naphthalene - Eye irritant
Xylene - Eye irritant

Ethylbenzene = TWA 100 ppm, STEL 125 ppm ACGIH/TLV
434 mg/m³, 543 mg/m³ ACGIH/TLV

Naphthalene = TWA 10 ppm, STEL 15 ppm ACGIH/TLV
52 mg/m³, 79 mg/m³ ACGIH/TLV

Xylene = TWA 100 ppm, STEL 150 ppm ACGIH/TLV
434 mg/m³, 651 mg/m³ ACGIH/TLV

Ethylbenzene = TWA 100 ppm, STEL 125 ppm OSHA/PEL
435 mg/m³, 545 mg/m³ OSHA/PEL

Naphthalene = TWA 10 ppm, STEL 15 ppm OSHA/PEL
50 mg/m³, 75 mg/m³ OSHA/PEL

Xylene = TWA 100 ppm, STEL 150 ppm OSHA/PEL
435 mg/m³, 655 mg/m³ OSHA/PEL

Heavy aromatic naptha = 100 ppm TLV
Manufacturer's recommendation

CERCLA, 40 CFR 117, 302:

This product contains naphthalene, a Reportable Quantity (RQ) substance and if 2,300 pounds of product are released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D. C. (1-800-424-8802).

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986

(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:

XX Immediate (acute) health hazard

-- Delayed (chronic) health hazard

XX Fire hazard



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MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

- Sudden release of pressure hazard
- Reactive hazard

Under Section 311, submittal of MSDS's or a list of product names to the local emergency planning commission, state emergency response commission and local fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever is less, of an extremely hazardous substance.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product contains the following ingredient(s), (with CAS # and % range) which appear(s) on the List of Toxic Chemicals.

Ethylbenzene	100-41-4	10-20
Naphthalene	91-20-3	1-5
Xylene	1330-20-7	5-10

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
If this product becomes a waste, it does meet the criteria of a hazardous waste as defined under RCRA 40 CFR 261 (consult Section 11).

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15/
formerly Sec. 307, 40 CFR 116/formerly Sec. 311:

This product contains the following ingredients covered by the Clean Water Act:

Naphthalene - Section 307, 311
Ethylbenzene - Section 307, 311
Xylene - Section 311

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product contains the following ingredients covered by the Clean Air Act:

Ethylbenzene - Section 111
Xylene - Section 111

STATE REGULATIONS:



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

GS237

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

CALIFORNIA PROPOSITION 65:

Substances known to the State of California to cause cancer may be present as an impurity or residue.

MICHIGAN CRITICAL MATERIALS:

This product contains the following substance(s) identified on the Michigan Critical Materials Register:

Naphthalene, Xylene

STATE RIGHT TO KNOW LAWS:

The following ingredient(s) are disclosed for compliance with State Right To Know Laws:

Alkylamide condensate

Ethylbenzene 100-41-4

Heavy aromatic naphtha 68603-08-7

Naphthalene 91-20-3

Xylene 1330-20-7

INTERNATIONAL REGULATIONS:

This is a WHMIS controlled product under The House of Commons of Canada Bill C-70. The product contains the following substance(s), from the Ingredient Disclosure List or has been evaluated based on its toxicological properties, to contain the following hazardous ingredient(s):

Chemical Name	CAS #	% Concentration Range
Ethylbenzene	100-41-4	10-20
Naphthalene	91-20-3	1-5
Xylene	1330-20-7	5-10
Heavy aromatic naphtha	68603-08-7	40-70

SECTION 15 ADDITIONAL INFORMATION

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SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 16 USER'S RESPONSIBILITY

(CONTINUED)

to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

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Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5163 CORROSION INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

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SECTION 17 BIBLIOGRAPHY

(CONTINUED)

Information on this MSDS has changed. The changes are indicated by asterisks on the right side of only the changed sections. This is an updated MSDS as required by OSHA's Hazard Communication Rule 29 CFR 1910.1200.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist

DATE CHANGED: 03/12/90

DATE PRINTED: 03/24/90

SAL 000006467



MATERIAL SAFETY DATA SHEET

PRODUCT

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SAL 000006468



MATERIAL SAFETY DATA SHEET

PRODUCT ELIMINOX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

CS248

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: ELIMINOX OXYGEN SCAVENGER *

DESCRIPTION: An aqueous solution of a modified amino compound *

NFPA 704M/HMIS RATING: 1/1 HEALTH 0/0 FLAMMABILITY 0/0 REACTIVITY 0 OTHER *
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme *

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation of the ingredient(s) under OSHA's Hazard Communication Rule, 29 CFR 1910.1200 has found none of the ingredient(s) hazardous. *

SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: May cause skin irritation. Avoid contact with skin and clothing. Avoid prolonged or repeated breathing of vapor. Use with adequate ventilation. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. *
SKIN: Flush with water for 15 minutes. *
INGESTION: Induce vomiting. Give water. Call a physician. *

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition. *

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water. *

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin

EYE CONTACT: Non-irritating.
SKIN CONTACT: Can cause transient irritation.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does



MATERIAL SAFETY DATA SHEET

PRODUCT ELIMINOX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 5 HEALTH EFFECTS INFORMATION

(CONTINUED)

not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have been conducted on this product. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS): LD₅₀ = Greater than 5 g/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS): LD₅₀ = Greater than 2 g/kg

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):

SKIN IRRITATION INDEX DRAIZE RATING: 0.23/8.0 Minimal irritation

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):

EYE IRRITATION INDEX DRAIZE RATING: 0.33/110.0 Practically non-irritating

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Colorless	FORM: Liquid	
DENSITY:	8.5 lbs/gal.	
SOLUBILITY IN WATER:	Completely	
SPECIFIC GRAVITY:	1.02 @ 60 Degrees F	ASTM D-1298
pH (NEAT) =	7.3	pH (at 1%) 6.7
VISCOSITY:	3 cps @ 60 Degrees F	ASTM E-70
FREEZE POINT:	28 Degrees F	ASTM D-2983
FLASH POINT:	None (PMCC)	ASTM D-1177
		ASTM D-93

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: None (PMCC) ASTM D-93

EXTINGUISHING MEDIA: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NO_x under fire conditions. Containers exposed in a fire should be cooled with water to prevent vapor pressure buildup leading to a rupture.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid mineral acids and nitrites.



MATERIAL SAFETY DATA SHEET

PRODUCT ELIMINOX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

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SECTION 9 REACTIVITY INFORMATION

(CONTINUED)

Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, NO_x may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low. If significant vapors, mists or aerosols are generated, wear a NIOSH approved or equivalent respirator.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles when attaching feeding equipment or doing maintenance.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, (i.e. D001 through D017) nor is it listed under Subpart D.

SAL 000006471



GS248

MATERIAL SAFETY DATA SHEET

PRODUCT ELIMINOX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be deep-well injected in accordance with local, state and federal regulations.

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SECTION 12 ENVIRONMENTAL INFORMATION

AQUATIC DATA:

96 hour static acute LC₅₀ to Bluegill Sunfish = 190 ppm

48 hour static acute LC₅₀ to Bluegill Sunfish = 520 ppm

24 hour static acute LC₅₀ to Bluegill Sunfish = 750 ppm

96 hour static acute LC₅₀ to Rainbow Trout = 360 ppm

48 hour static acute LC₅₀ to Rainbow Trout = 700 ppm

24 hour static acute LC₅₀ to Rainbow Trout = Greater than 1,000 ppm

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - PRODUCT IS NOT REGULATED
DURING TRANSPORTATION

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

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FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, this product is not hazardous.

CERCLA, 40 CFR 117, 302:

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986

(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SAL 000006472



MATERIAL SAFETY DATA SHEET

PRODUCT ELIMINOX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

GS248

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found that this product is not hazardous under
29 CFR 1910.1200.

Under Section 311, submittal of MSDS's or a list of product names to the local
emergency planning commission, state emergency response commission and local
fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever
is less, of an extremely hazardous substance.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product does not contain ingredients (at a level of 1% or greater) on the
List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List
(40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:

If this product becomes a waste, it does not meet the criteria of a
hazardous waste.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15

(formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

None of the chemicals on the current Proposition 65 list are known to be
present in this product.

MICHIGAN CRITICAL MATERIALS:

This product does not contain ingredients listed on the Michigan Critical
Materials Register.

STATE RIGHT TO KNOW LAWS:

The following ingredient(s) are disclosed for compliance with State Right To



G S 2 4 8

MATERIAL SAFETY DATA SHEET

PRODUCT ELIMINOX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

Know Laws:

Carbohydrazide 497-18-7
Water 7732-18-5

INTERNATIONAL REGULATIONS:

This is not a WHMIS controlled product under The House of Commons of Canada Bill C-70.

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Admur, M. O., eds., Macmillian Publishing Company, Inc., N. Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.



MATERIAL SAFETY DATA SHEET

PRODUCT ELIMINOX OXYGEN SCAVENGER

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

CS 248

SECTION 17 BIBLIOGRAPHY

(CONTINUED)

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

Information on this MSDS has changed. The changes are indicated by asterisks on the right side of only the changed sections. This is an updated MSDS as required by OSHA's Hazard Communication Rule 29 CFR 1910.1200.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist

DATE CHANGED: 05/02/90

DATE PRINTED: 05/12/90



MATERIAL SAFETY DATA SHEET

PRODUCT

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SAL 000006476

01120

MATERIAL SAFETY DATA SHEET

PG 1

GSA ASH LIGHT

REVISION OF 01-16-90

CS299

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LA 10000

UNIFORM NO: 45150097/
 FOR NO: 4621000

SAFETY DATA SHEET FOR THE SUBSIDIARY OF UNIVAR
 1000 NORTH BLVD. SEATTLE, WA 98104-1524 (408) 485-8700

EMERGENCY ASSISTANCE: (800) 424-9800

EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9800

FOR PRODUCT AND SALES INFORMATION: (800) 424-9800

CONTACT YOUR LOCAL VAN MATERS & ROGERS BRANCH OFFICE

FOR PRODUCT AND SALES INFORMATION: (800) 424-9800

PRODUCT NAME: GSA ASH
 CAS NO: 49119-8
 OTHER NAME: GSA ASH
 OTHER NAME: GSA ASH
 OTHER NAME: GSA ASH

DATE ISSUED: 01/90
 SUPERSEDES: 01/89
 HAZARD RATING SCALE:
 0-MINIMAL 1-MODERATE
 2-MODERATE 3-MODERATE
 4-MODERATE 5-MODERATE

HAZARDOUS INFORMATION: (800) 424-9800

COMPONENT	CAS NO.	HAZARD	EXPOSURE LIMITS, ppm	HAZARD
SODIUM CARBONATE	(497-19-8)	1	100	1

HAZARDOUS INFORMATION: (800) 424-9800

BOILING POINT: 100°C
 MELTING POINT: 100°C
 VAPOR PRESSURE: 100 mm Hg
 VAPOR DENSITY: 1.0
 WATER SOLUBILITY: 1.0
 SPECIFIC GRAVITY: 1.0
 DENSITY: 1.0
 EXPOSURE: 1.0
 EXPOSURE: 1.0

HAZARDOUS INFORMATION: (800) 424-9800

HAZARDOUS INFORMATION: (800) 424-9800

HAZARDOUS INFORMATION: (800) 424-9800

HAZARDOUS INFORMATION: (800) 424-9800

HAZARDOUS INFORMATION: (800) 424-9800

HAZARDOUS INFORMATION: (800) 424-9800

SAL 000006477

FLUORAL LIGHT

REVISION OF 01-18-90

IF NEARLY GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR COMPOUSING PERSON.

-----HEALTH HAZARD INFORMATION-----

HAZARD EFFECTS OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

HAZARD EFFECTS OF EXPOSURE:

HAZARD EFFECTS OF EXPOSURE: INHALATION MAY IRRITATE THE NOSE AND THROAT AND LONG EXPOSURE WITH EXCESSIVE CONTACT CAN CAUSE DAMAGE TO THE LUNGS.

HAZARD EFFECTS OF EXPOSURE: INHALATION MAY IRRITATE THE EYES AND PROLONGED CONTACT MAY DAMAGE THE EYES.

HAZARD EFFECTS OF EXPOSURE: PROLONGED OR REPEATED CONTACT WITH THE DUST MAY CAUSE IRRITATION OF THE SKIN AND EYES. SOLUTIONS MAY CAUSE IRRITATION OF THE SKIN.

HAZARD EFFECTS OF EXPOSURE: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA, VOMITING, ABDOMINAL PAIN, DIARRHEA AND COLLAPSE.

HAZARD EFFECTS OF EXPOSURE: MAY CAUSE SENSITIZATION.

HAZARD EFFECTS OF EXPOSURE: GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

-----TOXICITY DATA-----

HAZARD EFFECTS OF EXPOSURE:

HAZARD EFFECTS OF EXPOSURE: MODERATE IRRITATION

HAZARD EFFECTS OF EXPOSURE: NONE REPORTED.

HAZARD EFFECTS OF EXPOSURE: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

HAZARD EFFECTS OF EXPOSURE: NONE

-----PERSONAL PROTECTION-----

HAZARD EFFECTS OF EXPOSURE: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF DRAIN-AGING DUST EMISSIONS AT THE POINT OF USE BELOW THE PEL.

HAZARD EFFECTS OF EXPOSURE: IF USE CONDITIONS GENERATE DUSTS, WEAR A MESH-SCREENED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS. A SELF-CONTAINED BREATHING APPARATUS OR A SUPPLIED-AIR RESPIRATOR.

HAZARD EFFECTS OF EXPOSURE: CHEMICAL GOGGLES AND FULL FACE SHIELD. IT IS GENERALLY RECOMMENDED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH DUSTS, BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

HAZARD EFFECTS OF EXPOSURE: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, GOGGLES, GLOVES, AND/OR

HAZARD EFFECTS OF EXPOSURE: AN EYEWASH AND SAFETY SHOWER SHOULD BE AVAILABLE AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

HAZARD EFFECTS OF EXPOSURE: FLAMMABLE LIMITS IN AIR: 1.5% LOWER LIMIT: 0.5% UPPER LIMIT: 1.5% HAZARD EFFECTS OF EXPOSURE: CHEMICAL, DUST, OR FLOODED

HAZARD EFFECTS OF EXPOSURE: IF FLOODED, WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER

FORM 14411060 11-10-24 26 MAR 1990 CUST: 45000892 INVOICE: 451500997

SAL 000006478

SODA ASH LIGHT

REVISION OF:01-16-90

SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

FURNAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION.

CS299

-----HAZARDOUS REACTIVITY-----

UNSTABLE. STABLE POLYMERIZATION: DUE TO COLOR AND TASTE, AVOID OPEN FLAMES, WELDING ARCS, OR OTHER HIGH TEMPERATURE SOURCES WHICH MAY INDUCE THERMAL DECOMPOSITION.

AFTER 12 HOUR EXPOSURE

DECOMPOSITION PRODUCTION: MAY LIBERATE CARBON MONOXIDE, SODIUM DIOXIDE OR OXIDES OF SODIUM.

-----STILL, LEAK, AND DISPOSAL PROCEDURES-----

HOW TO DEAL FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING Goggles, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACE, PSC AIR-DRIVEN CARTRIDGE RESPIRATOR EQUIPPED WITH PARTICULATE FILTERS MAY BE SUFFICIENT. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS, SOUP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, LOAD INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF DRAINAGE DRAINS, SURFACE WATERS, AND SOIL. REPORT ALL APPLICABLE GOVERNMENT REGULATIONS ON SPILL REPORTING, STORAGE, AND DISPOSAL OF WASTE.

STORAGE METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED TO DEAL WITH SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. ADVISE APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ACCEPT AND PROPER DISPOSAL PROCEDURES. DOTS, EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND WASTES AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED AREA. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF IGNITION. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT EXPOSE TO PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

FIRE AND FIRE-FIGHTING PRECAUTIONS: NONE.

HAZARD PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL CONTAIN RESIDUE AND VAPORS. ALWAYS WEAR PROTECTIVE GEAR AND TREAT EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT YOUR COORDINATOR, VAN MATERS & POOLERS, INC.
800-760-BUSINESS HOURS, PACIFIC TIME (408)453-1700

-----OTHER REGULATORY INFORMATION-----

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONTROLLED BY THE STATE OF CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (SECTION 26) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH HANDLING ARE NOW REQUIRED:

SODIUM	CAS NO.
SODIUM	440-00-0
SODIUM	440-00-0
SODIUM	440-00-0

FORM 00001800 10:40:24 28 MAR 1990 CUST# 40000002 INVOICE# 40100999

SAL 000006479

DHA ASH LIGHT

REVISION 05101-16-90

NOTICE

W. H. HALLS & ROGERS INC. ("WHR") EXPRESSLY DISCLAIMS ALL EXPRESS
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
PURPOSE WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN.**

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE
WHR OFFICE AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMA-
TION IS BELIEVED TO BE ACCURATE, WHR MAKES NO REPRESENTATIONS AS TO
ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE SUCH THAT YOU BE CON-
FIDENTIAL THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA BASE
UNDER OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS
SAFE FOR THEIR PARTICULAR PURPOSES. WE HEREBY HOLD ALL ALL FOR
PROPER USE, HANDLING, AND DISPOSAL OF THE PRODUCT. WE FROM THE FORE-
CAST OF USE OF OR RELIANCE ON THE INFORMATION CONTAINED HEREIN. THE
REGISTRATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
MANNER.

REVISION

1.0000 ADDED SYNDROM.

**** E N D O F M S D S ****

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316LPA 259815

POB: 316LPA259815
HACH ORDERS: 685637

1934

MATERIAL SAFETY DATA SHEET

68411

MSDS DATE: 3/16/90
CHANGE NO.: 7557For Assistance, Contact:
Regulatory Affairs Dept.
PO Box 907 Ames, IA 50010
(800) 227-4224HACH COMPANY
PO BOX 907
AMES, IA 50010Emergency Telephone 8
Rocky Mountain Poison Ctr.
(303) 625-5716

I. PRODUCT IDENTIFICATION

CATALOG NO.: 1934
PRODUCT NAME: Amino Acid Reagent for Phosphate and Silice
CAS NO.: NA CHEMICAL NAME: Not applicable
FORMULA: Not applicable CHEMICAL FAMILY: Not applicable

II. INGREDIENTS

Sodium Metabisulfite
PCT: <10 CAS NO.: 7681-57-4 SARA: NOT LISTED
TLV: 5 mg/MS PEL: 5 mg/MS
HAZARD: Corrosive when wet; allergen

Sodium Sulfite
PCT: <5 CAS NO.: 7757-85-7 SARA: NOT LISTED
TLV: Not established PEL: Not established
HAZARD: Moderately toxic; allergen

Organic Solvent (Trade Secret)
PCT: <50 CAS NO.: Confidential SARA: NOT LISTED
TLV: 10 ppm (skin) PEL: 10 ppm (skin)
HAZARD: May be embryotoxic

Other component
PCT: <1 CAS NO.: NA SARA: NOT LISTED
TLV: Not applicable PEL: Not applicable
HAZARD: Not applicable

Demineralized Water
PCT: to 100 CAS NO.: 7732-18-5 SARA: NOT LISTED
TLV: Not applicable PEL: Not applicable
HAZARD: None

Any component of this mixture not specifically listed (eg. "other components") is not considered to present a carcinogen hazard.

III. PHYSICAL DATA

STATE: liquid APPEARANCE: Clear, yellow solution ODOR: Faint, amine
SOLUBILITY IN: WATER: Soluble ACID: Not determined
OTHER: Not determined BOILING POINT: 102 C MELTING PT.: NA
SPEC GRAVITY: 1.065 pH: 5.8 VAPOR PRESSURE: Not determined
VAPOR DENSITY (air=1): ND EVAPORATION RATE: 0.59
METAL CORROSIVITY - ALUMINUM: ND STEEL: ND STABILITY: Stable
STORAGE PRECAUTIONS: Store in a cool, dry place away from oxidizers.

IV. FIRE, EXPLOSION HAZARD AND REACTIVITY DATA

FLASH PT.: >212F; >100C METHOD: closed cup
FLAMMABILITY LIMITS - LOWER: NA UPPER: NA
SUSCEPTIBILITY TO SPONTANEOUS HEATING: None
SHOCK SENSITIVITY: None AUTOIGNITION PT.: >445C
EXTINGUISHING MEDIA: dry chemical, alcohol foam or carbon dioxide
FIRE/EXPLOSION HAZARDS: May emit toxic fumes in fire
HAZARDOUS DECOMP. PRODUCTS: May emit toxic fumes of dimethylamine, carbon monoxide in fire
OXIDIZER: No NFPA Codes: Health: 1 Flammability: 2 Reactivity: 0
CONDITIONS TO AVOID: Oxidizing materials, halogenated hydrocarbons, and inorganic nitrates; extreme heat or flames.

V. HEALTH HAZARD DATA

THIS PRODUCT MAY BE: Irritating to eyes, skin and respiratory tract.
ACUTE TOXICITY: Oral rat LD50 > 5000 mg/Kg = Slightly toxic
ROUTES OF EXPOSURE: Ingestion, Inhalation, contact, skin absorption
TARGET ORGANS: liver, kidneys, fetus
CHRONIC TOXICITY: Not determined
ROUTES OF EXPOSURE: Inhalation, skin absorption
TARGET ORGANS: liver, kidneys, fetus
CANCER INFORMATION: Not determined
ROUTES OF EXPOSURE: Not determined
TARGET ORGANS: Not determined
OVEREXPOSURE: May cause liver problems, nausea, abdominal pain, increased blood pressure. May be embryotoxic.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None reported

VI. PRECAUTIONARY MEASURES

Wash thoroughly after handling.
Avoid contact with eyes, skin and clothing.
Do not breathe chemicals.Keep container closed.
Use only with adequate ventilation.
PROTECTIVE EQUIPMENT: lab grade goggles, natural rubber gloves, adequate ventilation, lab coat

VII. FIRST AID

EYE AND SKIN CONTACT: Immediately flush eyes and skin with water for 15 minutes. Remove contaminated clothing. Call physician.
INGESTION: Give a slurry of powdered activated charcoal. Induce vomiting sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician.
INHALATION: Remove to fresh air. Give artificial respiration if necessary. Call physician.

VIII. SPILL AND DISPOSAL PROCEDURES

IN CASE OF SPILL OR RELEASE: Remove all sources of ignition. Absorb spill with non-reactive absorbent. Do not breathe fumes. Incinerate material in an EPA-approved facility.
DISPOSE OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.

IX. TRANSPORTATION DATA

D.O.T. PROPER SHIPPING NAME: Not Currently Regulated
HAZARD CLASS: Not applicable ID: NA
I.C.A.O. PROPER SHIPPING NAME: Not Currently Regulated
HAZARD CLASS: NA ID: NA GROUP: NA
I.H.O. PROPER SHIPPING NAME: Not Currently Regulated
HAZARD CLASS: NA ID: NA GROUP: NA

X. REFERENCES

- 1) TLV's Threshold Limit Values and Biological Exposure Indices for 1980-1989. American Conference of Governmental Industrial Hygienists, 1988.
- 2) 29 CFR 1900 - 1919 (Code of Federal Regulations - Labor)
- 3) In-house information
- 4) Technical judgment
- 5) Outside testing.

SPECIAL NOTE: In laboratory tests, application of an ingredient in this substance to the skin of pregnant rats caused fetal deaths when the dosages were close to the lethal dose level for the mother. Avoid inhalation and contact with this product.

SAL 000006481

APR 03 1993

MATERIAL SAFETY DATA SHEET

G S 427

PRODUCT NAME	Zinc Re-Nu (Aerosol) #03074	#	MSDS00 3074
MANUFACTURED BY:	CRC CHEMICALS	Phone	(215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974 Emergency phone # same as above.			

1. INGREDIENTS	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
* Zinc Dust	7440-66-6	NA	NA		36.0
Epoxy Ester Resin	NA	NA			4.0
* Xylene	1330-20-7	100	100		10.0
* Methyl Ethyl Ketone	78-93-3	200	200		35.0
* Propane	74-98-6	NA	1000		15.0
* These chemicals listed in Section 313 of SARA Title III and subject to release inventory reporting.					
* * The propane functions as a propellant for this product.					

2. PHYSICAL DATA (Without propellant)

Specific Gravity	NA	Vapor Pressure	aerosol can 55 ± 5 psig	% Volatile	60
Boiling Point	NA	Evaporation Rate	Dries in 20-30 minutes		
Freezing Point	NA	Vapor Density	Heavier than air		
Appearance and Odor	Gray, viscous liquid - solvent odor				
Solubility	Soluble in most organic solvents				

3. FIRE AND EXPLOSION DATA

Flashpoint	<20°F	Method	TCC	Flammable Limits	NA
Extinguishing Media	CO ₂ , Foam, Dry Chemical			LEL	UEL
Unusual Hazards	Material reacts with water - Aerosol cans may explode if heated above 130°F.				

4. REACTIVITY AND STABILITY

Stability	Stable				
Hazardous decomposition products	Carbon monoxide and carbon dioxide.				
Materials to avoid	Water, acids, strong acids				

5. PROTECTION INFORMATION

Ventilation	Mechanical required if sprayed in a confined area.		
Respiratory	Self contained breathing apparatus if vapors exceed TLV.		
Gloves	Solvent resistant	Eye & Face	Safety goggles.
Other Protective Equipment	Usually not required for aerosol use.		

GS 427

MSDS00 3074

6. HEALTH HAZARD DATA

Primary Routes of Entry Inhalation and Skin

Signs and Symptoms of Exposure

1. Acute Overexposure Inhalation - Headaches, dizziness, nausea and anesthesia.
Eyes - Will cause eye irritation, Skin - Will cause drying and irritation
of skin.

2. Chronic Overexposure May cause contact dermatitis - Could have effect on
liver and kidney.

Medical Conditions Generally Aggravated by Exposure Breathing difficulties

Chemical Listed as Carcinogen
or Potential Carcinogen

National Toxicology
Program

Yes ☐
No ☒

IARC
Monographs

Yes ☐
No ☒

OSHA

Yes ☐
No ☒

Emergency and First Aid Procedures (If symptoms persist, call a doctor)

1. Inhalation Remove to fresh air - apply artificial respiration if necessary.

2. Eyes Flush with water for at least 15 minutes.

3. Skin Wash with soap and water - Use skin cream.

4. Ingestion Do not induce vomiting - Call a physician.

7. SPILL OR LEAK PROCEDURES

Precautions to be taken in
handling and Storage

Store in a cool dry place.

Steps to be taken in case
Materials is released or spilled

Not normally a problem with aerosols - Ventilate and
absorb liquid - Remove sources of ignition.

Waste Disposal Partially used or filled aerosols are Hazardous Waste if
discarded - Dispose of in conformance to Federal, State & Local regulations.

8. SPECIAL PRECAUTIONS AND USE DIRECTIONS

Aerosol containers may explode if exposed to temperatures in excess
of 130°F. Due to the high density of the metallic zinc, the aerosol
must be thoroughly agitated before use.

PREPARED BY: A. B. Reed

ORIGINAL DATE OR DATE OF REVISION

9-89

SAL 000006484

BETZ INDUSTRIAL DIV.
1 QUALITY WAY, TREVOSE, PA.19047
BETZ MATERIAL SAFETY DATA SHEET
24 HOUR EMERGENCY TELEPHONE NO.(215)355-3300

GS470

(PAGE 1 OF 3)

REVISIONS TO SECTIONS: 1

PRODUCT: FOAM-TROL CT

PRINTED: 05-15-90

PRODUCT APPLICATION : ANTIFOAM.

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD ARE AND CHRONIC HAZARDS OF THIS FORMULATION.

MINERAL OIL(MILDLY SOLVENT-REFINED OR HYDROTREATED OILS)***CAS#64742-30-9;
POTENTIAL SKIN TUMORIGEN(BASED ON CHRONIC ANIMAL SKIN PAINTING STUDIES);
PEL:5MG/M3;TLV:5MG/M3.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: 50% SOL.	(APPROX.) 6.8	ODOR: MILD
FL.PT.(DEG.F): >200	SETA(CC)	SP.GR.(70F)OR DENSITY: 0.841
VAPOR PRESSURE(mmHG): <10		VAPOR DENSITY(AIR=1): >1
VISC cps70F: 30		%SOLUBILITY(WATER): 0
EVAP.RATE: <1	ETHER=1	APPEARANCE: OFF WHITE TO AMBER
PHYSICAL STATE: LIQUID		FREEZE POINT(DEG.F): ND

-----SECTION 3-----REACTIVITY DATA-----

STABLE.MAY REACT WITH STRONG OXIDIZERS.DO NOT CONTAMINATE.BETZ TANK
CLEAN-OUT CATEGORY 'B'

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

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S 470

BETZ MATERIAL SAFETY DATA SHEET

(PAGE 2 OF 3)

PRODUCT: FOAM-TROL CT

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SLIGHTLY IRRITATING TO THE SKIN.MAY CAUSE DERMATITIS.

ACUTE EYE EFFECTS ***

MODERATELY IRRITATING TO THE EYES

ACUTE RESPIRATORY EFFECTS ***

VAPORS,GASES,MISTS AND/OR AEROSOLS MAY CAUSE IRRITATION TO UPPER
RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED EXPOSURES MAY CAUSE DEFATTING-TYPE DERMATITIS;
LIFETIME SKIN PAINTING STUDIES IN MICE HAVE PRODUCED SKIN TUMORS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

PROLONGED EXPOSURE MAY CAUSE DRYING AND CRACKING OF SKIN.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF
SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A
PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE
FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF
STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB
ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE
CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,
SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.
FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD
SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIRE FIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
APPARATUS(FULL FACE-PIECE TYPE).PROPER FIRE EXTINGUISHING MEDIA:
DRY CHEMICAL/CO2/FOAM OR WATER. SLIPPERY CONDITION. USE SAND/GRIT

SAL 000006486

BETZ MATERIAL SAFETY DATA SHEET

(PAGE 3 OF 3)

PRODUCT: FOAM-TROL CT

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

NEOPRENE GLOVES

WASH OFF AFTER EACH USE.REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

STORE IN COOL VENTILATED LOCATION.STORE AWAY FROM OXIDIZERS

HANDLING INSTRUCTIONS***

NORMAL CHEMICAL HANDLING

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD

AROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE. ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY
TREAT AS OIL SPILL

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE,THE RCRA HAZARDOUS WASTE IDENTIFICATION NUMBER IS: NOT APPLICABLE

...DOT HAZARD/UN#/ER GUIDE# IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER OR REPRODUCTIVE TOXICITY: MINERAL OIL(64742-30-9)

...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 312 HAZARD CLASS: DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

NFPA/HMIS : HEALTH - 1 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - NONE ; PE - B



1 Quality Way
Trevose, PA 19047-6783
215-355-3300
Telex: 173-148
Fax: 215-355-2869

The Water Management Division of Betz Laboratories, Inc.

MAY 15, 1990

CONOCO INC.
LAKE CHAS. REFY-WHSE
OLD SPANISH TRAIL
WESTLAKE, LA 70669

ATTN: PURCHASING DEPARTMENT

RE: FOAM-TROL CT

Dear Customer:

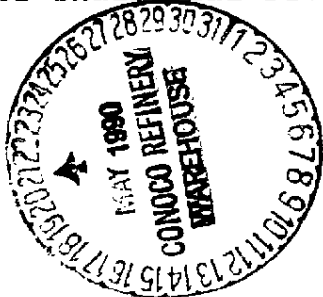
Thank you for your recent order of a Betz Product(s). The OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) requires that all manufacturers/suppliers of chemicals, send material safety data sheets (MSDS) to their customers with or prior to the receipt of those chemicals by the user. In compliance with this standard you will find enclosed, MSDS for the Betz product(s) you recently ordered. The standard requires that personnel who may come into contact with these products(s) be appraised of any hazards that may be associated with the product(s), therefore please route this information to the correct areas within your organization.

Should you have any questions about the contents of these MSDS, please contact Hal Hersh at 215-953-2491.

Betz is fully committed to the stewardship of its many product lines and to full disclosure of any health or environmental hazards they may contain. The protection of health and safety in the workplace and surrounding community, and the protection of the environment in which we all live and work requires dedication and team effort. Betz appreciates being part of your team and will ever strive to be equal to the trust you have placed in us.

Very Truly Yours,

F. S. Spoerle
Vice President Engineering
Betz Industrial Division



SAL 000006488



MATERIAL SAFETY DATA SHEET

PRODUCT TRANSPORT-PLUS 7205 LIQUID

Emergency Telephone Number

Medical (708) 820-1510 (24 hours)

6 S 5 2 3

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: TRANSPORT-PLUS 7205 LIQUID

DESCRIPTION: An aqueous solution of a polycarboxylic acid

NFPA 704M/HMIS RATING 1/1 HEALTH 0/0 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation of the ingredient(s) under OSHA's Hazard Communication Rule, 29 CFR 1910.1200 has found none of the ingredient(s) hazardous.

SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: May cause irritation to skin and eyes. Avoid contact with skin, eyes and clothing. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. Call a physician.

SKIN: Wash thoroughly with soap and rinse with water. Call a physician.

INGESTION: Do not induce vomiting. Give water. Call a physician.

INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin

EYE CONTACT: May cause irritation with prolonged contact.

SKIN CONTACT: May cause irritation with prolonged contact.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure.



MATERIAL SAFETY DATA SHEET

PRODUCT TRANSPORT-PLUS 7205 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 5 HEALTH EFFECTS INFORMATION

(CONTINUED)

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: No toxicity studies have been conducted on this product.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Clear yellow	FORM: Liquid	
DENSITY:	8.7 lbs/gal.	
SPECIFIC GRAVITY:	1.05 @ 73 Degrees F	ASTM D-1298
pH (NEAT) =	9.9	ASTM E-70
VISCOSITY:	7 cps @ 73 Degrees F	ASTM D-2983
FREEZE POINT:	31 Degrees F	ASTM D-1177
BOILING POINT:	212 Degrees F @ 760 mm Hg	ASTM D-86
FLASH POINT:	Greater than 200 Degrees F (PMCC)	ASTM D-93

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: Greater than 200 Degrees F (PMCC) ASTM D-93

EXTINGUISHING MEDIA: Not applicable

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: None known

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles (ANSI Z 87.1 requirements and selection of gloves, goggles, shoes, etc.) when



MATERIAL SAFETY DATA SHEET

PRODUCT TRANSPORT-PLUS 7205 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

GS523

SECTION 10 PERSONAL PROTECTION EQUIPMENT

(CONTINUED)

attaching feeding equipment, doing maintenance or handling product. *

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. *

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510) *

SPILL CONTROL AND RECOVERY: *

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14. *

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14. *

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, (i.e. D001 through D017) nor is it listed under Subpart D. *

As a non-hazardous liquid waste, it should be solidified before disposal in a sanitary landfill. Can be deep-well injected in accordance with local, state and federal regulations. *

SECTION 12 ENVIRONMENTAL INFORMATION

If released into the environment, see CERCLA in Section 14. *

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - PRODUCT IS NOT REGULATED DURING TRANSPORTATION

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product. *

FEDERAL REGULATIONS: *



MATERIAL SAFETY DATA SHEET

PRODUCT TRANSPORT-PLUS 7205 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, this product is not hazardous.

CERCLA/SUPERFUND, 40 CFR 117, 302:
Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
This product does not contain ingredients listed in Appendix A and B as an
Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found that this product is not hazardous under 29
CFR 1910.1200.

Under Section 311, submittal of MSDS's or a list of product names to the
local emergency planning commission, state emergency response commission and
local fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever
is less, of an extremely hazardous substance.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):
This product does not contain ingredients (at a level of 1% or greater) on
the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):
The chemical ingredients in this product are on the 8(b) Inventory List (40
CFR 710).

FOOD AND DRUG ADMINISTRATION (FDA):
Federal Food, Drug and Cosmetic Act:
When use situations necessitate compliance with FDA regulations, this
product is acceptable under 21 CFR 173.310 Boiler Water Additives.

U. S. DEPARTMENT OF AGRICULTURE (USDA):
USDA Inspection and Grading Programs - Food Safety and Inspection Service:
This product is authorized by USDA for use in federally inspected
meat and poultry plants. Authorized use is under category G6.



MATERIAL SAFETY DATA SHEET

PRODUCT TRANSPORT-PLUS 7205 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

GS529

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
If this product becomes a waste, it does not meet the criteria of a hazardous waste.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15/ formerly Sec. 307, 40 CFR 116/formerly Sec. 311:
None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:
This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:
None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:
This product does not contain ingredients listed on the Michigan Critical Materials Register.

STATE RIGHT TO KNOW LAWS:
The following ingredient(s) are disclosed for compliance with State Right To Know Laws:

Sodium polymethacrylate	25086-62-8
Water	7732-18-5

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SAL 000006493



MATERIAL SAFETY DATA SHEET

PRODUCT TRANSPORT-PLUS 7205 LIQUID

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

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PATY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

Information on this MSDS has changed. The changes are indicated by asterisks on the right side of only the changed sections. This is an updated MSDS as required by OSHA's Hazard Communication Rule 29 CFR 1910.1200.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist

DATE CHANGED: 03/08/90

DATE PRINTED: 04/13/90

SAL 000006494



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 4 FIRST AID INFORMATION

(CONTINUED)

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsions may be needed.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: Corrosive to the eyes with possible permanent damage depending on the length of exposure and on the first aid action given.

SKIN CONTACT: Corrosive to the skin, possibly resulting in third degree burns depending on the length of exposure and on the first aid action given. Can cause allergic contact dermatitis in susceptible individuals.

INGESTION: Can be harmful or fatal.

INHALATION: Can be corrosive to the mucous membranes and the lungs. Can cause an allergic reaction in susceptible individuals.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have been conducted on this product along with acute toxicity studies on the hazardous ingredient(s) in Section 2. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS):

LD₅₀ = 1267 mg/kg

95% Confidence Limit = 1,047 to 1,532 mg/kg

COMMENTS: Excessive salivation, squinting of the eyes, loss of muscular coordination, prostration and irregular breathing were observed.

ACUTE DERMAL TOXICITY (ALBINO RABBITS):



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

65582

SECTION 6 TOXICOLOGY INFORMATION

(CONTINUED)

LD₅₀ = Greater than 2,000 mg/kg

COMMENTS: Redness, swelling, and blanching of the skin were noted. Scab formation was due to the corrosive action of the product. However, no systemic signs of toxicity were observed.

SKIN SENSITIZATION: Cyclohexylamine can cause sensitization in susceptible individuals.

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):

EYE IRRITATION INDEX DRAIZE RATING: Corrosive

COMMENTS: Severe redness, swelling, and blistering of the conjunctiva were observed. Opacification of the cornea was also noted. Due to the extreme corrosive action of the test material, no Draize index rating could be assigned.

OTHER TOXICITY RESULTS: Cyclohexylamine. A battery of tests including the Ames test, sister chromatid exchange, cell transformation, mouse lymphoma and rat hepatocyte/DNA repair provided inconclusive evidence of mutagenic activity.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Colorless	FORM: Liquid	ODOR: Amine
DENSITY:	8.2 lbs/gal.	
SOLUBILITY IN WATER:	Completely	
SPECIFIC GRAVITY:	0.99 @ 77 Degrees F	ASTM D-1298
pH (NEAT) =	12.6	pH (at 1%) 11.2
VISCOSITY:	5 cps @ 77 Degrees F	ASTM E-70
FREEZE POINT:	8 Degrees F	ASTM D-2983
FLASH POINT:	135 Degrees F (PMCC)	ASTM D-1177
		ASTM D-93

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: 135 Degrees F (PMCC) ASTM D-93

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, alcohol foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For large fires, use water spray or fog, thoroughly drenching the burning material.



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 8 FIRE AND EXPLOSION INFORMATION

(CONTINUED)

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NOx under fire conditions.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: N-nitrosamines, many are cancer causing agents to laboratory animals, may be formed when certain amines are mixed with nitrous acid, organic or inorganic nitrites or atmospheres with high nitrous oxide concentrations.

Avoid contact with strong acids (eg. sulfuric, phosphoric, nitric, hydrochloric, chromic, sulfonic) which can generate heat, splattering or boiling and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, NOx may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: If it is possible to generate significant levels of vapors or mists, a NIOSH approved or equivalent respirator is recommended.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended. Additionally, local exhaust ventilation is recommended where vapors or mists may be released.

PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with chemical splash goggles (ANSI Z 87.1 requirements and selection of gloves, goggles, shoes, etc.). A full slicker suit is recommended if gross exposure is possible.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

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SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 10.

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous Waste D001 & D002.

As a hazardous liquid waste, it must be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to a licensed industrial waste landfill (Hazardous Waste Treatment, Storage and Disposal facility). A hazardous liquid waste can also be incinerated in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - CORROSIVE LIQUID, N.O.S.
CORROSIVE MATERIAL UN 1760
CONTAINS - CYCLOHEXYLAMINE

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, the following ingredients in this product are hazardous and the reasons are shown below.



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

Cyclohexylamine - Corrosive, combustible *
Ethanolamine - Corrosive, combustible *
Methoxypropylamine - Corrosive, combustible *

Cyclohexylamine = TWA 10 ppm, 41 mg/m³ ACGIH/TLV *
Ethanolamine = TWA 3 ppm, STEL 6 ppm ACGIH/TLV *
7.5 mg/m³ 15 mg/m³ ACGIH/TLV *

Cyclohexylamine = TWA 10 ppm, 40 mg/m³ OSHA/PEL *
Ethanolamine = TWA 3 ppm, STEL 6 ppm OSHA/PEL *
8 mg/m³ 15 mg/m³ OSHA/PEL *

Methoxypropylamine = TWA 10 ppm, 20 ppm (15 minute exposure) TLV *
Weel Guidelines *

CERCLA/SUPERFUND, 40 CFR 117, 302: *
Notification of spills of this product is not required. *

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 *
(TITLE III) - SECTIONS 302, 311, 312 AND 313: *

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): *
This product contains cyclohexylamine, which is listed in Appendix A and B *
as an Extremely Hazardous Substance. The statutory threshold planning *
quantity for this substance is 10,000 pounds. *

A release of 10 pounds of product will require a notification to your State *
Emergency Response Commission. *

You may also be required to notify the NATIONAL RESPONSE CENTER - See *
CERCLA/SUPERFUND, above. *

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370): *
Our hazard evaluation has found this product to be hazardous. The product *
should be reported under the following EPA hazard categories: *

XX Immediate (acute) health hazard *
-- Delayed (chronic) health hazard *
XX Fire hazard *
-- Sudden release of pressure hazard *
-- Reactive hazard *

Under Section 311, submittal of MSDS's or a list of product names to the local *
emergency planning commission, state emergency response commission and local *



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number
Medical (708) 920-1510 (24 hours)

65582

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever is less, of an extremely hazardous substance.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product does not contain ingredients (at a level of 1% or greater) on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:

If this product becomes a waste, it does meet the criteria of a hazardous waste as defined under RCRA 40 CFR 261 (consult Section 11).

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15

(formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

None of the ingredients are specifically listed.

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product contains the following ingredients covered by the Clean Air Act:

Ethanolamine - Section 111

Cyclohexylamine - Section 111

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:

This product does not contain ingredients listed on the Michigan Critical Materials Register.

STATE RIGHT TO KNOW LAWS:

The following ingredient(s) are disclosed for compliance with State Right To Know Laws:

Cyclohexylamine 108-91-8

SAL 000006501



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

Ethanolamine	141-43-5	*
Methoxypropylamine	5332-73-0	*
Water	7732-18-5	*

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Admur, M. O., eds., Macmillian Publishing Company, Inc., N. Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983

SAL 000006502



MATERIAL SAFETY DATA SHEET

PRODUCT TRI-ACT 1800 INHIBITOR

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

G 8 5 8 2

SECTION 17 BIBLIOGRAPHY

(CONTINUED)

supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

Information on this MSDS has changed. The changes are indicated by asterisks on the right side of only the changed sections. This is an updated MSDS as required by OSHA's Hazard Communication Rule 29 CFR 1910.1200.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist

DATE CHANGED: 04/03/90

DATE PRINTED: 04/13/90

SAL 000006503



MATERIAL SAFETY DATA SHEET

PRODUCT

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SAL 000006504



MATERIAL SAFETY
DATA SHEET

H-9290-9
Refinery coker water
clarifier

MSDS NO: 05007909

6 S 6 2 4

APR 11 1989

MANUFACTURER/SUPPLIER:
Welchem, Inc.
P. O. Box 920941
Houston, Texas 77292-0941
TEL. (713) 462-4783

EMERGENCY HEALTH INFORMATION: (800) 447-8735
EMERGENCY SPILL INFORMATION: (800) 424-9300
CHEMTREC, U.S.A.
OTHER PRODUCT SAFETY INFORMATION: (312) 856-3516

IMPORTANT COMPONENTS: Hydrophylllic polyacrylate: trade secret
Polymerized polyol: trade secret.
No exposure limit established.

WARNING STATEMENT: Danger! Causes eye damage and skin irritation. Can cause
respiratory irritation. Causes severe irritation of the mouth,
throat, and esophagus.

HMIS/NFPA CODES: (HEALTH;3)(FLAMMABILITY;1)(REACTIVITY;1)

APPEARANCE AND ODOR: Clear, viscous solution.

HEALTH HAZARD INFORMATION

EYE

EFFECT: Causes eye damage.

FIRST AID: Immediately flush eyes with plenty of water for at least 15 minutes, then
get immediate medical attention.

PROTECTION: Do not get in eyes. Wear chemical goggles.

SKIN

EFFECT: Causes skin irritation.

FIRST AID: Wash exposed skin with soap and water. Remove contaminated clothing and
thoroughly clean and dry before reuse. Get medical attention if
irritation develops.

PROTECTION: Do not get on skin or clothing. Wear protective clothing and gloves.

INHALATION

EFFECT: Can cause respiratory irritation.

FIRST AID: If adverse effects occur, remove to uncontaminated area. Give artificial
respiration if not breathing. Get prompt medical attention.

PROTECTION: Use with adequate ventilation. If ventilation is inadequate, use
NIOSH/MSHA certified respirator which will protect against organic
vapor/acid mist.

SAL 000006505

G S 6 2 4

HEALTH HAZARD INFORMATION - CONTINUED

INGESTION

EFFECT: Causes severe irritation of the mouth, throat and esophagus.

FIRST AID: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

FIRE AND EXPLOSION INFORMATION

FLASHPOINT: Above 200°F (93°C) ASTM D56

EXTINGUISHING MEDIA: Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, halogenated agents, foam, steam) or water fog.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Toxic vapors are given off when heated.

REACTIVITY INFORMATION

DANGEROUS REACTIONS: Mixing with bases can evolve heat and cause spattering.

HAZARDOUS DECOMPOSITION: Can form toxic gases if exposed to open flame or high heat. Incomplete burning can produce carbon monoxide, carbon dioxide, and other harmful products.

STABILITY: Stable.

CHEMICAL AND PHYSICAL PROPERTIES

BOILING POINT: Above 95°F (35°C)

pH: 10.4

SOLUBILITY IN WATER: Totally soluble.

SPECIFIC GRAVITY (WATER = 1): 0.971

VISCOSITY: 1613 cP @ 25°C

POUR POINT: 25°F (4°C) ASTM D97

STORAGE AND ENVIRONMENTAL PROTECTION

STORAGE REQUIREMENTS: No special requirements.

SPIILLS AND LEAKS: Remove mechanically or contain on an absorbent material.

WASTE DISPOSAL: Disposal must be in accordance with applicable federal, state, or local regulations. Enclosed-controlled incineration is recommended unless directed otherwise by applicable ordinances. Do not landfill. Residues and spilled material are hazardous waste due to corrosivity.

EMPTY CONTAINERS: Since the emptied containers retain product residue, follow label warnings even after container is emptied.

G S 6 2 4

TOXICOLOGICAL INFORMATION

Specific toxicity tests have not been conducted on this product. Our hazard evaluation is based on information from similar products, the ingredients, technical literature, and/or professional experience.

No component of this product present at levels greater than 0.1% is identified as a carcinogen by NTP, IARC or OSHA.

REGULATORY INFORMATION

CERCLA REPORTABLE QUANTITY:

This product is not reportable under 40 CFR Part 302.4.

DOT PROPER SHIPPING NAME: Corrosive Liquid, N.O.S., UN1760.

OSHA HAZARD COMMUNICATION STANDARD: Corrosive.

RCRA STATUS:

This product is not subject to the 40 CFR Part 268.30 land ban on the disposal of certain hazardous wastes.

SARA STATUS:

This product is regulated under the following section(s) of SARA Title III, 42 USC 9601. Spills or releases of the product may be reportable as determined by the information given below:

SECTIONS 311 AND 312 OF SARA AND 40 CFR PART 370:

This product is defined as hazardous by OSHA under 29 CFR Part 1910.1200(d).

TSCA STATUS: All of the components of this product are listed on the TSCA Inventory.

ISSUE INFORMATION

BY:



R. G. Farmer, Director,
Product Safety & Toxicology

ISSUED: March 01, 1990
SUPERSEDES: February 23, 1990

This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our company. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either express or implied.

SAL 000006507

G S 6 2 4

SAL 000006508

MATERIAL SAFETY DATA SHEET

PC022

APR 03 REC'D

PRODUCT NAME Red Urethane Seal Coat (Aerosol) #2044	# NSDS002044
MANUFACTURED BY: CRC CHEMICALS	Phone (215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974	

1. INGREDIENTS	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
*ASTM Type I polyurethane	NA	NA	NA	NA	13.5
**Xylene	11330-20-7	100	100		13.5
**Acetone	67-64-1	750	750		26.0
Mineral Spirits	64742-88-7	NA	NA	200	1.0
Iron oxide pigment	NA	NA	NA		3.5
*1,1,1 Trichloroethane	71-55-6	350	350		14.5
Propane	74-98-6	NA	1000		14.0
Isobutane	75-28-5	NA	NA	800	14.0
*Note - resin contains no free isocyanate. Propane and isobutane function as propellents - pressure is 55 psig at 70°F. **These chemicals found in SARA Title III and subject to release inventory reporting.					

2. PHYSICAL DATA

Specific Gravity 1.128	Vapor Pressure NA	% Volatile 82
Boiling Point NA	Evaporation Rate NA	
Freezing Point NA	Vapor Density Heavier than air	
Appearance and Odor Red brown liquid, pleasant odor, faintly aromatic		
Solubility Negligible in water.		

3. FIRE AND EXPLOSION DATA

Flashpoint <20°F	Method TCC	Flammable Limits NA
Extinguishing Media CO ₂ , Foam, Dry chemical		LEL NA UEL NA
Unusual Hazards Aerosol containers may explode when heated above 130°F		
*Due to hydrocarbon propellant.		

4. REACTIVITY AND STABILITY

Stability Stable	
Hazardous decomposition products Thermal (Hydrogen chloride, chlorine, carbon monoxide, possibly phosgene)	
Materials to avoid Strong oxidizers	

5. PROTECTION INFORMATION

Ventilation Mechanical ventilation to maintain vapor conc. below TLV.	
Respiratory Self contained breathing apparatus if vapor conc. is above TLV.	
Gloves Solvent resistant	Eye & Face Safety goggles
Other Protective Equipment - Not normally required for aerosol packages	

PC022

#2044

6. HEALTH HAZARD DATA

Primary Routes of Entry Inhalation and skin

Signs and Symptoms of Exposure

1. Acute Overexposure Inhalation - headache, nausea, anesthetic effects and unconsciousness. Skin - drying and defatting. Eyes - Burning and irritation.

2. Chronic Overexposure Dermatitis - May have liver and kidney effects.

Medical Conditions Generally Aggravated by Exposure Breathing problems

Chemical Listed as Carcinogen
or Potential Carcinogen

National Toxicology
Program

Yes ☐
No ☒

IARC
Monographs

Yes ☐
No ☒

OSHA Yes ☐
No ☒

Emergency and First Aid Procedures (If symptoms persist, call a physician)

1. Inhalation Remove to fresh air - Apply artificial respiration if necessary.

2. Eyes Flush with water for 15 min. Do not rub.

3. Skin Wash with soap and water.

4. Ingestion Do not induce vomiting.

7. SPILL OR LEAK PROCEDURES

Precautions to be taken in
Handling and Storage

Store in a cool dry area.

Steps to be taken in case

Materials is released or spilled

Not normally an aerosol problem. Ventilate area, remove sources of ignition, absorb on inert material and place in a closed container.

Waste Disposal Discarded filled or partially used aerosols are hazardous waste and must be disposed of in conformance with regulations.

8. SPECIAL PRECAUTIONS AND USE DIRECTIONS

Aerosol containers may explode when heated above 130°F. The solvent vapors are heavier than air and will collect in low confined areas. Make sure ventilation is adequate for location being used.

SAL 000006510

PREPARED BY: A.B. Reed

ORIGINAL DATE OR DATE OF REVISION 1/90

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS N/A TRADE NAME & SYNONYMS P-O-W AEROSOL (NEW)

CHEMICAL FAMILY AEROSOL PYRETHRUM/BAYGON INSECTICIDE FORMULA XK--MIXTURE

MANUFACTURERS NAME: NATIONAL CHEMSEARCH DIV. OF NCH CORP.

ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE) BCK 152170 IRVING, TEXAS 75015

PREPARED BY: KEVIN UHL/T.S. CHEMIST PRODUCT CODE NUMBER 5005 EMERGENCY TELEPHONE NUMBER 214-438-1381

GS423

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
PERCHLOROETHYLENE	SUSP CARC	50PPM	25PPM	127-18-4
ALIPHATIC PETROLEUM DISTILLATE	CDMB.	NA	100PPM	8030-30-6
NONYLPHENOL	EYE IRR.	NOT EST.	NOT EST.	25154-52-3
2-((1-METHYLETHOXY) PHENYL				
METHYLCARBAMATE	MUT.	5MG/M3	5MG/M3	114-26-1
CARBON DIOXIDE	ASPHYXIANT	5000PPM	10,000PPM	124-28-9

P-O-W AEROSOL (NEW)

SECTION IIA - NON-HAZARDOUS INGREDIENTS PAGE : 02

NON-HAZARDOUS INGREDIENT NAMES AND CAS NUMBERS ARE PROTECTED UNDER NJ TRADE SECRET REGISTRY # 409363-5041P

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	250	SPEC GRAVITY (H2O=1)	1.380
VAPOR PRESSURE (MM HG).	13	COLOR	LIGHT YELLOW
VAPOR DENSITY (AIR=1)	5.5	ODOR	PYRETHRIN/SOLVENT
PH # 100%	N/A	CLARITY	TRANSPARENT
PERCENT VOLATILE BY VOLUME (%)	99	EVAPORATION RATE (BU AC = 1)	2.0
SOLUBILITY IN WATER	APPRECIABLE		
VISCOSITY	NON-VISCOUS		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED) NON-FLAM FLAMMABLE LIMITS N/A LEL N/A UEL

EXTINGUISHING MEDIA "ALCOHOL" X---FOAM X---CO2 DRY X---CHEMICAL WATER X---SPRAY ---OTHER

SPECIAL FIRE FIGHTING PROCEDURES USE WATER IN FINE SPRAY TO COOL UNBROKEN CONTAINERS TO PREVENT BURSTING FROM EXCESSIVE PRESSURE. SELF-CONTAINED BREATHING APPARATUS AND RUBBER PROTECTIVE CLOTHING SHOULD BE WORN. DIKE AREA TO PREVENT RUNOFF.

UNUSUAL FIRE & EXPLOSION HAZARDS FIRE FIGHTING SHOULD BE DONE FROM UPWIND TO MINIMIZE POSSIBILITY OF EXPOSURE TO PESTICIDE, SMOKE AND FUMES. EVACUATE PEOPLE DOWNWIND AS APPROPRIATE. SEE HAZARDOUS DECOMPOSITION PRODUCTS.

LEVEL 1 AEROSOL (NFPA 308)

NFPA HAZARD RATING (0=INSIGNIFICANT; 1=SLIGHT; 2=MODERATE; 3=HIGH; 4=EXTREME): 3 ---HEALTH 0 ---FLAMMABILITY 0 ---REACTIVITY ---SPECIAL

SAL 000006511

THRESHOLD LIMIT VALUE :

NOT ESTABLISHED FOR MIXTURE. SEE SECTION II.

EFFECTS OF OVEREXPOSURE

- ACUTE - (SHORT TERM EXPOSURE)
 IRRITATING TO SKIN EYES AND MUCOUS MEMBRANES. SKIN EXPOSURE - LOCAL
 IRRITATION POSSIBLE FOLLOWED BY TOXIC EFFECTS. INHALATION - EUPHORIA,
 HEADACHE, BURNING SENSATION IN THE CHEST, INGESTION - IRRITATION OF MOUTH,
 THROAT AND ESOPHAGUS. TOXIC EFFECTS OF NAUSEA, RAPID BREATHING, DROWSINESS.
 EYE EXPOSURE - BURNING SENSATION AND IRRITATION.
 PROLONGED SKIN CONTACT CAUSES IRRITATION, REDDENING, DRYING AND CAN LEAD
 TO DERMATITIS. CONSTANT EXPOSURE TO EYES CAUSES MARKED IRRITATION.
 INHALATION FOR A PROLONGED PERIOD CAN LEAD TO CENTRAL NERVOUS SYSTEM
 DEPRESSION, HEADACHES, AND NAUSEA.

- CHRONIC - (LONG TERM EXPOSURE)
 SYSTEMIC & OTHER EFFECTS: PERCHLOROETHYLENE HAS CAUSED LIVER AND KIDNEY
 TOXIC EFFECTS IN CHRONICALLY OVEREXPOSED EXPERIMENTAL ANIMALS.
 CARCINOGENICITY: THREE STUDIES HAVE BEEN CONDUCTED TO ASSESS THE
 CARCINOGENIC POTENTIAL OF PERCHLOROETHYLENE IN LABORATORY ANIMALS. IN ONE
 STUDY, RATS AND MICE WERE EXPOSED BY GAVAGE (FORCE-FED) AT LEVELS OF 500
 AND 1000 MG/KG/DAY. INCREASED INCIDENCE OF LIVER TUMORS WERE OBSERVED IN
 MICE. THE RESULTS OF THE RAT STUDY WERE INCONCLUSIVE DUE TO AN EXCESS IN
 ANIMAL DEATHS. THE SECOND STUDY INVOLVED RATS EXPOSED TO CONCENTRATIONS UP
 TO 600 PPM VIA INHALATION, SIX HOURS PER DAY, 5 DAYS PER WEEK FOR ONE YEAR.
 THE ANIMALS WERE OBSERVED UNTIL THE TIME OF DEATH OR UNTIL THE 31ST MONTH.
 AND STUDIES INDICATE NO STATISTICALLY SIGNIFICANT INCREASE IN TUMORS.
 SEE SECTION VI--TOXICITY INFORMATION

PRIMARY ROUTE OF ENTRY: X-- INHALATION <-- INGESTION X-- ABSORPTION

EMERGENCY & FIRST AID PROCEDURES

INHALATION:
 GET PERSON OUT OF CONTAMINATED AREA TO FRESH AIR. IF BREATHING HAS
 STOPPED, ARTIFICIAL RESPIRATION SHOULD BE STARTED. OXYGEN MAY BE
 ADMINISTERED, IF READILY AVAILABLE. SEEK MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
 IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES
 HOLDING EYELIDS APART TO INSURE FLUSHING OF THE EYE SURFACE. SEEK MEDICAL
 ATTENTION IMMEDIATELY.

SKIN CONTACT:
 IMMEDIATELY WASH CONTAMINATED SKIN WITH PLENTY OF SOAP AND WATER. IF
 IRRITATION PERSISTS, SEEK MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
 CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. DO NOT INDUCE
 VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL
 ATTENTION IMMEDIATELY. IF VICTIM IS CONSCIOUS, GIVE LARGE AMOUNTS OF
 WATER TO DILUTE STOMACH CONTENTS.

NOTES TO PHYSICIAN:
 ATROPINE SULFATE IS ANTIDOTAL.

PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	X--YES	NTP	<--YES	OSHA	<--YES	ACGIH	<--YES	OTHER	<--YES
<--NO		X--NO		X--NO		X--NO		X--NO	

PERCHLOROETHYLENE	NONYLPHENOL
TERATOGENESIS:	ORL-RAT LD50: 1620MG/KG 1.
IHL-RAT: 300PPM/7H/D 1.	SKN-RBT LD50: 2140MG/KG 1.
CARCINOGENESIS	2-(1-METHYLETHOXY) PHENYL
ORL-MUS TDLO: 195GM/KG/50W-I:CAR 1.	METHYLCARBAMATE
IHL-HMN TCLO: 96PPM/7H:SYS 1.	ORL-RAT LD50: 83MG/KG 1.
IHL-MAN TCLO: 280PPM/2H:EYE 1.	SKN-RAT LD50: 800MG/KG 1.
ORL-RAT LD50: 8850MG/KG 1.	NMO-SAT 250NG/PLATE 1.

ALIPHATIC PETROLEUM DISTILLATE
 UNK-MAN LDLO: 1176MG/KG 2.
 ORL-RAT LD50: 28G/KG 2.

SYSTEMIC & OTHER EFFECTS: (CONT.)
 THE SIGNIFICANCE OF THE SECOND
 STUDY HAS BEEN QUESTIONED, SINCE
 EXPOSURE LASTED FOR ONLY ONE YEAR.
 A THIRD STUDY CONDUCTED FOR THE NATIONAL TOXICOLOGY PROGRAM (NTP) INVOLVED
 EXPOSURE OF MICE TO 100 OR 200 PPM AND RATS TO 200 AND 400 PPM FOR SIX
 HOURS PER DAY, 5 DAYS PER WEEK FOR 2 YEARS. SEE SEC. X--SPEC. PRECAUTION

SECTION VII - REACTIVITY DATA

STABILITY	X--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
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N/A

INCOMPATIBILITY (MATERIALS TO AVOID)

ALKALINE MATERIALS, STRONG OXIDANTS.

HAZARDOUS DECOMPOSITION PRODUCTS

WHEN HEATED TO DECOMPOSITION EMITS ACRID SMOKE, FUMES & PHOSGENE.

HAZARDOUS	WILL NOT	MAY	CONDITIONS TO AVOID
	X <--OCCUR	<--OCCUR	

POLYMERIZATION N/A

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 THE PRODUCT IS IN AN AEROSOL SO A SPILL IS UNLIKELY. IN CASE OF LEAKAGE,
 CONTAIN SPILL, PICK UP WITH AN ABSORBANT. DO NOT FLUSH TO SEWER. PLACE
 INTO LABELED CONTAINER AND SEAL. CONTACT YOUR STATE PESTICIDE OR
 ENVIRONMENTAL CONTROL AGENCY OR THE HAZARDOUS WASTE REPRESENTATIVE AT
 THE NEAREST EPA REGIONAL OFFICE FOR GUIDANCE

(CONTINUED)

SECTION VIII - SPILL OR LEAK PROCEDURES PAGE : 05

GS 4.23

WASTE DISPOSAL METHOD
 REPLACE THE CAP ON THE AEROSOL CONTAINER AND SECURELY WRAP THE ORIGINAL
 CONTAINER IN SEVERAL LAYERS OF NEWSPAPER AND DISCARD IN TRASH. DO NOT
 INCINERATE OR PUNCTURE.

NEUTRALIZING AGENT

SOAP AND WATER WILL NEUTRALIZE.

SECTION IX - SPECIAL PROTECTION INFORMATION

REQUIRED VENTILATION
 THIS PRODUCT IS FOR OUTDOOR USE ONLY.

RESPIRATORY PROTECTION
 TYPICAL USE OF PRODUCT DOES NOT REQUIRE THE USE OF A RESPIRATOR.

PROTECTIVE GLOVES
 PROTECTIVE GLOVES TO MINIMIZE CONTACT INCLUDING
 PVA, MBR NITRILE, VITON, NITRILE LATEX

EYE PROTECTION
 SAFETY GOGGLES SHOULD BE WORN DEPENDING ON
 SEVERITY OF EXPOSURE.

OTHER PROTECTION
 PROTECTIVE CLOTHING SHOULD BE WORN DEPENDING UPON
 SEVERITY OF EXPOSURE.

SECTION X - STORAGE AND HANDLING INFORMATION

STORAGE TEMPERATURE	INDOOR	HEATED	REFRIGERATED	OUTDOOR
120 F <--MAX 35 F <--MIN	X			

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
 KEEP AWAY FROM IGNITION SOURCES. STORE IN A COOL,
 DRY PLACE. WASH THOROUGHLY AFTER HANDLING.
 OTHER PRECAUTIONS: AVOID CONTAMINATING WATER
 SOURCES. DO NOT ALLOW SPRAY DRIFT TO CONTACT
 DESIRABLE PLANTS. KEEP OUT OF REACH OF CHILDREN
 AND ANIMALS. READ ENTIRE LABEL BEFORE USE.

OTHER PRECAUTIONS
 SYSTEMIC & OTHER EFFECTS: (CONT.) INCREASED
 INCIDENCE OF LIVER TUMORS WERE OBSERVED IN MICE.
 IN RATS AN INCREASE IN A RARE KIDNEY TUMOR WAS
 OBSERVED IN THE MALE RAT AND BOTH MALES AND
 FEMALES HAD AN INCREASED INCIDENCE OF MONONUCLEAR
 CELL LEUKEMIA. SEE SECTION XII--REFERENCES

SECTION XI - REGULATORY INFORMATION

PAGE : 06

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
PERCHLOROETHYLENE	127-18-4	UE
METHYLCARBAMATE	114-26-1	UE

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF
 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF
 1986 AND 40 CFR PART 372.
 IF USE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT
 FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE
 JANITORIAL WORK OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS
 MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND
 LABELED FOR MAINTAINING MOTOR VEHICLES.

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS
 <--49 CFR <--IMCC <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)

SHIPPING NAME

HAZARD CLASS ID NUMBER REPORT QTY

LABELS LIMITED QTY

UNIT CONTAINER

DOT SPS CONTAINER NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

SECTION XIII - REFERENCES

1. DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, 6TH EDITION.
N. IRVING SAX.
2. NIOSH REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES, 1982.
3. NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, 1978.
4. VENDOR'S MSDS.

SYSTEMIC & OTHER EFFECTS: (CONT.) THE INTERNATIONAL AGENCY FOR CANCER

SAL 000006513

S 4 2 8

RESEARCH CONSIDERS LIVER TUMORS IN MICE AS LIMITED EVIDENCE OF ANIMAL CARCINOGENICITY. EPIDEMIOLOGIC STUDIES HAVE BEEN INCONCLUSIVE IN DETERMINING WHETHER PERCHLOROETHYLENE CAUSES CANCER IN HUMANS. REPRODUCTIVE TOXICITY: STUDIES ON MICE, RATS AND RABBITS HAVE BEEN CONDUCTED TO EVALUATE THE POTENTIAL EFFECTS PERC MAY HAVE ON REPRODUCTION AND OFFSPRING OF LABORATORY ANIMALS. PERC HAS BEEN FOUND TO BE EMBRYOTXIC AND HAS CAUSED DELAYS IN THE DEVELOPMENT OF FETUSES. PERC HAS NOT CAUSED TERATOGENIC (BIRTH DEFECT) EFFECTS IN EXPERIMENTAL ANIMALS.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE IN LIGHT OF CURRENT FORMULATION, HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

NATIONAL CHEMSEARCH DIV. OF NCH CORP. ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

MATERIAL SAFETY DATA SHEET

GS205

APR 03 ECT

PRODUCT NAME	LECTRA CLEAN (Aerosol) #2018,02018T	#MSDSO 2018
MANUFACTURED BY:	CRC Industries, Inc.	Phone (215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974		

1. INGREDIENTS	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
* 1,1,1 Trichloroethane	71-55-6	350	350		91.0
1,3 Dioxolane	646-06-0	NA	NA		3.0
* 2-Butanol	78-92-2	100	100		2.0
Carbon Dioxide	124-38-9	5000	10000		4.0
These chemicals are listed in the Toxic Chemical List found in Section 313 of the Emergency Planning and Community-Right-To-Know Act (SARA Title III) and are subject to release inventory reporting under that act.					

2. PHYSICAL DATA (does not include carbon dioxide propellant)

Specific Gravity	1.293 (70°F)	Vapor Pressure	100 mm @ 20°C	% Volatile	100%
Boiling Point	164°F	Evaporation Rate	Rapid		
Freezing Point	N/A	Vapor Density	4.55 (air = 1)		
Appearance and Odor	Colorless liquid - irritating odor at high concentrations				
Solubility	Slight solubility in water - good solvent for many organic materials				

3. FIRE AND EXPLOSION DATA

Flashpoint	None	Method	TCC, COC, TOC	Flammable Limits
Extinguishing Media	Water, fog			LEL 6 UEL 16.7
Unusual Hazards	Aerosol cans may explode if their temperature exceeds 130° F			

4. REACTIVITY AND STABILITY

Stability	Good - avoid exposures to open flames, arcs, and high temperatures.				
Hazardous decomposition products	Thermal - Hydrogen chloride, chlorine and some phosgene				
Materials to avoid	Avoid storage in aluminum containers or contact with aluminum and/or zinc powder.				

5. PROTECTION INFORMATION

Ventilation	Maintain vapor concentration below TLV - Use mechanical means if necessary.		
Respiratory	Above TLV use self contained breathing apprratus (air mask or vapor mask).		
Gloves	solvent resistant	Eye & Face	safety glasses
Other Protective Equipment	Not normally required for aerosol product usage.		

CS 205

MSDS 00 2018

6. HEALTH HAZARD DATA

Primary Routes of Entry Inhalation and skin contact

Signs and Symptoms of Exposure

1. Acute Overexposure Inhalation - headaches, dizziness, anesthesia, unconsciousness.
Eyes - causes pain and some irritation. Skin - irritation on repeated exposures.

2. Chronic Overexposure Repeated overexposures may cause liver and kidney effects.

Medical Conditions Generally Aggravated by Exposure High levels (8000 ppm +) of vapor may cause cardiac arrhythmias

Chemical Listed as Carcinogen or Potential Carcinogen

National Toxicology Program

Yes ☐
No ☒

IARC Monographs

Yes ☐
No ☒

OSHA

Yes ☐
No ☒

Emergency and First Aid Procedures (If symptoms persist, call a physician)

1. Inhalation Remove to fresh air, apply artificial respiration if necessary.

2. Eyes Flush for 15 minutes with large amounts of water.

3. Skin Remove contaminated clothing, wash exposed area with soap and water.

4. Ingestion DO NOT induce vomiting - call physician

7. SPILL OR LEAK PROCEDURES

Precautions to be taken in Handling and Storage

Store in a cool, dry place.

Steps to be taken in case Materials is released or spilled

Usually not a problem with aerosols. Area should be ventilated and absorbent used to pick up excess material.

Waste Disposal Discarded full cans or partially filled cans are considered Hazardous

Waste - Dispose of in conformance with Local, State and Federal regulation

8. SPECIAL PRECAUTIONS AND USE DIRECTIONS

Avoid skin contact or breathing of vapors. Since vapors are heavier than air, aerosols should not be used in confined areas or low spots without adequate ventilation. If vapors are suspected in a low area, do not enter unless special breathing apparatus is used and an observer is present for assistance.
Keep aerosols away from heat.

PREPARED BY: Allen B. Reed

ORIGINAL DATE OR DATE OF REVISION 3-90

SAL 000006516

MATERIAL SAFETY DATA SHEET

G S 1 3 9

PRODUCT NAME CO CONTACT CLEANER (Aerosol) #2015,2016	# MSDS 002015
MANUFACTURED BY: CRC CHEMICALS	Phone (215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974	

1. INGREDIENTS	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
Trichlorotrifluoroethane	76-13-1	1000	1000		75
Chlorodifluoromethane	75-41			1000	25
* This chemical is listed in the Toxic Emergency Planning and Community - Risk release inventory reporting under the section 313 of the Title III) and are subject to					

2. PHYSICAL DATA (Does not include Chlorodifluoromethane propellant)

Specific Gravity 1.57	Vapor Pressure 5.5 psia 70° F	% Volatile 100
Boiling Point 117.6° F	Evaporation Rate 0.3 (Carbon tet = 1)	
Freezing Point -35.7° F	Vapor Density 6.5 (air =1)	
Appearance and Odor Colorless liquid		
Solubility Slight solubility in water - Soluble in many organic liquids		

3. FIRE AND EXPLOSION DATA

Flashpoint None	Method TCC, TOC	Flammable Limits None
Extinguishing Media Not needed		LEL — UEL —
Unusual Hazards Aerosol containers can explode if contents are heated to more than 130° F		

4. REACTIVITY AND STABILITY

Stability Very stable	
Hazardous decomposition products Halogens, halogen acids, possibility of phosgene (Thermal)	
Materials to avoid Powdered metals such as aluminum, magnesium, calcium, zinc	

5. PROTECTION INFORMATION

Ventilation Maintain concentration below TLV.	
Respiratory Self-contained breathing apparatus above TLV.	
Gloves Neoprene	Eye & Face Safety goggles
Other Protective Equipment Protective clothing only if there is repeated contact with liquid.	

6. HEALTH HAZARD DATA

Primary Routes of Entry Inhalation and skin

Signs and Symptoms of Exposure

1. Acute Overexposure Inhalation - Drowsiness, lightheadedness possible cardiac arrhythmias at high concentration. Skin - defatting action, may cause dermatitis. Eyes - may irritate eyes.
2. Chronic Overexposure May cause skin irritation with repeated skin contact.

Medical Conditions Generally Aggravated by Exposure Impaired cardiovascular function such as cardiac arrhythmias might be sensitized by inhalation.

Chemical Listed as Carcinogen or Potential Carcinogen

National Toxicology Program

Yes ☐
No ☒

IARC Monographs

Yes ☐
No ☒

OSHA

Yes ☐
No ☒

Emergency and First Aid Procedures (if symptoms persist call a physician)

1. Inhalation Remove to fresh air - apply artificial respiration if necessary
2. Eyes Flush with large amounts of water
3. Skin Wash with water
4. Ingestion Induce vomiting - call a physician

7. SPILL OR LEAK PROCEDURES

Precautions to be taken in Handling and Storage

Store in a cool dry area

Steps to be taken in case Materials is released or spilled

Due to high volatility material quickly evaporates.

Ventilate area, evacuate personnel until concentration is below TLV or use self-contained breathing apparatus.

Waste Disposal If possible pump into drums for reclamation.

8. SPECIAL PRECAUTIONS AND USE DIRECTIONS

Aerosol containers may explode if exposed to temperatures over 130° F.

Vapors are very heavy and will collect in low areas. Oxygen would be displaced and asphyxiation could result. Good ventilation is a must for low areas and confined spaces.

PREPARED BY: Allen B. Reed

ORIGINAL DATE OR DATE OF REVISION

1/90

SAL 000006518

CA 011



HALDOR TOPSOE, INC.

TK-711

REVISED: May 1989

MATERIAL SAFETY DATA SHEET

EMERGENCY HAZARD RATING

4 - EXTREME
3 - HIGH
2 - MODERATE
1 - SLIGHT
0 - INSIGNIFICANT



Page 1 of 2

1. GENERAL INFORMATION

Trade name and synonym: Hydroprocessing Catalyst, TK-711

Chemical family: Oxides of Nickel, Molybdenum, Aluminum

Major chemical constituents (CAS No.): NiO (1313-99-1)
MoO₃ (1313-27-5)
Al₂O₃ (1344-28-1)

All components of the catalyst appear on the TSCA inventory.

Manufacturer's or importer's name & address:

HALDOR TOPSOE, INC.
17629 El Camino Real
Houston, TX 77058

Telephone No.:

(713) 480-2600

Emergency Telephone No.:

(713) 474-3261

2. HAZARDOUS INGREDIENTS

	concentration wt %	TLV/TWA* mg/m ³
NiO	2	1 (Ni)
MoO ₃	6	5 (Mo)
Al ₂ O ₃	92	10 (Nuisance Dust)

*As adopted by ACGIH

Aluminum oxide, molybdenum trioxide, and all compounds containing chromium, cobalt, nickel, copper or zinc are subject to Chemical Release Reporting requirements of SARA Section 313, as codified in 40 CFR Part 372.

3. PHYSICAL DATA

Appearance & odor: Yellowish-green cylinders or rings, odorless

Bulk density: 31 lbs/cuft (rings) Vapor pressure: Not relevant
38 lbs/cuft (cylinders)

Melting point: >1470 °F Solubility in water: Negligible

4. FIRE & EXPLOSION HAZARD DATA

Flash Point: Not relevant

Special Fire Fighting Procedures:
Not relevant, Noncombustible

Flammable Limits: Not relevant

Unusual Fire & Explosion Hazard: None

Extinguishing Media: Not relevant

SAL 000006519

5. HEALTH HAZARD DATA

Effects of overexposure: Nickel and some nickel compounds have been listed as human carcinogens. In addition, nickel compounds may irritate the skin and respiratory tract. Some people can develop an allergy towards nickel and therefore should not handle this catalyst.

Emergency & first aid procedures: In case of significant inhalation, seek medical attention. Wash off the skin with soap and water. Irrigate eyes with water.

Listed as a carcinogen: Yes X No
by OSHA IARC X NTP X

6. REACTIVITY DATA

Stability: Stable X Unstable

Incompatibility (Materials to avoid): Water damages catalytic properties.

Hazardous decomposition products: N/A

Hazardous polymerization: may occur will not occur X

7. SPILL AND WASTE DISPOSAL PROCEDURES

Steps to be taken if material is spilled: Collect all spilled material by mechanical means and place in a container. Avoid dust generation. Label container.

Waste Disposal Method: In accordance with Federal, state, & local regulations.

8. PERSONAL PROTECTION INFORMATION

Respiratory protection: Use approved respirator in confined space.

Eye protection: Goggles Ventilation of work place: Outside: Natural
Inside reactor: Mechanical

Hand protection: Gloves Other protection: Safety shoes recommended
when handling drums.

9. SPECIAL PRECAUTIONS

During storage: Keep containers dry and tightly closed.

When handling containers: Adhere to standard safety procedures. Use mechanical assistance to avoid strain.

During loading: Adhere to standard safety procedures. Minimize free fall of material to avoid breakage.

During unloading: Adhere to standard safety procedures. Spent catalyst may be pyrophoric in the presence of air.



MATERIAL SAFETY DATA SHEET

MSDS NUMBER : 6153-03

REVIEW DATE : November 14, 1989

24 HOUR EMERGENCY ASSISTANCE		GENERAL MSDS ASSISTANCE
CRITERION: 800-777-6076 (IN USA)	CHEMTREC: 800-424-9300 (IN USA)	CRITERION: 713-874-2600
CRITERION: 713-863-3942 (GLOBAL)	CANUTEC: 613-996-6666 (CANADA)	

HEALTH *	FIRE	REACTIVITY	HAZARD RATING : LEAST-0 MODERATE-2 EXTREME-4
2	0	0	

CA042

* For acute and chronic health effects refer to Section IV

SECTION I	NAME
PRODUCT	CRITERION TRILOBE® 424 CATALYST
CHEMICAL NAME	C-424
CHEMICAL FAMILY	METAL OXIDE
CRITERION PRODUCT CODE	55140 55150 55160 55170
CRITERION FILE NUMBER	40706211 40706154 40706153 40706155
PRODUCT USE	REFINERY PROCESSING

SECTION II-A		PRODUCT/INGREDIENT	
NO.	COMPOSITION	CAS NUMBER	PERCENT
P	CRITERION TRILOBE® 424 CATALYST	MIXTURE	100
1	ALUMINUM OXIDE (ALUMINA) - Al ₂ O ₃	1344-28-1	BALANCE
2	MOLYBDENUM OXIDE - MoO ₃	1313-27-5	19.5
3	NICKEL OXIDE - NiO	1313-99-1	4
4	PHOSPHOROUS OXIDE - P ₂ O ₅	1314-56-3	8

SECTION II-B		SARA TITLE III AND CERCLA INFORMATION			
NO.	SARA III EHS RQ (lbs) (*1)	SARA III EHS TPQ (lbs) (*2)	SARA III 311/312 CATEGORIES (*3)	SARA III SECTION 313 (*4)	CERCLA RQ (lbs) (*5)
1	Al ₂ O ₃		H-1	YES	
2	MoO ₃		H-1	YES	
3	NiO		H-1, H-2	YES, NICKEL COMPOUNDS	
4	P ₂ O ₅	1			

SPENT C-424

H-1, H-2, P-3

-----FOOTNOTES-----

*1 REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE UNDER SECTION 302

*2 THRESHOLD PLANNING QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE UNDER SECTION 302

*3 HAZARD CATEGORY FOR SECTION 311/312 REPORTING:

HEALTH H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD H-2 = DELAYED (CHRONIC) HEALTH HAZARD

PHYSICAL P-3 = FIRE HAZARD P-4 = SUDDEN RELEASE OF PRESSURE HAZARD P-5 = REACTIVE HAZARD

*4 TOXIC CHEMICAL UNDER SECTION 313, CATEGORY AS REQUIRED UNDER SECTION 313 (40 CFR 372.42).

*5 REPORTABLE QUANTITY OF HAZARDOUS SUBSTANCE UNDER CERCLA

CA 042

PRODUCT NAME: CRITERION TRILOBE® 424 CATALYST
MSDS NO. 6153-03

SECTION II-C		ACUTE TOXICITY DATA		
NO.		ACUTE ORAL LD50 (mg/kg)	ACUTE DERMAL LD50 (mg/kg)	ACUTE INHALATION LC50 (mg/M3)
P	C-424	NOT AVAILABLE		
2	MoO ₃	125-180 (RAT)	2090 (RAT)	287 (LC70, RAT -1 hr/30 days)
4	P ₂ O ₅			1217 (RAT - 1 hr)

SECTION III		WHMIS INFORMATION	
ACCORDING TO CRITERION'S UNDERSTANDING, THIS PRODUCT (C-424) IS CLASSIFIED UNDER THE CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) AS:			
POISONOUS AND INFECTIOUS CLASS D DIVISION 2, SUBDIVISION A.			
FOR SPENT CRITERION TRILOBE® 424 CATALYST, THE WHMIS CLASSIFICATION IS:			
POISONOUS AND INFECTIOUS CLASS D DIVISION 2, SUBDIVISION A.			
FLAMMABLE AND COMBUSTIBLE CLASS B, DIVISION 6.			

SECTION IV		HEALTH INFORMATION		
THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).				

EYE CONTACT

BASED ON ESSENTIALLY SIMILAR PRODUCT TESTING, PRODUCT IS MILDLY IRRITATING TO THE EYES.

SKIN CONTACT

BASED ON ESSENTIALLY SIMILAR PRODUCT TESTING, PRODUCT IS MINIMALLY IRRITATING TO THE SKIN.

INHALATION

THIS PRODUCT CONTAINS NICKEL OXIDES WHICH ARE CONSIDERED TOXIC AND MAY BE HARMFUL IF INHALED; MAY PRODUCE LUNG DAMAGE.

INGESTION

THIS PRODUCT MAY BE SLIGHTLY TOXIC AND HARMFUL IF SWALLOWED.

SIGNS AND SYMPTOMS

IRRITATION AS NOTED ABOVE. LUNG DAMAGE MAY BE EVIDENCED BY SHORTNESS OF BREATH, ESPECIALLY ON EXERTION, AND MAY BE ACCOMPANIED BY CHRONIC COUGH.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING EYE AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED LUNG FUNCTION(S) FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS

THE NATIONAL TOXICOLOGY PROGRAM AND INTERNATIONAL AGENCY FOR RESEARCH ON CANCER HAVE DETERMINED THERE IS SUFFICIENT EVIDENCE FOR THE CARCINOGENICITY IN EXPERIMENTAL ANIMALS OF NICKEL OXIDES. THEREFORE, THE HANDLING PROCEDURES AND SAFETY PRECAUTIONS IN THIS MSDS SHOULD BE FOLLOWED TO MINIMIZE EMPLOYEE'S EXPOSURE.

SECTION V		OCCUPATIONAL EXPOSURE LIMITS			
NO.		OSHA	ACGIH		OTHER
		TRANSITIONAL LIMIT/PEL (mg/M3)	FINAL RULE LIMIT/TWA (mg/M3)	TLV/TWA (mg/M3)	
	Al ₂ O ₃	15	10	10	TOTAL DUST
		5	5		RESPIRABLE FRACTION
2	MoO ₃	15	10	10	INSOLUBLE COMPOUNDS, TOTAL DUST
		5***	5***		INSOLUBLE COMPOUNDS, RESPIRABLE FRACTION
3	NiO	1	1	1	AS Ni

* COMPLIANCE WITH TRANSITIONAL LIMITS REQUIRED BY ADMINISTRATIVE OR ENGINEERING CONTROLS ONLY, UNTIL 12/31/92.

** COMPLIANCE WITH FINAL RULE LIMITS BY ANY COMBINATION OF ENGINEERING CONTROLS, WORK PRACTICES AND PERSONAL PROTECTIVE EQUIPMENT UNTIL 12/31/92. STARTING 1/1/93, THE FINAL RULE LIMITS MUST BE MET BY ADMINISTRATIVE OR ENGINEERING CONTROLS ONLY.

*** AS NICKEL, CRITERION HAS ESTABLISHED AN INTERNAL STANDARD FOR NICKEL OXIDE, BASED ON 8-12 HOUR TWA AT 300 MICROGRAMS/M3.

CA042PRODUCT NAME: CRITERION TRILOBE® 424 CATALYST
MSDS NO. 6153-03**SECTION VI EMERGENCY AND FIRST AID PROCEDURES****EYE CONTACT**

FLUSH EYES WITH PLENTY OF WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT

REMOVE CONTAMINATED CLOTHING/SHOES AND WIPE EXCESS FROM SKIN. FLUSH SKIN WITH WATER. FOLLOW BY WASHING WITH SOAP AND WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. DO NOT REUSE CLOTHING UNTIL CLEANED.

INHALATION

REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GET MEDICAL ATTENTION.

INGESTION

DO NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DROWSY. OTHERWISE, GIVE NO MORE THAN 2 GLASSES OF WATER AND INDUCE VOMITING BY GIVING 30CC (2 TABLESPOONS) SYRUP OF IPECAC. IF IPECAC IS UNAVAILABLE, GIVE 2 GLASSES OF WATER AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF VICTIM'S THROAT. KEEP VICTIM'S HEAD BELOW HIPS WHILE VOMITING. GET MEDICAL ATTENTION.

SECTION VII SUPPLEMENTAL HEALTH INFORMATION

NO REPORTS OF CANCER HAVE BEEN ASSOCIATED WITH THIS PRODUCT, HOWEVER, EPIDEMIOLOGICAL STUDIES ON WORKERS IN NICKEL REFINERIES HAVE DEMONSTRATED AN EXCESS RISK OF CANCER OF THE NASAL CAVITY AND LUNG. THEREFORE, THE HANDLING PROCEDURES AND SAFETY PRECAUTIONS IN THIS MSDS SHOULD BE FOLLOWED TO MINIMIZE EMPLOYEE'S EXPOSURE.

FOR SPENT CATALYST - NICKEL SUBSULFIDE, WHICH MAY BE PRESENT IN THE REDUCED CATALYST, HAS BEEN SHOWN TO PRODUCE A POSITIVE CARCINOGENIC EFFECT IN EXPERIMENTAL ANIMALS VIA INHALATION EXPOSURE. BASED ON THIS INFORMATION CRITERION HAS ESTABLISHED AN INTERNAL STANDARD FOR NICKEL SUBSULFIDE, BASED ON 8-12 HOUR TWA AT 15 MICROGRAMS/M³.

STUDIES CONDUCTED ON GUINEA PIGS HAVE DETERMINED THAT SIMILAR CRITERION CATALYSTS TO C-424 ARE NOT SKIN SENSITIZERS. HOWEVER, SOME INDIVIDUALS MAY BE SUSCEPTIBLE TO NICKEL SENSITIZATION.

SECTION VIII PHYSICAL DATABOILING POINT: APPROX. 4000
(DEG F)SPECIFIC GRAVITY: NOT APPLICABLE
(H2O=1)VAPOR PRESSURE: NOT SIGNIFICANT
(MM HG)MELTING POINT: APPROX. 3700
(DEG F)SOLUBILITY: APPROX. 5%
(IN WATER)VAPOR DENSITY: NOT APPLICABLE
(AIR=1)

EVAPORATION RATE (N-BUTYL ACETATE = 1): NOT SIGNIFICANT

BULK DENSITY = 0.80 g/cc

APPEARANCE AND ODOR: YELLOWISH-GREEN, TRILOBE®-SHAPED EXTRUDATES. NO ODOR.

SECTION IX FIRE AND EXPLOSION HAZARDS**FLASH POINT METHOD:**

WILL NOT BURN. (SEE BELOW)

FLAMMABLE LIMITS % VOLUME IN AIR

LOWER: N/AP UPPER: N/AP

EXTINGUISHING MEDIAAS PRODUCED, WILL NOT BURN. IF REDUCED (SPENT) CATALYST IS INVOLVED IN A FIRE, USE WATER FOG, FOAM, DRY CHEMICAL OR CO₂.**SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS**

WILL NOT BURN. WEAR FULL PROTECTIVE CLOTHING AND A NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS IF CATALYST IS IN FIRE AREA.

UNUSUAL FIRE AND EXPLOSION HAZARDS

MAY FORM NICKEL CARBONYL; A VERY TOXIC, POTENTIALLY LETHAL GAS, ON CONTACT WITH CARBON MONOXIDE. AS PRODUCED, THE CATALYST WILL NOT BURN. HOWEVER, IN USE, THE CATALYST IS REDUCED AND SULFIDED. THE REDUCED FORM, ESPECIALLY WHEN WARM, REACTS WITH OXYGEN ON CONTACT WITH AIR. ENOUGH HEAT CAN BE PRODUCED TO BURN COKE OR RESIDUAL ORGANIC MATERIAL LEFT ON THE CATALYST, AND COULD IGNITE FLAMMABLE MIXTURES WHICH IT MAY CONTACT. TO

CA042

PRODUCT NAME: CRITERION TRILOBE® 424 CATALYST
MSDS NO. 6153-03

PROTECT AGAINST THIS POSSIBILITY, SPENT CATALYST SHOULD BE OXIDIZED AND COOLED BEFORE REMOVING IT FROM THE REACTOR. OTHER MEASURES, SUCH AS COOLING AND BLANKETING WITH NITROGEN OR WATER WETTING THE CATALYST MAY ALSO BE USED TO RETARD OXIDATION.

SECTION X REACTIVITY

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID:

CONTACT WITH CARBON MONOXIDE UNDER CERTAIN CONDITIONS CAN FORM VERY TOXIC AND POTENTIALLY LETHAL NICKEL CARBONYL (ACGIH TLV/TWA FOR NICKEL CARBONYL IS 0.05 PPM).

HAZARDOUS DECOMPOSITION PRODUCTS

SEE ABOVE.

SECTION XI EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

IF EXPOSURE MAY OR DOES EXCEED OCCUPATIONAL EXPOSURE LIMITS (SEC. V) USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134 USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR PARTICULATES.

PROTECTIVE CLOTHING

AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT.

ADDITIONAL PROTECTIVE MEASURES

USE EXPLOSION-PROOF VENTILATION AS REQUIRED TO CONTROL PARTICULATE CONCENTRATIONS.

SECTION XII ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

WEAR NIOSH APPROVED RESPIRATOR WHEN DUST LEVELS EXCEED OCCUPATIONAL EXPOSURE LIMITS. WEAR GLOVES, GOGGLES AND PROTECTIVE CLOTHING TO CONTROL EXPOSURE TO BODY SURFACES. DO NOT DRY SWEEP OR USE METHODS WHICH INCREASE DUSTING. USE VACUUMING OR SWEEPING COMPOUND FOR CLEAN-UP. DO NOT WASH SPILLS INTO SEWERS OR OTHER PUBLIC WATER SYSTEMS.

WASTE DISPOSAL

UNDER EPA - RCRA (40 CFR 261.21), SPENT UNREGENERATED CATALYST IS A WASTE MATERIAL, IT COULD BE AN IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

ENVIRONMENTAL HAZARDS

DO NOT WASH SPILLS INTO SEWERS OR OTHER PUBLIC WATER SYSTEMS.

SECTION XIII SPECIAL PRECAUTIONS

DO NOT EAT, DRINK OR SMOKE IN AREAS WHERE CATALYST IS PRESENT. WASH HANDS THOROUGHLY AFTER HANDLING. KEEP CONTAINERS CLOSED WHEN NOT IN USE. NOTIFY AUTHORITIES IF MATERIAL THREATENS TO ENTER OR ENTERS INTO SEWER OR PUBLIC WATER SYSTEM. ALL PRECAUTIONS GIVEN FOR FRESH CATALYST SHOULD BE OBSERVED FOR SPENT CATALYST AND WASHINGS.

BECAUSE OF CHARACTERISTICS NOTED IN SECTIONS IX AND X, SPENT CATALYST HANDLING CAN REQUIRE SPECIAL, MORE RESTRICTIVE, PROCEDURES THAN FRESH CATALYST.

SECTION XIV TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION: FRESH CATALYST NOT HAZARDOUS BY DOT REG^{*}

OTHER REQUIREMENTS:

^{*} SPENT CATALYST ONLY - FLAMMABLE SOLID N.O.S. UN1325.

CA042

PRODUCT NAME: CRITERION TRILOBE® 424 CATALYST
MSDS NO. 6153-03

SECTION XV. OTHER REGULATORY CONTROLS

THE COMPONENTS OF THIS PRODUCT ARE LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, CRITERION MAKES NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. CRITERION ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

SECTION XVI. SUMMARY OF REVISIONS

MSDS NUMBER	DATE	NATURE OF REVISION(S)
6153-01	OCTOBER 30, 1988	ORIGINAL ISSUE
6153-02	MAY 12, 1989	ADD NEW OSHA TRANSITIONAL AND FINAL RULE EXPOSURE LIMITS. ADD SECTION XVI - SUMMARY OF REVISIONS. ADD REVIEW DATE TO TOP OF PAGE 1.
6153-03	November 14, 1989	ADD CERCLA INFORMATION TO SECTIONS IIB AND XII WHERE APPROPRIATE. CHANGE PRODUCT CODE NUMBERS (DROP 93's AND -'s).

REVIEW DATE: November 14, 1989

Donald C. McCulloch

DONALD C. McCULLOCH
TECHNICAL DIRECTOR
CRITERION CATALYST COMPANY L.P.

CA042

SAL 000006526



MATERIAL SAFETY DATA SHEET

MSDS NUMBER : 6159-04
REVIEW DATE : November 14, 1989

24 HOUR EMERGENCY ASSISTANCE		GENERAL MSDS ASSISTANCE
CRITERION: 800-777-6076 (IN USA)	CNENTREC: 800-424-9300 (IN USA)	CRITERION: 713-874-2600
CRITERION: 713-863-3942 (GLOBAL)	CANUTEC: 613-996-6666 (CANADA)	

HEALTH *	FIRE	REACTIVITY	
2	0	0	HAZARD RATING : LEAST-0 MODERATE-2 EXTREME-4

CA043

* For acute and chronic health effects refer to Section IV

SECTION I NAME

PRODUCT CRITERION TRILOBE® 444 CATALYST

CHEMICAL NAME C-444

CHEMICAL FAMILY METAL OXIDE

CRITERION PRODUCT CODE 55180 55190 55200 55195
CRITERION FILE NUMBER 40706161 40706160 40706159

PRODUCT USE REFINERY PROCESSING

SECTION II-A		PRODUCT/INGREDIENT	
NO.	COMPOSITION	CAS NUMBER	PERCENT
P	CRITERION TRILOBE® 444 CATALYST	MIXTURE	100
1	ALUMINUM OXIDE (ALUMINA) - Al_2O_3	1344-28-1	BALANCE
2	MOLYBDENUM OXIDE - MoO_3	1313-27-5	14.5
3	COBALT OXIDE - CoO	1307-96-6	4

SECTION II-B SARA TITLE III AND CERCLA INFORMATION				
NO.	SARA III EHS RQ (lbs) (*1)	SARA III EHS TPQ (lbs) (*2)	SARA III 311/312 CATEGORIES (*3)	SARA III SECTION 313 (*4) CERCLA RQ (lbs) (*5)
1	Al_2O_3		H-1	YES
2	MoO_3		H-1	YES
3	CoO		H-1, H-2	YES, COBALT COMPOUNDS

SPENT C-444

H-1, H-2, P-3

FOOTNOTES

- *1 REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE UNDER SECTION 302
- *2 THRESHOLD PLANNING QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE UNDER SECTION 302
- *3 HAZARD CATEGORY FOR SECTION 311/312 REPORTING:
HEALTH H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD H-2 = DELAYED (CHRONIC) HEALTH HAZARD
PHYSICAL P-3 = FIRE HAZARD P-4 = SUDDEN RELEASE OF PRESSURE HAZARD P-5 = REACTIVE HAZARD
- *4 TOXIC CHEMICAL UNDER SECTION 313, CATEGORY AS REQUIRED UNDER SECTION 313 (40 CFR 372.42).
- *5 REPORTABLE QUANTITY OF HAZARDOUS SUBSTANCE UNDER CERCLA

SECTION II-C		ACUTE TOXICITY DATA		
NO.		ACUTE ORAL LD50 (mg/kg)	ACUTE DERMAL LD50 (mg/kg)	ACUTE INHALATION LC50 (mg/K3)
P	C-444	>5000 (RAT)*	>1000 (RAT)*	>748 (RAT - 4 HR)*

* BASED ON SIMILAR PRODUCT TESTING.

SECTION III WHMIS INFORMATION
ACCORDING TO CRITERION'S UNDERSTANDING, THIS PRODUCT (C-444) IS CLASSIFIED UNDER THE CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) AS:

POISONOUS AND INFECTIOUS CLASS D DIVISION 2, SUBDIVISION B.

FOR SPENT CRITERION TRILOBE® 444 CATALYST, THE WHMIS CLASSIFICATION IS:

POISONOUS AND INFECTIOUS CLASS D DIVISION 2, SUBDIVISION B.

FLAMMABLE AND COMBUSTIBLE CLASS B, DIVISION 6.

SECTION IV HEALTH INFORMATION
THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT

PRODUCT MAY BE MILDLY IRRITATING TO THE EYES.

SKIN CONTACT

PRODUCT MAY BE MILDLY IRRITATING TO THE SKIN.

INHALATION

THIS PRODUCT MAY CAUSE IRRITATION TO THE NOSE, THROAT AND RESPIRATORY TRACT. MAY PRODUCE LUNG DAMAGE AND/OR SENSITIZATION BASED ON COMPONENT 3 (COBALT OXIDE).

INGESTION

GENERALLY CONSIDERED TO HAVE A LOW ORDER OF ACUTE ORAL TOXICITY.

SIGNS AND SYMPTOMS

IRRITATION AS NOTED ABOVE. LUNG DAMAGE MAY BE EVIDENCED BY SHORTNESS OF BREATH, ESPECIALLY ON EXERTION, AND MAY BE ACCOMPANIED BY CHRONIC COUGH. LUNG SENSITIZATION (E.G. ALLERGY, ASTHMA) MAY BE EVIDENCED BY WHEEZING WITH SHORTNESS OF BREATH AND COUGH.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING EYE, SKIN AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED LUNG FUNCTION(S) FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. PREEXISTING SKIN OR LUNG ALLERGIES MAY INCREASE THE CHANCE OF DEVELOPING INCREASED ALLERGY SYMPTOMS FROM EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS

NO REPORTS OF HEART TOXICITY HAVE BEEN ASSOCIATED WITH THIS PRODUCT, HOWEVER, COBALT IS KNOWN TO CAUSE HEART TOXICITY (MYOCARDIOPATHY), WHICH MAY BE EVIDENCED BY EDEMA (SWELLING OF THE FEET) AND SHORTNESS OF BREATH ON EXERTION OR WHEN LYING SUPINE (ON THE BACK, WITH FACE UPWARD).

SECTION V		OCCUPATIONAL EXPOSURE LIMITS			
NO.		OSHA	FINAL RULE	ACGIH	OTHER
		TRANSITIONAL LIMIT/PEL (mg/K3)	LIMIT/TWA (mg/K3)	TLV/TWA (mg/K3)	TLV/STEL (mg/K3)
1	Al ₂ O ₃	15	10	10	TOTAL DUST
		5	5		RESPIRABLE FRACTION
2	MoO ₃	15	10	10	INSOLUBLE COMPOUNDS, TOTAL DUST
		5	5		INSOLUBLE COMPOUNDS, RESPIRABLE FRACTION
3	CoO	0.1	0.05	0.05	AS Co

* COMPLIANCE WITH TRANSITIONAL LIMITS REQUIRED BY ADMINISTRATIVE OR ENGINEERING CONTROLS ONLY, UNTIL 12/31/92.
** COMPLIANCE WITH FINAL RULE LIMITS BY ANY COMBINATION OF ENGINEERING CONTROLS, WORK PRACTICES AND PERSONAL PROTECTIVE EQUIPMENT UNTIL 12/31/92. STARTING 1/1/93, THE FINAL RULE LIMITS MUST BE MET BY ADMINISTRATIVE OR ENGINEERING CONTROLS ONLY.

SECTION VI EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT

FLUSH EYES WITH PLENTY OF WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT

REMOVE CONTAMINATED CLOTHING/SHOES AND WIPE EXCESS FROM SKIN. FLUSH SKIN WITH WATER. FOLLOW BY WASHING WITH SOAP AND WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. DO NOT REUSE CLOTHING UNTIL CLEANED.

INHALATION

REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GET MEDICAL ATTENTION.

INGESTION

DO NOT INDUCE VOMITING. DO NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DROWSY. OTHERWISE, GIVE LARGE QUANTITY OF WATER. IF VOMITTING OCCURS, REPEAT LIQUID ADMINISTRATION. GET MEDICAL ATTENTION IMMEDIATELY.

SECTION VII SUPPLEMENTAL HEALTH INFORMATION

IN ONE LIFETIME INHALATION STUDY, COBALT-EXPOSED HAMSTERS DEVELOPED PNEUMOCONIOSIS; ADDITIONALLY, THERE WERE NO INCREASES IN TUMORS.

STUDIES CONDUCTED ON GUINEA PIGS HAVE DETERMINED THAT SIMILAR CRITERION CATALYSTS TO C-444 ARE NOT SKIN SENSITIZERS. HOWEVER, SOME INDIVIDUALS MAY BE SUSCEPTIBLE TO COBALT SENSITIZATION.

SECTION VIII PHYSICAL DATA

BOILING POINT: APPROX. 4000
(DEG F)

SPECIFIC GRAVITY: NOT APPLICABLE
(N20=1)

VAPOR PRESSURE: NOT SIGNIFICANT
(MM HG)

MELTING POINT: APPROX. 3700
(DEG F)

SOLUBILITY: APPROX. 5%
(IN WATER)

VAPOR DENSITY: NOT APPLICABLE
(AIR=1)

EVAPORATION RATE (N-BUTYL ACETATE = 1): NOT SIGNIFICANT

BULK DENSITY = 0.82 G/CC

APPEARANCE AND ODOR: BLUE, TRILOBE®-SHAPED EXTRUDATES. NO ODOR.

SECTION IX FIRE AND EXPLOSION HAZARDS

FLASH POINT METHOD:

WILL NOT BURN. (SEE BELOW)

FLAMMABLE LIMITS % VOLUME IN AIR

LOWER: N/AP UPPER: N/AP

EXTINGUISHING MEDIA

AS PRODUCED, WILL NOT BURN. IF REDUCED (SPENT) CATALYST IS INVOLVED IN A FIRE, USE WATER FOG, FOAM, DRY CHEMICAL OR CO₂.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

WILL NOT BURN. WEAR FULL PROTECTIVE CLOTHING AND A NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS IF CATALYST IS IN FIRE AREA.

UNUSUAL FIRE AND EXPLOSION HAZARDS

AS PRODUCED, THE CATALYST WILL NOT BURN. HOWEVER, IN USE, THE CATALYST IS REDUCED AND SULFIDED. THE REDUCED FORM, ESPECIALLY WHEN WARM, REACTS WITH OXYGEN ON CONTACT WITH AIR. ENOUGH HEAT CAN BE PRODUCED TO BURN COKE OR RESIDUAL ORGANIC MATERIAL LEFT ON THE CATALYST, AND COULD IGNITE FLAMMABLE MIXTURES WHICH IT MAY CONTACT. TO PROTECT AGAINST THIS POSSIBILITY, SPENT CATALYST SHOULD BE OXIDIZED AND COOLED BEFORE REMOVING IT FROM THE REACTOR. OTHER MEASURES, SUCH AS COOLING AND BLANKETING WITH NITROGEN OR WATER WETTING THE CATALYST MAY ALSO BE USED TO RETARD OXIDATION.

SECTION X**REACTIVITY**

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION XI**EMPLOYEE PROTECTION**

RESPIRATORY PROTECTION

USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134, USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR PARTICULATES.

PROTECTIVE CLOTHING

AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT.

ADDITIONAL PROTECTIVE MEASURES

USE EXPLOSION-PROOF VENTILATION AS REQUIRED TO CONTROL PARTICULATE CONCENTRATIONS.

SECTION XII**ENVIRONMENTAL PROTECTION**

SPILL OR LEAK PROCEDURES

WEAR NIOSH APPROVED RESPIRATOR WHEN DUST LEVELS EXCEED OCCUPATIONAL EXPOSURE LIMITS. WEAR GLOVES, GOGGLES AND PROTECTIVE CLOTHING TO CONTROL EXPOSURE TO BODY SURFACES. DO NOT DRY SWEEP OR USE METHODS WHICH INCREASE DUSTING. USE VACUUMING OR SWEEPING COMPOUND FOR CLEAN-UP. DO NOT WASH SPILLS INTO SEWERS OR OTHER PUBLIC WATER SYSTEMS.

WASTE DISPOSAL

UNDER EPA - RCRA (40 CFR 261.21), SPENT UNREGENERATED CATALYST IS A WASTE MATERIAL, IT COULD BE AN IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

ENVIRONMENTAL HAZARDS

DO NOT WASH SPILLS INTO SEWERS OR OTHER PUBLIC WATER SYSTEMS.

SECTION XIII**SPECIAL PRECAUTIONS**

DO NOT EAT, DRINK OR SMOKE IN AREAS WHERE CATALYST IS PRESENT. WASH HANDS THOROUGHLY AFTER HANDLING. KEEP CONTAINERS CLOSED WHEN NOT IN USE. NOTIFY AUTHORITIES IF MATERIAL THREATENS TO ENTER OR ENTERS INTO SEWER OR PUBLIC WATER SYSTEM. ALL PRECAUTIONS GIVEN FOR FRESH CATALYST SHOULD BE OBSERVED FOR SPENT CATALYST AND WASHINGS.

SECTION XIV**TRANSPORTATION REQUIREMENTS**

DEPARTMENT OF TRANSPORTATION CLASSIFICATION: FRESH CATALYST NOT HAZARDOUS BY DOT REG^{*}

OTHER REQUIREMENTS:

- * SPENT CATALYST ONLY - FLAMMABLE SOLID N.O.S. UN1325.

CA048

PRODUCT NAME: CRITERION TRILOBED 444 CATALYST
MSDS NO. 6159-04

SECTION XV **OTHER REGULATORY CONTROLS**

THE COMPONENTS OF THIS PRODUCT ARE LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, CRITERION MAKES NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. CRITERION ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

SECTION XVI **SUMMARY OF REVISIONS**

MSDS NUMBER	DATE	NATURE OF REVISION(S)
6159-01	DECEMBER 28, 1988	ORIGINAL ISSUE
6159-02	MAY 14, 1989	ADD NEW OSHA TRANSITIONAL AND FINAL RULE EXPOSURE LIMITS. ADD SECTION XVI - SUMMARY OF REVISIONS. ADD REVIEW DATE TO TOP OF PAGE 1. CORRECT TYPO IN CAS NUMBER FOR COBALT OXIDE TO 1307-96-6.
6159-03	AUGUST 12, 1989	ADD PRODUCT CODE NO. 93551-95 TO MSDS.
6159-04	November 14, 1989	ADD CERCLA INFORMATION TO SECTIONS IIB AND XII WHERE APPROPRIATE. CHANGE PRODUCT CODE NUMBERS (DROP 93's AND -'s).

REVIEW DATE: November 14, 1989

Donald C. McCulloch

DONALD C. MCCULLOCH
TECHNICAL DIRECTOR
CRITERION CATALYST COMPANY L.P.

SAL 000006531

CA048

SAL 000006532



CA 044 MATERIAL SAFETY DATA SHEET

MSDS NUMBER : 6075-03
REVIEW DATE : November 14, 1989

24 HOUR EMERGENCY ASSISTANCE	
CRITERION: 800-777-6076 (IN USA)	CLIENTEC: 800-424-9500 (IN USA)
CRITERION: 713-863-3942 (GLOBAL)	CLIENTEC: 613-996-6666 (CANADA)
GENERAL MSDS ASSISTANCE	
CRITERION: 713-874-2600	

HEALTH *	FIRE	REACTIVITY
2	0	0
HAZARD RATING : MODERATE-2 LEAST-0 EXTREME-4		

* For acute and chronic health effects refer to Section IV

SECTION I NAME

PRODUCT CRITERION N-39 CATALYST

CHEMICAL NAME

N-39

CHEMICAL FAMILY

METAL OXIDE

CRITERION PRODUCT CODE
65510

CRITERION FILE NUMBER
40706075

PRODUCT USE

REFINERY PROCESSING

SECTION II-A PRODUCT/INGREDIENT

NO.	COMPOSITION	CAS NUMBER	PERCENT
P	CRITERION N-39 CATALYST	MIXTURE	100
1	ALUMINUM OXIDE (ALUMINA) - Al_2O_3	1344-28-1	85
2	MOLYBDENUM OXIDE - MoO_3	1313-27-5	12
3	COBALT OXIDE - CoO	1307-96-6	3

SECTION II-B SARA TITLE III AND CERCLA INFORMATION			
NO.	SARA III EHS RQ (lbs)	SARA III 311/312 CATEGORIES	CERCLA RQ (lbs)

1	Al_2O_3	H-1	YES
2	MoO_3	H-1	YES
3	CoO	H-1, H-2	YES, COBALT COMPOUNDS
SPENT N-39			

FOOTNOTES--
H-1, H-2, P-3

- *1 REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE UNDER SECTION 302
- *2 THRESHOLD PLANNING QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE UNDER SECTION 302
- *3 HAZARD CATEGORY FOR SECTION 311/312 REPORTING:
HEALTH H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD
PHYSICAL P-3 = FIRE HAZARD
P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
P-5 = REACTIVE HAZARD
- *4 TOXIC CHEMICAL UNDER SECTION 313, CATEGORY AS REQUIRED UNDER SECTION 313 (40 CFR 372.42).
- *5 REPORTABLE QUANTITY OF HAZARDOUS SUBSTANCE UNDER CERCLA

CA044

PRODUCT NAME: CRITERION H-39 CATALYST
MSDS NO. 6075-03

SECTION II-C		ACUTE TOXICITY DATA		
NO.		ACUTE ORAL LD50 (mg/kg)	ACUTE DERMAL LD50 (mg/kg)	ACUTE INHALATION LC50 (mg/K3)
1	H-39	NOT AVAILABLE		
2	MoO ₃	125-180 (RAT)	2090 (RAT)	287 (LC70, RAT -1 hr/30 days)
3	CoO	1700 (RAT)		

SECTION III		WHMIS INFORMATION		
ACCORDING TO CRITERION'S UNDERSTANDING, THIS PRODUCT (H-39) IS CLASSIFIED UNDER THE CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) AS:				

POISONOUS AND INFECTIOUS CLASS D DIVISION 2, SUBDIVISION B.

FOR SPENT CRITERION H-39 CATALYST, THE WHMIS CLASSIFICATION IS:

POISONOUS AND INFECTIOUS CLASS D DIVISION 2, SUBDIVISION B.

FLAMMABLE AND COMBUSTIBLE CLASS B, DIVISION 6.

SECTION IV		HEALTH INFORMATION	
THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).			

EYE CONTACT

PRODUCT MAY BE MILDLY IRRITATING TO THE EYES.

SKIN CONTACT

PRODUCT MAY BE MILDLY IRRITATING TO THE SKIN.

INHALATION

THIS PRODUCT MAY CAUSE IRRITATION TO THE NOSE, THROAT AND RESPIRATORY TRACT. MAY PRODUCE LUNG DAMAGE AND/OR SENSITIZATION BASED ON COMPONENT 3 (COBALT OXIDE).

INGESTION

GENERALLY CONSIDERED TO HAVE A LOW ORDER OF ACUTE ORAL TOXICITY.

SIGNS AND SYMPTOMS

IRRITATION AS NOTED ABOVE. LUNG DAMAGE MAY BE EVIDENCED BY SHORTNESS OF BREATH, ESPECIALLY ON EXERTION, AND MAY BE ACCOMPANIED BY CHRONIC COUGH. LUNG SENSITIZATION (E.G. ALLERGY, ASTHMA) MAY BE EVIDENCED BY WHEEZING WITH SHORTNESS OF BREATH AND COUGH.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING EYE, SKIN AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED LUNG FUNCTION(S) FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. PREEXISTING SKIN OR LUNG ALLERGIES MAY INCREASE THE CHANCE OF DEVELOPING INCREASED ALLERGY SYMPTOMS FROM EXPOSURE TO THIS PRODUCT.

OTHER HEALTH EFFECTS

NO REPORTS OF HEART TOXICITY HAVE BEEN ASSOCIATED WITH THIS PRODUCT, HOWEVER, COBALT IS KNOWN TO CAUSE HEART TOXICITY (MYOCARDIOPATHY), WHICH MAY BE EVIDENCED BY EDEMA (SWELLING OF THE FEET) AND SHORTNESS OF BREATH ON EXERTION OR WHEN LYING SUPINE (ON THE BACK, WITH FACE UPWARD).

SECTION V		OCCUPATIONAL EXPOSURE LIMITS				
NO.		OSHA	OSHA	ACGIH	ACGIH	OTHER
		TRANSITIONAL LIMIT/PEL (mg/M3)	FINAL RULE LIMIT/TWA (mg/M3)	TLV/TWA (mg/M3)	TLV/STEL (mg/M3)	
1	Al ₂ O ₃	15	10	10		TOTAL DUST
		5	5			RESPIRABLE FRACTION
2	MoO ₃	15	10	10		INSOLUBLE COMPOUNDS, TOTAL DUST
		5	5			INSOLUBLE COMPOUNDS, RESPIRABLE FRACTION
3	CoO	0.1	0.05	0.05		AS Co

- COMPLIANCE WITH TRANSITIONAL LIMITS REQUIRED BY ADMINISTRATIVE OR ENGINEERING CONTROLS ONLY, UNTIL 12/31/92.
- COMPLIANCE WITH FINAL RULE LIMITS BY ANY COMBINATION OF ENGINEERING CONTROLS, WORK PRACTICES AND PERSONAL PROTECTIVE EQUIPMENT UNTIL 12/31/92. STARTING 1/1/93, THE FINAL RULE LIMITS MUST BE MET BY ADMINISTRATIVE OR ENGINEERING CONTROLS ONLY.

SECTION VI EMERGENCY AND FIRST AID PROCEDURES**EYE CONTACT**

FLUSH EYES WITH PLENTY OF WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT

REMOVE CONTAMINATED CLOTHING/SHOES AND WIPE EXCESS FROM SKIN. FLUSH SKIN WITH WATER. FOLLOW BY WASHING WITH SOAP AND WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION. DO NOT REUSE CLOTHING UNTIL CLEANED.

INHALATION

REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GET MEDICAL ATTENTION.

INGESTION

DO NOT INDUCE VOMITING. DO NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DROWSY. OTHERWISE, GIVE LARGE QUANTITY OF WATER. IF VOMITTING OCCURS, REPEAT LIQUID ADMINISTRATION. GET MEDICAL ATTENTION IMMEDIATELY.

SECTION VII SUPPLEMENTAL HEALTH INFORMATION

IN ONE LIFETIME INHALATION STUDY, COBALT-EXPOSED HAMSTERS DEVELOPED PNEUMOCONIOSIS; ADDITIONALLY, THERE WERE NO INCREASES IN TUMORS.

STUDIES CONDUCTED ON GUINEA PIGS HAVE DETERMINED THAT SIMILAR CRITERION CATALYSTS TO M-39 ARE NOT SKIN SENSITIZERS. HOWEVER, SOME INDIVIDUALS MAY BE SUSCEPTIBLE TO COBALT SENSITIZATION.

SECTION VIII PHYSICAL DATA

BOILING POINT: APPROX. 4000
(DEG F)

SPECIFIC GRAVITY: NOT APPLICABLE
(H2O=1)

VAPOR PRESSURE: NOT SIGNIFICANT
(MM HG)

MELTING POINT: APPROX. 3700
(DEG F)

SOLUBILITY: APPROX. 5%
(IN WATER)

VAPOR DENSITY: NOT APPLICABLE
(AIR=1)

EVAPORATION RATE (M-BUTYL ACETATE = 1): NOT SIGNIFICANT

BULK DENSITY = -0.55 G/CC

APPEARANCE AND ODOR: BLUE, CYLINDER-SHAPED EXTRUDATES. NO ODOR.

SECTION IX FIRE AND EXPLOSION HAZARDS**FLASH POINT METHOD:**

WILL NOT BURN. (SEE BELOW)

FLAMMABLE LIMITS % VOLUME IN AIR

LOWER: N/AP UPPER: N/AP

EXTINGUISHING MEDIA

AS PRODUCED, WILL NOT BURN. IF REDUCED (SPENT) CATALYST IS INVOLVED IN A FIRE, USE WATER FOG, FOAM, DRY CHEMICAL OR CO₂.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

WILL NOT BURN. WEAR FULL PROTECTIVE CLOTHING AND A NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS IF CATALYST IS IN FIRE AREA.

UNUSUAL FIRE AND EXPLOSION HAZARDS

AS PRODUCED, THE CATALYST WILL NOT BURN. HOWEVER, IN USE, THE CATALYST IS REDUCED AND SULFIDED. THE REDUCED FORM, ESPECIALLY WHEN WARM, REACTS WITH OXYGEN ON CONTACT WITH AIR. ENOUGH HEAT CAN BE PRODUCED TO BURN COKE OR RESIDUAL ORGANIC MATERIAL LEFT ON THE CATALYST, AND COULD IGNITE FLAMMABLE MIXTURES WHICH IT MAY CONTACT. TO PROTECT AGAINST THIS POSSIBILITY, SPENT CATALYST SHOULD BE OXIDIZED AND COOLED BEFORE REMOVING IT FROM THE REACTOR. OTHER MEASURES, SUCH AS COOLING AND BLANKETING WITH NITROGEN OR WATER WETTING THE CATALYST MAY ALSO BE USED TO RETARD OXIDATION.

CA 044

PRODUCT NAME: CRITERION H-39 CATALYST
MSDS NO. 6075-85

SECTION I

REACTIVITY

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION XI

EMPLOYEE PROTECTION

RESPIRATORY PROTECTION

USE A NIOSH-APPROVED RESPIRATOR TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134, USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR PARTICULATES.

PROTECTIVE CLOTHING

AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT.

ADDITIONAL PROTECTIVE MEASURES

USE EXPLOSION-PROOF VENTILATION AS REQUIRED TO CONTROL PARTICULATE CONCENTRATIONS.

SECTION XII

ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES

WEAR NIOSH APPROVED RESPIRATOR WHEN DUST LEVELS EXCEED OCCUPATIONAL EXPOSURE LIMITS. WEAR GLOVES, GOGGLES AND PROTECTIVE CLOTHING TO CONTROL EXPOSURE TO BODY SURFACES. DO NOT DRY SWEEP OR USE METHODS WHICH INCREASE DUSTING. USE VACUUMING OR SWEEPING COMPOUND FOR CLEAN-UP. DO NOT WASH SPILLS INTO SEWERS OR OTHER PUBLIC WATER SYSTEMS.

WASTE DISPOSAL

UNDER EPA - RCRA (40 CFR 261.21), SPENT UNREGENERATED CATALYST IS A WASTE MATERIAL, IT COULD BE AN IGNITABLE HAZARDOUS WASTE, HAZARDOUS WASTE NUMBER D001. REFER TO LATEST EPA OR STATE REGULATIONS REGARDING PROPER DISPOSAL.

ENVIRONMENTAL HAZARDS

DO NOT WASH SPILLS INTO SEWERS OR OTHER PUBLIC WATER SYSTEMS.

SECTION XIII

SPECIAL PRECAUTIONS

DO NOT EAT, DRINK OR SMOKE IN AREAS WHERE CATALYST IS PRESENT. WASH HANDS THOROUGHLY AFTER HANDLING. KEEP CONTAINERS CLOSED WHEN NOT IN USE. NOTIFY AUTHORITIES IF MATERIAL THREATENS TO ENTER OR ENTERS INTO SEWER OR PUBLIC WATER SYSTEM. ALL PRECAUTIONS GIVEN FOR FRESH CATALYST SHOULD BE OBSERVED FOR SPENT CATALYST AND WASHINGS.

SECTION XIV

TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION: FRESH CATALYST NOT HAZARDOUS BY DOT REG^{*}

OTHER REQUIREMENTS:

- * SPENT CATALYST ONLY - FLAMMABLE SOLID N.O.S. UN1325.

CA044

PRODUCT NAME: CRITERION H-39 CATALYST
MSDS NO. 6075-03**SECTION XV OTHER REGULATORY CONTROLS**

THE COMPONENTS OF THIS PRODUCT ARE LISTED ON THE EPA/TSCA INVENTORY OF CHEMICAL SUBSTANCES.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, CRITERION MAKES NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. CRITERION ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

SECTION XVI SUMMARY OF REVISIONS

MSDS NUMBER	DATE	NATURE OF REVISION(S)
6075-01	DECEMBER 28, 1988	ORIGINAL ISSUE
6075-02	MAY 14, 1989	ADD NEW OSHA TRANSITIONAL AND FINAL RULE EXPOSURE LIMITS. ADD SECTION XVI - SUMMARY OF REVISIONS. ADD REVIEW DATE TO TOP OF PAGE 1. CORRECT TYPO IN CAS NUMBER FOR COBALT OXIDE TO 1307-96-6.
6075-03	November 14, 1989	ADD CERCLA INFORMATION TO SECTIONS IIB AND XII WHERE APPROPRIATE. CHANGE PRODUCT CODE NUMBERS (DROP 93's AND -'s).

REVIEW DATE: November 14, 1989

*Donald C. McCulloch*DONALD C. MCCULLOCH
TECHNICAL DIRECTOR
CRITERION CATALYST COMPANY L.P.

CA044

SAL 000006538



Refining, North America

Conoco Inc.
P.O. Box 37
Westlake, LA 70669
(318) 491-5211

March 31, 1990

Louisiana Emergency Response Commission
Office Of State Police
Hazardous Substance Control Section
Right-To-Know Unit
P. O. Box 66614
Baton Rouge, LA 70896

SUBMITTAL OF MSDS UPDATES - FIRST QUARTER 1990

Dear Sir:

Enclosed you will find Material Safety Data Sheet Updates for the first quarter of 1990, for the Conoco Refinery, Westlake, Louisiana. This information is being provided to you in accordance with the update requirements of Section 311 of Community Right-To-Know Act.

If you have any questions concerning this submittal, please contact Dave Tinker at 318-491-5543.

Sincerely,

D. R. Unruh
Plant Manager
Lake Charles Refinery

am
att

cc w/o att: W. O. Lukens (Conoco)
P. B. Butler (Conoco)
D. L. Tinker (Conoco)



Refining, North America

Conoco Inc.
P.O. Box 37
Westlake, LA 70669
(318) 491-6211

March 31, 1990

Mr. Samuel H. Russell
Calcasieu Parish Local Emergency Planning Committee
P. O. Box 1391
Lake Charles, LA 70602-1391

SUBMITTAL OF MSDS UPDATES - FIRST QUARTER 1990

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Sincerely,

D. R. Udrup
Plant Manager
Lake Charles Refinery

am
att

cc w/o att: W. O. Lukens (Conoco)
P. B. Butler (Conoco)
D. L. Tinker (Conoco)

DLT: MSDS.DOC

SAL 000006540



Refining, North America

Conoco Inc.
P.O. Box 37
Westlake, LA 70669
(318) 491-5211

March 31, 1990

Fire Chief
Westlake Fire Department
2401 Guillory Street
Westlake, LA 70669

SUBMITTAL OF MSDS UPDATES - FIRST QUARTER 1990

Dear Sir:

Enclosed you will find Material Safety Data Sheet Updates for the first quarter of 1990, for the Conoco Refinery, Westlake, Louisiana. This information is being provided to you in accordance with the update requirements of Section 311 of Community Right-To-Know Act.

If you have any questions concerning this submittal, please contact Dave Tinker at 318-491-5543.

Sincerely,

D. R. Unruh
Plant Manager
Lake Charles Refinery

am
att

cc w/o att: W. O. Lukens (Conoco)
P. B. Butler (Conoco)
D. L. Tinker (Conoco)

CHESTERTON®

65498

MATERIAL SAFETY DATA SHEET

A.W. CHESTERTON COMPANY
225 Fallon Road, Middlesex Industrial Park
Stoneham, MA 02180-2999 U.S.A.

Emergency Telephone Nos.
617-438-7000 (Day)
617-438-7013 (Night)

Section I

Date of Prep. October 15, 1989

MSDS No. 192A-4

Product Name: 855 Abrasion Control Liquid Part A
Black, Grey

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard
0 = Minimal Hazard

HEALTH	1
FLAMMABILITY	1
REACTIVITY	1
Personal Protection	-

- See Section VIII - Special Protection Information

General Use and Precautionary Information

Chesterton® Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B; separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.

Section II - HAZARDOUS INGREDIENTS

Ingredients/Synonyms	EM TYPE	CAS No.	% Wt.	OSHA-PEL ppm	mg/m3	ACGIH-TL ppm	mg/m3	Vapor Pressure
Bisphenol A Diglycidyl Ether Resin		25068-38-6	5-15	-	-	-	-	--

Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS

None				x Material marked contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.				
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Section III - PHYSICAL DATA

Initial Boiling Point	N/A	Percent Volatile (by volume) < 1						
Vapor Density > 1 (Air = 1)		Evaporation Rate < 1 (Ether = 1)		Weight Per Gallon 16 lbs. (1.9 kg/l)				

Section IV - FIRE AND EXPLOSION DATA

Flash Point	249°C (480°F) Closed Cup	LEL	Not Determined	DOT Shipping Name	Nonhazardous
				DOT Hazard Class	Not Restricted
				DOT UN/NA #	N/A
Extinguishing Media Carbon Dioxide, dry chemical, foam or water fog.					
Unusual Fire and Explosion Hazards Thermal decomposition can form aldehydes, acids or other toxic fumes.					
Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.					

6 S 4 9 8

Product Name: 855 Abrasion Control Liquid Part A
Black, Grey

Date: October 15, 1989

Section V — REACTIVITY DATA

Stability Stable

Hazardous Decomposition Products Carbon Monoxide, aldehydes, acids and other toxic fumes.

Hazardous Polymerization

☐ May Occur

☒ Will Not Occur

Conditions to Avoid Heat above 300°F (149°C)

Materials to Avoid Strong mineral acids and bases, strong organic bases and strong oxidizers like liquid Chlorine and concentrated Oxygen.

Section VI — HEALTH HAZARD DATA

Primary Route of Exposure Under Normal Use Skin and eye contact. Personnel with pre-existing skin or lung allergies may be aggravated by exposure.

Acute Effects Moderate eye and skin irritant. May cause skin sensitization as evidenced by rashes or hives.

Chronic Effects Although the significance is unknown, Bisphenol A Diglycidyl Ether Resin has been shown to be mutagenic in some microbial tests but has failed to show mutagenicity in others. Chromosomal aberrations were observed in cultured rat liver cells.

Based on recent 2-year mice skin painting studies and other available information, the International Agency for Research on Cancer (IARC) concluded that they did not have enough information to classify Bisphenol A Diglycidyl Ether Resin.

Emergency and First Aid Procedures

Inhalation N/A

Eye/Skin Contact Remove contaminated clothing. Wash skin with soap and water. Flush eyes for at least 15 minutes with large quantities of water. Consult physician if irritation develops.

Ingestion Do not induce vomiting. Contact physician immediately.

Section VII — SPILL OR RELEASE PROCEDURES

Steps to be Taken in Case Material is Spilled or Released

Avoid skin contact. Contain spill to a small area. Pick up with absorbent material (e.g., sand, sawdust, clay, etc.) and transfer to a suitable container for disposal. Keep out of sewers, streams and waterways.

Waste Disposal Method Landfill sealed containers in an approved area. Check local, state and federal regulations.

Section VIII — SPECIAL PROTECTION INFORMATION

Respiratory Protection Not needed.

Protective Gloves Chemical resistant gloves (e.g., Neoprene).

Ventilation No special requirements.

Eye Protection Safety goggles.

Other Impervious clothing as necessary to prevent skin contact.

Section IX — SPECIAL PRECAUTIONS

Precautions in Handling and Storing Store in cool, dry area.

Other Precautions Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.

The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purposes.

CHESTERTON.

MATERIAL SAFETY DATA SHEET

G S 4 9 4

A.W. CHESTERTON COMPANY
225 Fallon Road, Middlesex Industrial Park
Stoneham, MA 02180-2999 U.S.A.

Emergency Telephone Nos.
617-438-7000 (Day)
617-438-7013 (Night)

Section I	
Date of Prep. October 15, 1989	HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS) 4 = Severe Hazard 3 = Serious Hazard 2 = Moderate Hazard 1 = Slight Hazard 0 = Minimal Hazard - See Section VIII - Special Protection Information
MSDS No. 192B-4	
Product Name: 855 Abrasion Control Liquid Part B	

HEALTH	3
FLAMMABILITY	1
REACTIVITY	1
Personal Protection	-

General Use and Precautionary Information

Chesterton® Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B; separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.

Section II - HAZARDOUS INGREDIENTS						
Ingredients/Synonyms	EPA Pesticide	CAS No.	% Wt.	OSHA-PEL ppm	ACOSH-TL mg/m ³	Vapor Pressure
Benzyl Alcohol		100-51-6	40-50	-	-	-

Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS			
Bisphenol A	80-05-7	1-5	x Material marked contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Section III - PHYSICAL DATA		
Initial Boiling Point	Not Determined	Percent Volatile (by volume)
		Negligible
Vapor Density >1 (Air = 1)	Evaporation Rate <1 (Ether = 1)	Weight Per Gallon 8.3 lbs. (1.0 kg/l)

Section IV - FIRE AND EXPLOSION DATA		
Flash Point >93°C (>200°F) Closed Cup	LEL Not Determined	DOT Shipping Name Nonhazardous DOT Hazard Class Not Restricted DOT UN/NA & N/A
Extinguishing Media Carbon Dioxide, dry chemical or foam.		
Unusual Fire and Explosion Hazards Thermal decomposition can form Carbon Monoxide, Nitrogen Oxides and other toxic fumes.		
Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.		

G S 4 9 4

Product Name: 855 Abrasion Control Liquid Part B

Date: October 15, 1989

Section V — REACTIVITY DATA

Stability Stable**Hazardous Decomposition Products**

Carbon Monoxide, Carbon Dioxide, NOx, aldehydes and other toxic fumes.

Hazardous Polymerization☐ May Occur☒ Will Not Occur**Conditions to Avoid** Open flames and red hot surfaces.**Materials to Avoid** Strong acids, strong oxidizers like liquid Chlorine and concentrated Oxygen.

Section VI — HEALTH HAZARD DATA

Primary Route of Exposure Under Normal Use

Inhalation, skin and eye contact. Personnel with pre-existing allergies, eczema or skin conditions may be aggravated by exposure.

Acute Effects

Direct contact will cause severe irritation to skin, eyes, and mucous membranes. High vapor concentrations can cause severe eye and respiratory tract irritation, headache, dizziness, nausea and possibly shortness of breath.

Chronic Effects

Prolonged or repeated contact may cause asthma, skin sensitization and other allergic reactions.

As per 29 CFR 1910.1200 (Hazard Communication), there are NO carcinogens in this product as listed in the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Health and Safety Administration (OSHA)

Emergency and First Aid Procedures**Inhalation** Remove to fresh air. If not breathing, administer artificial respiration. Contact physician.**Eye/Skin Contact** Flood area with water while removing contaminated clothing. Wash clothing before reuse. Flush eyes for at least 15 minutes with large amounts of water. Consult physician.**Ingestion** If conscious, do not induce vomiting; drink milk, water or vinegar. Contact physician immediately.

Section VII — SPILL OR RELEASE PROCEDURES

Steps to be Taken in Case Material is Spilled or Released

Evacuate area. Provide adequate ventilation. Avoid skin contact. Contain spill to a small area. Pick up with absorbent material (e.g., sand, sawdust, clay, etc.) and transfer to a suitable container for disposal. Flush final traces of spill with water.

Waste Disposal Method Landfill sealed containers in an approved area. Check local, state and federal regulations.

Section VIII — SPECIAL PROTECTION INFORMATION

Respiratory Protection Not normally needed. If necessary, utilize an approved organic vapor respirator.**Protective Gloves** Chemical resistant gloves (e.g., natural rubber or PVC).**Ventilation** No special requirements. If necessary, provide adequate ventilation.**Eye Protection** Safety goggles.**Other** Impervious clothing as necessary to prevent skin contact.

Section IX — SPECIAL PRECAUTIONS

Precautions in Handling and Storing

Store in cool, dry area. Avoid breathing mist.

Other Precautions

Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.

The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purposes.

CHESTERTON.

65495

MATERIAL SAFETY DATA SHEET

A.W. CHESTERTON COMPANY
225 Fallon Road, Middlesex Industrial Park
Stoneham, MA 02180-2999 U.S.A.

Emergency Telephone Nos.
617-438-7000 (Day)
617-438-7013 (Night)

Section I	
Date of Prep. June 1, 1989	HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS) 4 = Severe Hazard 3 = Serious Hazard 2 = Moderate Hazard 1 = Slight Hazard 0 = Minimal Hazard • = See Section VIII - Special Protection Information
MSDS No. 144A-3	
Product Name: 818 Rapid Cure Steel Putty Plus Part A	

HEALTH	1
FLAMMABILITY	1
REACTIVITY	1
Personal Protection	•

General Use and Precautionary Information

Chesterton® Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B; separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.

Section II - HAZARDOUS INGREDIENTS						
Ingredients/Synonyms	Emp. Form	CAS No.	% Wt.	OSHA PEL ppm mg/m ³	ACGIH TLV ppm mg/m ³	Vapor Pressure
Bisphenol A Diglycidyl Ether Resin		25068-38-6	25-35	- -	- -	- -

Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS				
None				X Material marked contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Section III - PHYSICAL DATA		
Initial Boiling Point N/A	Percent Volatile (by volume) < 1	
Vapor Density > 1 (Air = 1)	Evaporation Rate < 1 (Ether = 1)	Weight Per Gallon 17 lbs. (2.06 kg/l)

Section IV - FIRE AND EXPLOSION DATA		
Flash Point 249°C (480°F) Closed Cup	LEL Not Determined	DOT Shipping Name Nonhazardous DOT Hazard Class Not Restricted DOT UN/NA # N/A
Extinguishing Media Carbon Dioxide, dry chemical, foam or water fog.		
Unusual Fire and Explosion Hazards Thermal decomposition can form aldehydes, acids or other toxic fumes.		
Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.		

G S 4 9 5

Product Name: 818 Rapid Cure Steel Putty Plus Part A

Date: June 1, 1989

Section V — REACTIVITY DATA

Stability Stable**Hazardous Decomposition Products**

Carbon Monoxide, aldehydes, acids and other toxic fumes.

Conditions to Avoid None**Hazardous Polymerization**☐ May Occur☒ Will Not Occur**Materials to Avoid** Strong mineral acids, strong oxidizers like liquid Chlorine and concentrated Oxygen

Section VI — HEALTH HAZARD DATA

Primary Route of Exposure Under Normal Use Skin and eye contact. Personnel with pre-existing allergies may be aggravated by exposure**Acute Effects** Moderate eye and skin irritant. May cause skin sensitization as evidenced by rashes or hives.**Chronic Effects** Although the significance is unknown, Bisphenol A Diglycidyl Ether Resin has been shown to be mutagenic in some microbial tests but has failed to show mutagenicity in others. Chromosomal aberrations were observed in cultured rat liver cells

Based on recent 2-year mice skin painting studies and other available information, the International Agency for Research on Cancer (IARC) concluded that they did not have enough information to classify Bisphenol A Diglycidyl Ether Resin

Emergency and First Aid Procedures**Inhalation** N/A**Eye/Skin Contact** Remove contaminated clothing. Wash skin with soap and water. Flush eyes for at least 15 minutes with large quantities of water. Consult physician if irritation persists.**Ingestion** Do not induce vomiting. Contact physician immediately.

Section VII — SPILL OR RELEASE PROCEDURES

Steps to be Taken in Case Material is Spilled or Released

Avoid skin contact. Scoop up and transfer to a suitable container for disposal

Waste Disposal Method Landfill sealed containers in an approved area. Check local, state and federal regulations

Section VIII — SPECIAL PROTECTION INFORMATION

Respiratory Protection Not needed**Ventilation** No special requirements.**Protective Gloves** Chemical resistant gloves (e.g., Neoprene)**Eye Protection** Safety goggles**Other** Impervious clothing as necessary to prevent skin contact

Section IX — SPECIAL PRECAUTIONS

Precautions in Handling and Storing Store in cool, dry area.**Other Precautions** Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.

The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purposes.

SAL 00000

CHESTERTON.

CS496

MATERIAL SAFETY DATA SHEET

A.W. CHESTERTON COMPANY
225 Fallon Road, Middlesex Industrial Park
Stoneham, MA 02180-2999 U.S.A.

Emergency Telephone Nos.
617-438-7000 (Day)
617-438-7013 (Night)

Section I	
Date of Prep. June 1, 1989	HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS) 4 = Severe Hazard 3 = Serious Hazard 2 = Moderate Hazard 1 = Slight Hazard 0 = Minimal Hazard • = See Section VIII - Special Protection Information
MSDS No. 144B-3	
Product Name: 818 Rapid Cure Steel Putty Plus Part B	

HEALTH	2
FLAMMABILITY	1
REACTIVITY	1
Personal Protection	•

General Use and Precautionary Information

Chesterton's Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B, separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.

Section II - HAZARDOUS INGREDIENTS						
Ingredients/Synonyms	EPA Toxic	CAS No.	% Wt.	OSHA-PCL ppm	ACQHTLY mg/m ³	Vapor Pressure
2,4,6-Tri (dimethylaminomethyl) Phenol		90-72-2	5-10	-	-	-

Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS						
None				X Material marked contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.		

Section III - PHYSICAL DATA						
Initial Boiling Point	N/A	Percent Volatile (by volume) < 1				
Vapor Density > 1 (Air = 1)		Evaporation Rate < 1 (Ether = 1)		Weight Per Gallon 8.7 lbs. (1.04 kg)		

Section IV - FIRE AND EXPLOSION DATA		
Flash Point	149°C (300°F) Open Cup	LEL Not Determined
		DOT Shipping Name Nonhazardous DOT Hazard Class Not Restricted DOT UN/NA # N/A
Extinguishing Media	Carbon Dioxide, dry chemical, foam or water fog	
Unusual Fire and Explosion Hazards	Thermal decomposition can form Hydrogen Sulfide and other toxic fumes.	
Special Fire Fighting Procedures	Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.	

Product Name: 818 Rapid Cure Steel Putty Plus Part B

Date: June 1, 1989

Section V — REACTIVITY DATA

Stability Stable

Hazardous Decomposition Products

Hydrogen Sulfide, Carbon Monoxide and other toxic fumes.

Conditions to Avoid None

Materials to Avoid Strong oxidizers like liquid Chlorine and concentrated Oxygen.

Hazardous Polymerization

☐ May Occur

☒ Will Not Occur

Section VI — HEALTH HAZARD DATA

Primary Route of Exposure Under Normal Use

Inhalation, skin and eye contact. Personnel with pre-existing skin, eye and lung conditions may be aggravated by exposure.

Acute Effects

Direct contact causes irritation to skin, eyes and mucous membranes. Vapors cause irritation to eyes, nose and throat. 2,4,6-Tri (dimethylaminomethyl) Phenol may cause skin sensitization as evidenced by rashes or hives.

Chronic Effects

Prolonged or repeated skin and eye contact with 2,4,6-Tri (dimethylaminomethyl) Phenol can cause burns. Vapors/fumes of 2,4,6-Tri (dimethylaminomethyl) Phenol can cause delayed lung damage and chemical pneumonia.

As per 29 CFR 1910.1200 (Hazard Communication), there are NO carcinogens in this product as listed in the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).

Emergency and First Aid Procedures

Inhalation N/A

Eye/Skin Contact

Flood area with water while removing contaminated clothing. Wash clothing before reuse. Wash skin with soap and water. Flush eyes for at least 30 minutes with large quantities of water. Consult physician.

Ingestion

Do not induce vomiting. If conscious, dilute stomach contents with milk or water. Contact physician immediately.

Section VII — SPILL OR RELEASE PROCEDURES

Steps to be Taken in Case Material is Spilled or Released

Evacuate area. Provide adequate ventilation. Scoop up and transfer to a suitable container for disposal. Keep out sewers, streams and waterways.

Waste Disposal Method

Landfill sealed containers in an approved area. Check local, state and federal regulations.

Section VIII — SPECIAL PROTECTION INFORMATION

Respiratory Protection

Not normally needed. If necessary, use approved air supplied respirator.

Protective Gloves

Chemical resistant gloves (e.g., Neoprene).

Ventilation

No special requirements. If necessary, provide adequate ventilation.

Eye Protection

Safety goggles.

Other

Impervious clothing as necessary to prevent skin contact.

Section IX — SPECIAL PRECAUTIONS

Precautions in Handling and Storing

Store in cool, dry area.

Other Precautions

Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.

The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purposes.

CHESTERTON®

GS497

MATERIAL SAFETY DATA SHEET

A.W. CHESTERTON COMPANY
225 Fallon Road, Middlesex Industrial Park
Stoneham, MA 02180-2999 U.S.A.

Emergency Telephone Nos.
617-438-7000 (Day)
617-438-7013 (Night)

Section I														
Date of Prep. June 1, 1989 MSDS No. 143A-3 Product Name: 810 Steel Putty Plus Part A	HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS) 4 = Severe Hazard 3 = Serious Hazard 2 = Moderate Hazard 1 = Slight Hazard 0 = Minimal Hazard • • See Section VIII - Special Protection Information													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">HEALTH</td> <td style="width: 20%; text-align: center;">1</td> </tr> <tr> <td>FLAMMABILITY</td> <td style="text-align: center;">1</td> </tr> <tr> <td>REACTIVITY</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Personal Protection</td> <td style="text-align: center;">•</td> </tr> </table>							HEALTH	1	FLAMMABILITY	1	REACTIVITY	1	Personal Protection	•
HEALTH	1													
FLAMMABILITY	1													
REACTIVITY	1													
Personal Protection	•													
General Use and Precautionary Information Chesterton® Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B, separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.														
Section II - HAZARDOUS INGREDIENTS														
<i>Ingredients/Synonyms</i>	<i>Emp. Index</i>	<i>CAS No.</i>	<i>% Wt.</i>	<i>OSHA-PEL ppm mg/m3</i>	<i>ACGIH-TLV ppm mg/m3</i>	<i>Vapor Pressure</i>								
Bisphenol A Diglycidyl Ether Resin		25068-38-6	35-45	- -	- -	--								
Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS														
None				x Material marked contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.										
Section III - PHYSICAL DATA														
Initial Boiling Point N/A		Percent Volatile (by volume) < 1												
Vapor Density > 1 (Air = 1)		Evaporation Rate < 1 (Ether = 1)		Weight Per Gallon 17 lbs. (2.06 kg/l)										
Section IV - FIRE AND EXPLOSION DATA														
Flash Point 249°C (480°F) Closed Cup		LEL Not Determined		DOT Shipping Name Nonhazardous DOT Hazard Class Not Restricted DOT UN/NA # N/A										
Extinguishing Media Carbon Dioxide, dry chemical, foam or water fog.														
Unusual Fire and Explosion Hazards Thermal decomposition can form aldehydes, acids or other toxic fumes.														
Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.														

GS497

Product Name: 810 Steel Putty Plus Part A

Date: June 1, 1989

Section V — REACTIVITY DATA

Stability Stable Hazardous Decomposition Products Carbon Monoxide, aldehydes, acids and other toxic fumes. Hazardous Polymerization ☐ May Occur ☒ Will Not Occur	Conditions to Avoid None Materials to Avoid Strong mineral acids, strong oxidizers like liquid Chlorine and concentrated Oxygen.
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Section VI — HEALTH HAZARD DATA

Primary Route of Exposure Under Normal Use	Skin and eye contact. Personnel with pre-existing allergies may be aggravated by exposure.
Acute Effects	Moderate eye and skin irritant. May cause skin sensitization as evidenced by rashes or hives.
Chronic Effects	Although the significance is unknown, Bisphenol A Diglycidyl Ether Resin has been shown to be mutagenic in some microbial tests but has failed to show mutagenicity in others. Chromosomal aberrations were observed in cultured rat liver cells. Based on recent 2-year mice skin painting studies and other available information, the International Agency for Research on Cancer (IARC) concluded that they did not have enough information to classify Bisphenol A Diglycidyl Ether Resin.
Emergency and First Aid Procedures	
Inhalation	N/A
Eye/Skin Contact	Remove contaminated clothing. Wash skin with soap and water. Flush eyes for at least 15 minutes with large quantities of water. Consult physician if irritation persists.
Ingestion	Do not induce vomiting. Contact physician immediately.

Section VII — SPILL OR RELEASE PROCEDURES

Steps to be Taken in Case Material is Spilled or Released
Avoid skin contact. Scoop up and transfer to a suitable container for disposal.
Waste Disposal Method Landfill sealed containers in an approved area. Check local, state and federal regulations.

Section VIII — SPECIAL PROTECTION INFORMATION

Respiratory Protection Not needed.	Protective Gloves Chemical resistant gloves (e.g., Neoprene).
Ventilation No special requirements.	Eye Protection Safety goggles.
	Other Impervious clothing as necessary to prevent skin contact.

Section IX — SPECIAL PRECAUTIONS

Precautions in Handling and Storing Store in cool, dry area.	
Other Precautions	Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.

The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purposes.

CHESTERTON®

65498

MATERIAL SAFETY DATA SHEET

A.W. CHESTERTON COMPANY
225 Fallon Road, Middlesex Industrial Park
Stoneham, MA 02180-2999 U.S.A.

Emergency Telephone No:
617-438-7000 (Day)
617-438-7013 (Night)

Section I

Date of Prep. June 1, 1989

MSDS No. 1438-3

Product Name: 810 Steel Putty Plus Part B

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard
0 = Minimal Hazard

HEALTH	3
FLAMMABILITY	2
REACTIVITY	1
Personal Protection	*

- See Section VIII - Special Protection Information

General Use and Precautionary Information

Chesterton® Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B; separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.

Section II - HAZARDOUS INGREDIENTS

Ingredients/Synonyms	CP 100%	CAS No.	% Wt.	OSHA-PEL ppm mg/m ³	ACGIH-TL ppm mg/m ³	Vapor Pressure
Methylene Triamine		111-40-0	<25	1 4	1 (skin) 4	--
Phenol	x	108-95-2	<2	5 (skin) 19	5 (skin) 19	-

Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS

None				x Material marked contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372
------	--	--	--	---

Section III - PHYSICAL DATA

Initial Boiling Point N/A

Percent Volatile (by volume) < 1

Vapor Density > 1
(Air = 1)

Evaporation Rate < 1
(Ether = 1)

Weight Per Gallon 8.3 lbs (1.0 kg)

Section IV - FIRE AND EXPLOSION DATA

Flash Point 76°C (168°F)
Closed Cup

LEL Not Determined

DOT Shipping Name Corrosive Liquid, n.o.s.
DOT Hazard Class Corrosive
DOT UN/NA # UN1760

Extinguishing Media Carbon Dioxide, dry chemical or foam

Unusual Fire and Explosion Hazards Thermal decomposition can form Phenol, Amines and other toxic fumes.

Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus

65498

Product Name: 810 Steel Putty Plus Part B		Date: June 1, 1989
Section V — REACTIVITY DATA		
Stability Stable Hazardous Decomposition Products Carbon Monoxide, Phenol, Amines and other toxic fumes. Hazardous Polymerization ☐ May Occur ☒ Will Not Occur	Conditions to Avoid Open flames and red hot surfaces. Materials to Avoid Strong oxidizers like liquid Chlorine and concentrated Oxygen.	
Section VI — HEALTH HAZARD DATA		
Primary Route of Exposure Under Normal Use Inhalation, skin and eye contact.		
Acute Effects Direct contact will cause burns to skin, eyes, and mucous membranes. High vapor concentrations can cause severe eye and respiratory tract irritation, nausea and vomiting.		
Chronic Effects Prolonged or repeated contact may cause asthma, skin sensitization and other allergic reactions. As per 29 CFR 1910.1200 (Hazard Communication), there are NO carcinogens in this product as listed in the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA).		
Emergency and First Aid Procedures Inhalation Remove to fresh air. If not breathing, administer artificial respiration. Contact physician. Eye/Skin Contact Flood area with water while removing contaminated clothing. Wash clothing before reuse. Flush eyes for at least 30 minutes with large amounts of water. Consult physician. Ingestion If conscious, do not induce vomiting; drink milk, water or vinegar. Contact physician immediately.		
Section VII — SPILL OR RELEASE PROCEDURES		
Steps to be Taken in Case Material is Spilled or Released Evacuate area. Provide adequate ventilation. Avoid skin contact. Scoop up and transfer to a suitable container for disposal.		
Waste Disposal Method Landfill sealed containers in an approved area. Check local, state and federal regulations.		
Section VIII — SPECIAL PROTECTION INFORMATION		
Respiratory Protection Not normally needed. If necessary, utilize an approved air supplied respirator. Ventilation No special requirements. If necessary, provide adequate ventilation.	Protective Gloves Chemical resistant gloves (e.g., natural rubber or PVC). Eye Protection Safety goggles. Other Impervious clothing as necessary to prevent skin contact.	
Section IX — SPECIAL PRECAUTIONS		
Precautions in Handling and Storing None		
Other Precautions Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.		
The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purposes.		



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5209 ANTIFOULANT

Emergency Telephone Number

Medical (312) 920-1510 (24 hours)*

*Effective November 11, 1989, the area code will be changed to 708.

GS611

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 5209 ANTIFOULANT

DESCRIPTION: An alkyl aryl diamine in a heavy aromatic naphtha

NFPA 704M/HMIS RATING: 1/1 HEALTH 2/2 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX.%
Heavy aromatic naphtha	64742-94-5	40+
Naphthalene	91-20-3	1-10

SECTION 3 PRECAUTIONARY LABEL INFORMATION

CAUTION: Combustible. May cause irritation to skin and eyes. Prolonged inhalation of vapor may be harmful. Avoid contact with skin, eyes, and clothing. Avoid prolonged or repeated breathing of vapor. Use with adequate ventilation. Do not take internally. Keep away from heat and open flame. Keep container closed when not in use.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. Call a physician.
SKIN: Wash thoroughly with soap and rinse with water. Call a physician.
INGESTION: Do not induce vomiting. Give water. Call a physician.
INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water.



GS611

MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5209 ANTIFOULANT

Emergency Telephone Number

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SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: May cause irritation depending on the duration of exposure.
SKIN CONTACT: Can cause transient to moderate irritation.
INHALATION: Prolonged inhalation of vapor may be harmful.

SYMPTOMS OF EXPOSURE:

ACUTE: Inhalation of high concentrations of heavy aromatic naphtha can cause nausea, dizziness, vomiting, stupor or unconsciousness.

CHRONIC: Prolonged skin contact with heavy aromatic naphtha can cause dry skin and defatting resulting in irritation and dermatitis.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: Acute toxicity studies have been conducted on this product. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS): $LD_{50} = 3.4 \text{ g/kg}$

95% Confidence Limit = 2.6 - 4.4 g/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS): $LD_{50} = \text{Greater than } 2 \text{ g/kg}$

COMMENTS: 2.0 g/kg applied to the backs of test animals failed to produce mortality.

PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):

SKIN IRRITATION INDEX DRAIZE RATING: 4.2/8.0

COMMENTS: Slight redness was noted at all sites 24 hours after contact. Irritation increased at 72 hours in one-half of the test sites. Swelling increased in intensity from slight to moderate at 72 hours.

PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):

EYE IRRITATION INDEX DRAIZE RATING: 8/110.0 Minimally irritating

COMMENTS: Corneal opacities and iritis were not noted. Only slight conjunctivitis was observed at one hour. By day three, all eyes appeared normal.



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5209 ANTIFOULANT

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GS611

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Dark red	FORM: Liquid	ODOR: Hydrocarbon
DENSITY: 7.5 - 7.7 lbs/gal.		
SOLUBILITY IN WATER: Insoluble		
SPECIFIC GRAVITY: 0.91 @ 60 Degrees F		ASTM D-1298
pH (at 20%) = 8.7		ASTM E-70
VISCOSITY: 48 SUS @ 100 Degrees F		ASTM D-2983
POUR POINT: -10 Degrees F		ASTM D-97
FLASH POINT: 172 Degrees F (TCC)		ASTM D-56
PERCENT VOLATILE BY WEIGHT: 1 @ 75 Degrees F		

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: 172 Degrees F (TCC) ASTM D-56

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, alcohol foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For large fires, use water spray or fog, thoroughly drenching the burning material.

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NO_x under fire conditions.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Do not use with rubber, vinyl, polyethylene, PVC, Buna-N, polypropylene, ethylene isopropylene, or polyurethane.

Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, NO_x may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed since the volatility and toxicity are low. If significant vapors, or mists are generated, wear a NIOSH approved or equivalent respirator, (ANSI Z 88.2, 1980 for requirements and selection).

For large spills, entry into large tanks, vessels or enclosed small



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MATERIAL SAFETY DATA SHEET

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SECTION 10 PERSONAL PROTECTION EQUIPMENT

(CONTINUED)

spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended. Additionally, local exhaust ventilation is recommended where vapors, mists or aerosols may be released.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles (ANSI Z 87.1 requirements and selection of gloves, goggles, shoes, etc.) when attaching feeding equipment or doing maintenance.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

DISPOSAL: If this product becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, (i.e. D001 through D017) nor is it listed under Subpart D.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be incinerated in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

If released into the environment, see CERCLA in Section 14.

SAL 000006557

PAGE 4 OF 8



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5209 ANTIFOULANT

Emergency Telephone Number

CS611

Medical (312) 920-1510 (24 hours)*

*Effective November 11, 1989, the area code will be changed to 708.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - COMBUSTIBLE LIQUID, N.O.S.
COMBUSTIBLE LIQUID NA 1993
CONTAINS - AROMATIC HYDROCARBONS,
NAPHTHALENE

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, the following ingredient in this product is hazardous and the reason is shown below.

Heavy aromatic naphtha - Skin irritant, combustible
Naphthalene - Irritant

Naphthalene = TWA 10 ppm, STEL 15 ppm ACGIH/TLV
52 mg/m³, 79 mg/m³ ACGIH/TLV

Naphthalene = TWA 10 ppm, STEL 15 ppm OSHA/PEL
50 mg/m³, 75 mg/m³ OSHA/PEL

Heavy aromatic naphtha = 100 ppm TLV
Manufacturer's recommendation

CERCLA, 40 CFR 117, 302:

This product contains naphthalene, a Reportable Quantity (RQ) substance and if 1,400 pounds of product are released, it requires notification to the NATIONAL RESPONSE CENTER, WASHINGTON, D. C. (1-800-424-8802).

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS
(40 CFR 370):

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:



65611

MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5209 ANTIFOULANT

Emergency Telephone Number

Medical (312) 920-1510 (24 hours)*

*Effective November 11, 1989, the area code will be changed to 708

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

- XX Immediate (acute) health hazard
- Delayed (chronic) health hazard
- XX Fire hazard
- Sudden release of pressure hazard
- Reactive hazard

Under Section 311, submittal of MSDS's or a list of product names to the local emergency planning commission, state emergency response commission and local fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever is less, of an extremely hazardous substance.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product contains the following ingredient(s), (with CAS # and % range) which appear(s) on the List of Toxic Chemicals.

Naphthalene	91-20-3	1-10
-------------	---------	------

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

REGISTERED WITH THE U. S. EPA, OFFICE OF FUEL AND FUEL ADDITIVE REGISTRATION, as a fuel additive.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:

If this product becomes a waste, it does not meet the criteria of a hazardous waste.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 (formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

This product contains the following ingredient covered by the Clean Water Act:

Naphthalene - Section 307, 311

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:



MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5209 ANTIFOULANT

Emergency Telephone Number

68611

Medical (312) 920-1510 (24 hours)*

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SECTION 14 REGULATORY INFORMATION

(CONTINUED)

None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:

This product does not contain ingredients listed on the Michigan Critical Materials Register.

STATE RIGHT TO KNOW LAWS:

Regulated in those states using the TLV for naphthalene as a criteria for listing.

SECTION 15 ADDITIONAL INFORMATION

None

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Admur, M. O., eds., Macmillian Publishing Company, Inc., N. Y., 2nd edition, 1980.

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.



GS611

MATERIAL SAFETY DATA SHEET

PRODUCT NALCO 5209 ANTIFOULANT

Emergency Telephone Number

Medical (312) 920-1510 (24 hours)*

*Effective November 11, 1989, the area code will be changed to 708.

SECTION 17 BIBLIOGRAPHY

(CONTINUED)

PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

PREPARED BY: John J. Kasper, MSc., Manager Product Safety

DATE CHANGED: 11/29/89

DATE PRINTED: 01/06/90

GS180

M A T E R I A L S A F E T Y D A T A S H E E T P A G E : 1
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 13 NOV 79

PRODUCT CODE: 38698

PRODUCT NAME: GLYCERINE, USP

MSD: 0165

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS)

: % :

GLYCERINE, MINIMUM

: 99.5 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 554F, 290C : SOL. IN WATER: MISCIBLE
VAP PRESS: 1.0 MMHG @ 20C : SP. GRAVITY: 1.2607 @ 25/25 (MIN.)
VAP DENSITY (AIR=1): 3.1 : % VOLATILE BY VOL: VERY LOW
APPEARANCE AND ORDER: WATER WHITE — ODORLESS LIQUID.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 390F, 199C : FLAMMABLE LIMITS (STP IN AIR)
METHOD USED: PENSKY MARTENS C.C. : LFL: NOT DETER. UFL: NOT DETER.
EXTINGUISHING MEDIA: WATER FOG, ALCOHOL FOAM, CO2, DRY CHEMICAL.
SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: NONE. AUTOIGNITION
TEMPERATURE 698F, 370C.

SECTION 3

REACTIVITY DATA

STABILITY: ----
INCOMBATIBILITY: OXIDIZING MATERIAL.
HAZARDOUS DECOMPOSITION PRODUCTS: ACROLEIN.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS: SMALL LEAKS -
ABSORB, SWEEP UP AND BURN. LARGE SPILLS - FLUSH TO SEWER WITH WATER.
DISPOSAL METHOD: BURN OR DILUTE WITH COPIOUS AMOUNTS OF WATER.

SECTION 5

HEALTH HAZARD DATA

INGESTION: LOW SINGLE AND REPEATED DOSE TOXICITY.
EYE CONTACT: SLIGHT TRANSIENT IRRITATION.
SKIN CONTACT: ESSENTIALLY NON-IRRITATING.
SKIN ABSORPTION: NOT LIKELY TO BE ABSORBED THROUGH SKIN.
INHALATION: ACGIH TLV IS 10 MG/M3 AS A NUISANCE MIST (1979).
EFFECTS OF OVEREXPOSURE: IRRITATION.

(CONTINUED ON PAGE 2)

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

APR 24

255188

GS180

M A T E R I A L S A F E T Y D A T A S H E E T P A G E : 2
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 13 NOV 79
PRODUCT (CONT'D): GLYCERINE, USP, 99.5%

PRODUCT CODE: 38698
MSD: 0165

SECTION 6

FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES:

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES IS GOOD SAFETY PRACTICE.

SKIN: WASH OFF IN FLOWING WATER.

INHALATION: FAIRREMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.

INGESTION: LOW IN TOXICITY. INDUCE VOMITING IF LARGE AMOUNTS ARE INGESTED.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE MILD IRRITATION. STAIN FOR EVIDENCE OF CORNEAL INJURY. INJURY IS UNLIKELY.

SKIN: INJURY IS UNLIKELY. NOT LIKELY TO BE ABSORBED IN ACUTELY TOXIC AMOUNTS.

RESPIRATORY: SHOULD AVOID HEATED VAPORS. MAY CAUSE SEVERE IRRITATION WITH OVEREXPOSURE. ADMINISTER OXYGEN IF AVAILABLE. BRONCHODILATORS, EXPECTORANTS, AND ANTITUSSIVES MAY BE OF HELP.

ORAL: LOW IN TOXICITY.

SYSTEMIC: RAT STUDIES INDICATE THAT KIDNEY IS TARGET ORGAN WITH OVEREXPOSURE. CONSULT STANDARD LITERATURE. NO SPECIFIC ANTIDOTE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7

SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF MIST TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: NONE NORMALLY NEEDED.

PROTECTIVE CLOTHING: NONE REQUIRED.

EYE PROTECTION: NOT NORMALLY NECESSARY.

SECTION 8

SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: PRACTICE REASONABLE CARE AND CAUTION.

ADDITIONAL INFORMATION: REVISIONS 11/13/79 -- SECTIONS 3, 5, 6, 7.

LAST PAGE

(R) INDICATES A REGISTERED OR TRADEMARK NAME OF THE DOW CHEMICAL COMPANY

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESS OR IMPLIED, IS MADE.

APR 2 1984

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29427

M A T E R I A L S A F E T Y D A T A S H E E T
EM SCIENCE
A DIVISION OF EM INDUSTRIES
111 WOODCREST
CHERRY HILL, N.J. 08034-0395

PREPARATION DATE: OCT 27, '87

INFORMATION PHONE NUMBER.:
(609) 354-9200
CHEMTREC EMERGENCY NUMBER:
1-800-424-9300

NFPA HAZARD RATINGS

HEALTH: 3 FLAMMABILITY: 0
REACTIVITY : 0 SPECIAL HAZARDS.: N/A

SECTION I - GENERAL INFORMATION
CATALOG NUMBER(S): MX0398 MX0400 MX0405 4404
CHEMICAL NAME.....: MERCURY
TRADE NAME.....: QUICK SILVER
C.A.S. NUMBER.....: 7439-97-6
CHEMICAL FAMILY...: METALLIC ELEMENT
FORMULA.....: HG
MOLECULAR WEIGHT.: 200.59
DOT SHIPPING NAME: N/A
DOT NUMBER.....: N/A

CS588

SECTION II - HAZARDOUS INGREDIENTS
-NONE OTHER THAN SPECIFIED PRODUCT

SECTION III- PHYSICAL DATA
BOILING POINT (C 760 MM HG): 357C
MELTING POINT (C).....: -39C
SPECIFIC GRAVITY(H₂O = 1)....: 13.55
VAPOR PRESSURE..(MM HG).....: 0.001 20C
PERCENT VOLATILE BY VOL (%)..: 99+ ●
VAPOR DENSITY (AIR=1).....: N/A
EVAPORATION RATE (BUAC=1)....: N/A
SOLUBILITY IN WATER (%).....: INSOLUBLE
APPEARANCE AND ODOR.....: SILVERY-GRAY
HEAVY LIQUID

SECTION IV - FIRE & EXPLOSION HAZARD DATA
FLASH POINT (F).....: NONCOMBUSTIBLE
FLAMMABLE LIMITS LEL %.: N/A
FLAMMABLE LIMITS UEL %.: N/A
EXTINGUISHING MEDIA.....:
ANY SUITABLE FOR SURROUNDING MATERIALS

MSDS-MX0398 PAGE # : 01

GS588

FIRE FIGHTING PROC.....:

WEAR SELF-CONTAINED BREATHING APPARATUS

FIRE & EXPL. HAZARDS...:

-EMITS EXTREMELY TOXIC MERCURY VAPOR AT HIGH TEMPERATURES

SECTION V - HEALTH HAZARD DATA (ACUTE AND CHRONIC)

ACGIH TLV/OSHA PEL (TWA).....:

0.05 MG/CU.M. (TWA)

OSHA-PEL: 0.1 MG/CU.M. (CL)

TOXICITY DATA.....:

-IHL-MAN TCLO: 44.3 MG/M3/8H IHL-RBT LCLO: 29 MG/M3/30H

SYMPTOMS OF EXPOSURE

-HIGHLY TOXIC BY VAPOR INHALATION; SYMPTOMS: METALLIC TASTE, NAUSEA, ABDOMINAL PAIN, DIARRHEA, HEADACHE, ALBUMINUREA
PROLONGED OR REPEATED EXPOSURE MAY CAUSE MUSCLE TREMORS, CENTRAL NERVOUS SYSTEM DISTURBANCES, KIDNEY, HEART, LUNG AND BRAIN DAMAGE

CAN BE ABSORBED THROUGH SKIN AND GI TRACT

MEDICAL COND. AGGRAVATED BY EXP: DATA NOT AVAILABLE.

ROUTES OF ENTRY.....: INHALATION, INGESTION OR SKIN CONTACT.

CARCINOGENICITY.....: SEE COMMENTS, SECTION X; IF NO INFORMATION APPEARS, THE MATERIAL IS NOT LISTED AS A CANCER CAUSING AGENT.

EMERGENCY FIRST AID.....:

SKIN: WASH THOROUGHLY WITH SOAP AND WATER

EYES: FLUSH THOROUGHLY WITH WATER

INHALATION: REMOVE TO FRESH AIR *

INGESTION: IF CONSCIOUS, INDUCE VOMITING

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE

* (GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED)

SECTION VI - REACTIVITY DATA

STABILITY.....: YES

CONDITIONS TO AVOID

-HEAT

MATERIALS TO AVOID.....: () WATER () ACIDS

() BASES () CORROSIVES () OXIDIZERS

(X) OTHER (SPECIFY)- ACETYLENIC COMPOUNDS, AMMONIA, ETHYLENE OXIDE

HAZARDOUS POLYMERIZATION.: DATA NOT AVAILABLE.

HAZARDOUS DECOMPOSITION..: -N/A

SECTION VII - ENVIRONMENTAL PROTECTION PROCEDURES

SPILL RESPONSE:

-TAKE UP WITH SUCTION AND CONTAINERIZE FOR RECLAMATION OR PROPER DISPOSAL

WASTE DISPOSAL: TO BE PERFORMED IN COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION INFORMATION

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION:

-MATERIAL MUST BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD

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OR WITH EQUIVALENT VENTILATION
PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO
PREVENT SKIN CONTACT
SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES

SECTION IX - SPECIAL PROTECTION INFORMATION

HANDLING & STORAGE

-KEEP CONTAINER CLOSED AND AWAY FROM HEAT
DO NOT BREATHE VAPOR
DO NOT GET IN EYES, ON SKIN OR ON CLOTHING
AVOID PROLONGED OR REPEATED SKIN CONTACT
DO NOT TAKE INTERNALLY
WASH THOROUGHLY AFTER HANDLING
WORK/HYGIENIC PRACTICES: WASH THOROUGHLY AFTER HANDLING. DO NOT TAKE
INTERNALLY. EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

SECTION X - OTHER INFORMATION

COMMENTS.....:

-* (SUBLIMES)

TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY CAUSE TUMORS
AND MAY PRODUCE ADVERSE MUTAGENIC AND REPRODUCTIVE EFFECTS

REV. 9/86

REVISION HISTORY.....: 12/01/81, N/A
OCT 27, '87

N/A = NOT AVAILABLE:

MSDS-MX0398

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SAL 000006566

MATERIAL SAFETY DATA SHEET
EASTMAN KODAK COMPANY

Date of Revision: 10/5/89

Kodak Accession Number: 427769

PRODUCT INFORMATION

Product Name: KODAK PROSTAR Plus Developer

GS608

Formula: Aqueous Mixture

Kodak Catalog Number(s): Cat 102 2490 - 1 Gallon

Solution Number: 4874

Kodak Hazard Rating Codes: R: 1 S: 2 F: 0 C: 0

Manufacturer/Supplier:

Eastman Kodak Company

343 State Street

Rochester, New York 14650

USA

For Emergency Information: (716) 722-5151

For other purposes, call the Marketing and Distribution Center in your area.

COMPONENT INFORMATION

	Weight Percent	CAS Number	Accession Number
Water	85-90	7732-18-5	035290
Sodium sulfite	1-5	7757-83-7	901148
Potassium sulfite	1-5	10117-38-1	347367
Potassium carbonate	1-5	584-08-7	900409
Hydroquinone	2	123-31-9	900356

*Principal Hazardous Component(s)

**Chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments & Reauthorization Act of 1986 and 40 CFR Part 372.

PHYSICAL DATA

Appearance and Odor: Clear, light yellow solution; odorless

Boiling Point: GT 100 C (GT 212 F)

Vapor Pressure: ca. 18 mmHg @ 20 C

Evaporation Rate (n-butyl acetate = 1): ca. 0.36

Vapor Density (Air = 1): ca. 0.6

Volatile Fraction by Weight: ca. 85 %

Specific Gravity (H2O = 1): 1.10

pH: ca. 10.6

Solubility in Water (by Weight): Complete

GT = Greater than; LT = Less than

C-0112.350D

83-0336

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FIRE AND EXPLOSION HAZARD

=====

FLASH POINT: None, noncombustible

EXTINGUISHING MEDIA: Use appropriate agent for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Fire or excessive heat may cause production of hazardous decomposition products.

=====

REACTIVITY DATA

=====

STABILITY: Stable

INCOMPATIBILITY: Mineral acids

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce oxides of sulfur.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Will not occur.

=====

TOXICOLOGICAL PROPERTIES

=====

EXPOSURE LIMITS:

Component: Hydroquinone

ACGIH TLV: 2 mg/m³-TWA (ACGIH 1988-89)OSHA PEL: 2 mg/m³-TWA

EXPOSURE EFFECTS:

Inhalation: Low hazard for recommended handling.

Eyes: Liquid may cause irritation.

Skin: Prolonged or repeated skin contact may cause skin irritation. May cause an allergic skin reaction.

Ingestion: Expected to be a low ingestion hazard.

=====

PROTECTION AND PREVENTIVE MEASURES

=====

VENTILATION: Good general ventilation* should be sufficient.

*Typically 10 room volumes per hour is considered good general ventilation:

Ventilation rates should be matched to conditions of use.

SKIN AND EYE PROTECTION: Safety glasses with side shields are recommended. Impervious gloves should be worn. The routine use of a non-alkaline (acid) type of hand cleaner will help minimize the possibility of allergic skin reaction.

=====

STORAGE AND DISPOSAL

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SPECIAL STORAGE AND HANDLING PRECAUTIONS: Avoid contact with mineral acids.

SPILL, LEAK, AND DISPOSAL PROCEDURES: Flush material to an acid-free sewer with large amounts of water. Discharge, treatment, or disposal may be subject to federal, state, or local laws.

=====

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FIRST AID

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Eyes: Immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if any symptoms are present after washing.

Skin: Flush skin with plenty of soap and water. If skin irritation or an allergic skin reaction develops, get medical attention. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Drink 1-2 glasses of water. Seek medical attention.

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ENVIRONMENTAL EFFECTS DATA

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This environmental effects summary is written to assist in addressing emergencies created by an accidental spill, which might occur during the shipment of this product, and in general, it is not meant to address discharges to sanitary sewers or publically owned treatment works.

Some laboratory test data and published data are available for the major components of this formulation. Although this product, as such, has not been tested for environmental effects, the data, mentioned above, have been used to provide the following estimates of potential environmental impact, in the event of an accidental spill: (1-12)

This chemical formulation is a moderately alkaline aqueous solution, and this property may cause adverse environmental effects. It is expected to have a low biological oxygen demand, and it is not expected to cause oxygen depletion in aquatic systems. It is expected to have a high potential to affect aquatic organisms and a moderate potential to affect the germination and growth of some plants. It is expected to have a moderate potential to affect the germination and growth of some plants. The organic components of this chemical formulation are biodegradable and are not expected to persist in the environment. They are not likely to bioconcentrate. The direct instantaneous discharge to a receiving body of water of an amount of this formulation which will rapidly produce, by dilution, a final concentration of 0.25 mg/L, or less, is not expected to cause an adverse environmental effect. After dilution with a large amount of water, followed by secondary waste treatment, the chemicals in this formulation are not expected to have any adverse environmental impact.

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TRANSPORTATION

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For Transportation information regarding this product, please phone the Eastman Kodak Distribution Center nearest you: Rochester, NY (716) 588-9293; Oak Brook, IL (312) 954-6000; Chamblee, GA (404) 455-0123; Dallas, TX (214) 241-1611; Whittier, CA (213) 693-5222; Honolulu, HI (808) 833-1661.

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REFERENCES

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12. Pomona College, Medicinal Chemistry Project, Chemical Parameter Data Base, Leo, A.J. and Hansch, C., Eds., Seaver Chemistry Laboratory, Claremont, CA, June 20, 1987.

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PREPARATION INFORMATION

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Health and Environment Laboratories
Eastman Kodak Company
Rochester, New York 14652-3615

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The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must take independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

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C-0112.350D
83-0336



GRAPHITE METALLIZING

CORPORATION

1050 Nepperhan Avenue, P.O. Box 110, YONKERS, NY 10702

Tel: 914-968-8400 TELEX: 13-1571 FAX: 914-968-8468

Engineered GRAPHALLOY Products since 1913.

DS-2095-10
5/17/88

MATERIAL SAFETY DATA SHEET

SECTION I

G S 6 0 9

Chemical name and Synonyms: Impregnated graphite/carbon

Trade name and Synonyms: GRAPHALLOY®

Chemical Family: Mixture of carbon, graphite, and resin or metal (Normally, only a few of the metals indicated will be present in any one piece of material)

SECTION II - INGREDIENTS

GRAPHALLOY May contain a combination of these materials:

	%	TLV (UNITS)
Carbon (C) including natural and synthetic graphite	40 - 60	10.0 mg/M ³ ***
Lead (Pb) (7439-92-1) (See Section V)	0 - 50	50.0 ug/M ³ *
Antimony (Sb) (7440-36-0)	0 - 50	0.5 mg/M ³ **
Tin (Sn) (7440-31-5)	0 - 5	2.0 mg/M ³ **
Copper (Cu) (7440-50-8) as dust	0 - 50	2.0 mg/M ³
Cast Iron (Fe) (7439-89-6)	0 - 50	5.0 mg/M ³ ***
Boron (B) (7440-42-8)	0 - 2	10.0 mg/M ³ ***
Nickel (Ni) (7440-02-0) (See Section V)	0 - 50	1.0 mg/M ³ **
Chromium (Cr) (7440-47-3)	0 - 10	0.5 mg/M ³ **
Silver (Ag) (7440-22-4)	0 - 50	0.1 mg/M ³ **
Traces of other metals are possible		
Resin	0 - 30	10.0 mg/M ³ ***

* OSHA Regulations

** ACGIH 1988-89

*** Nuisance particulate

SECTION III - PHYSICAL DATA

Boiling Point - Melts (at or above) 475°F (Lead Alloys Only)
Boils 2900°F

Specific Gravity (H₂O=1) — 1.8 - 3.5

Vapor Pressure (mm Hg) - not applicable

Percent Volatile by Volume (%) - not applicable

Vapor Density (Air=1) - not applicable

Evaporation Rate - negligible

Solubility in Water - negligible

Appearance and Order - odorless, various shapes and sizes, black to grey

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used) - not applicable

Flammable Limits - not applicable

Extinguishing Media - normal fire fighting techniques

Special Fire Fighting Procedures - normal fire fighting techniques plus approved breathing apparatus and full protective clothing.

Unusual Fire and Explosion Hazards - Dust will be electrically conductive and may contribute to fire hazard. Solids and dust may contribute to fire. Lead, lead oxide, antimony, and tin fumes and dust are hazardous.

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SECTION V - HEALTH HAZARD DATA

Threshold Limit Value - See Section II

Effects of Overexposure - Ingestion of dust particles or breathing of dust or fumes may lead to metal poisoning. Refer to OSHA standards and industrial hygiene references. Hexavalent chromium has been listed as a cancer agent by the ACGIH (chromium metal has not been listed).

Emergency First Aid Procedures - Remove from exposure; consult physician at once.

LEAD Molten lead alloys consisting of tin and antimony do not produce significant quantities of fume below 900°F

The present U.S. Department of Labor (OSHA) standard limit for occupational exposure to lead as referenced in CFR-Title 29 part 1910.1025 is 50 micrograms (50ug/M³) based on an 8 hour time-weighted average. This standard states that when the air of work-rooms contain regularly not more than 50 ug/M³ of inorganic lead and its inorganic compounds per cubic meter of air, as measured by prescribed methods, cases of lead intoxication will not occur.

As a matter of good industrial hygiene, it is recommended that when lead alloys of tin and antimony are melted, adequate local exhaust ventilation be employed. Maintain the threshold limit value (TLV) below 50 ug /M³ for lead equal to 0.05 mg/M³.

NICKEL Inhalation: The national Toxicology has listed nickel oxide as possible cancer hazards. The International Agency for Research on Cancer concluded there was sufficient evidence that nickel refining was carcinogenic to humans and limited evidence that nickel and certain nickel compounds were carcinogenic to humans. IARC could not state with certainty which forms of nickel are human carcinogens but said "...metallic nickel seems less likely to be so than nickel subsulphide or nickel oxides." The inhalation of nickel powder has not resulted in an increased incidence of malignant tumors in rodents. Studies of workers exposed to nickel powder and to dust and fume-generated in the production of nickel alloys and stainless steel have not indicated a respiratory cancer hazard.

Inhalation may cause irritation to upper respiratory tract. Acute inhalation case LC50 in rats is greater than 10 mg/L.

Skin: Repeated contact with metallic nickel can cause nickel sensitivity resulting in allergic reaction such as skin rashes. Repeated contact is not likely to cause absorption in toxic quantities.

Ingestion: Single dose oral toxicity is minimal, amounts ingested in industrial use are unlikely to cause injury. (Acute oral case LD50 in rats is greater than 500 mg/kg.

SECTION VI - REACTIVITY DATA

Unstable in Strong oxidizing acids; other strong oxidants.

Incompatibility (Materials to Avoid) - Strong oxidizing acids; other strong oxidants. Avoid acetylene, ammonia nitrate, bromates, chlorates, iodates, Cl and F1 gas, and hydrogen sulfide.

Hazardous Decomposition Products - CO, CO², SO²

Hazardous Polymerization /Will not occur.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled - Sweep, shovel, vacuum with approved device.

Waste Disposal Method - Dispose in accordance with Federal, State and Local regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection - Approved respirators if dust generated in excess of PEL.

Ventilation /Local Exhaust: Recommended to minimize dust.

Special: Not applicable

Mechanical (General): Not applicable

Other: Not applicable

Protective Gloves - Recommended

Eye Protection - Safety glasses

Other Protective Equipment - Full protective clothing when required by fumes or dusts.

SECTION IX - SPECIAL PRECAUTIONS

SAL 000006572

Precautions to be taken in Handling and Storing - Minimize Dust; minimize accumulation.

CAUTION: The dust generated from cutting, grinding, or machining the solid material will be toxic to some degree, depending on the metal and the amount of secondary work.

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GS609

SECTION V - HEALTH HAZARD DATA

Threshold Limit Value - See Section II

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Incompatibility (Materials to Avoid) - Strong oxidizing acids; other strong oxidants. Avoid acetylene, ammonia nitrate, bromates, chlorates, iodates, Cl and FI gas, and hydrogen sulfide.

Hazardous Decomposition Products - CO, CO², SO²

Hazardous Polymerization /Will not occur.

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Steps to be taken in case material is released or spilled - Sweep, shovel, vacuum with approved device.

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Ventilation /Local Exhaust: Recommended to minimize dust.

Special: Not applicable

Mechanical (General): Not applicable

Other: Not applicable

Protective Gloves - Recommended

Eye Protection - Safety glasses

Other Protective Equipment - Full protective clothing when required by fumes or dusts.

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Precautions to be taken in Handling and Storing - Minimize Dust; minimize accumulation.

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68610

Material Safety Data Sheet

Required under USDL Safety and Health Regulations
for Shipyard Employment (29 CFR 1915)

U.S. Department of Labor

Occupational Safety and Health Administration



October 1989

Section I

Manufacturer's Name

ALPHA CHEMICAL COMPANY

Emergency Telephone Number

318) 625 7550

Address (Number, Street, City, State, and ZIP Code)

4809 E. Napoleon St. Sulphur, LA 70663

Chemical Name
and Synonyms

EDTA Titrant, 0.001-0.20 Molar

Trade Name
and Synonyms

EDTA, 2Na+ H₂O

Chemical
Family

Formula

Section II - Hazardous Ingredients

Paints, Preservatives, and Solvents

% TLV (Units)

Alloys and Metallic Coatings

% TLV (Units)

Pigments

Base Metal

Catalyst

Alloys

Vehicle

Metallic Coatings

Solvents

Filler Metal
Plus Coating or Core Flux

Additives

Others

Others

Hazardous Mixtures of Other Liquids, Solids or Gases

% TLV (Unit)

DiSodium EDTA + H₂O

Section III - Physical Data

Boiling Point (°F)

100°C

Specific Gravity (H₂O=1)

1.0

Vapor Pressure (mm Hg.)

14 (H₂O)

Percent Volatile by Volume (%)

96-100%

Vapor Density (AIR=1)

0.7 (H₂O)

Evaporation Rate

— Ether — *1)

> 1

Solubility in Water

Soluble

Appearance and Odor

Clear Liquid

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)

N/A

Flammable Limits

Let

Uet

Extinguishing Media

N/A

Special Fire Fighting Procedures

N/A

Unusual Fire and Explosion Hazards

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MATERIAL IDENTIFICATION

NUMBER : GASCO059
NAME : CONOCO XP-14W SOLVENT **CP038**
CHEMICAL FAMILY : Mixed Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Paraffinic/Naphthenic Solvent
CAS NUMBER : 64742-47-8
NFPA RATING : Health: 0 Flammability: 2 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.
MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252
GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number	%
Paraffinic & Naphthenic Hydrocarbons	Mixture	100%

Hazardous Physical Properties:
Class IIIA Comoustible Liquid, NFPA 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard 29 CFR 1910.1200. Refer to the Regulatory information Section of this MSDS for federal and state regulatory information.

PHYSICAL DATA

Boiling Point : 350 to 460 deg F
Vapor Pressure : 2 mm Hg at 100 deg F
Vapor Density : 6.2 (Air = 1.0)
% Volatiles : Nil
Evaporation Rate : Not Applicable
Solubility in Water : Insoluble
Odor : Hydrocarbon
Form : Liquid
Color : Clear, colorless
Specific Gravity : (H2O=1) 0.80-0.81

16-Oct-89

Conoco Material Safety Data Sheet

Page 2
MSDS No: GASCOOS

CP038

HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Composition Products: Combustion products will include carbon dioxide and possibly carbon monoxide.

Conditions to Avoid: Excessive heat, flame and oxidizing materials.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point : 140 deg F

Method : TCC

Flammable Limits in Air, % by Vol.

LEL : 1.0

UEL : 6.0

FIRE AND EXPLOSION HAZARDS

Class IIIA Combustible Liquid (NFPA).

EXTINGUISHING MEDIA

Water Spray. Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Route(s) of Exposure/Entry: Skin, inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness and other nervous system effects; greater exposure may cause

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CP088

(HEALTH HAZARD INFORMATION - CONTINUED)

dizziness, slurred speech, flushed face, unconsciousness or convulsions.

The product contains petroleum hydrocarbons and, as with many petroleum products, it may cause irritation to the eyes, lungs or skin after prolonged or repeated exposure.

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for CONOCO XP-14W SOLVENT

TLV • (ACGIH) : None Established
PEL (OSHA) : None Established
Other : PEL: Petroleum Distillates
400 ppm; 1600 mg/m³

* TLV is a registered trademark.

Safety Precautions

Wash thoroughly after handling.

FIRST AID

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

(FIRST AID - CONTINUED)

CP038

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: General mechanical ventilation normally adequate.

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection where necessary to maintain exposures below the acceptable limits in the Health Hazard Information Section. Proper respiratory selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure, and published respiratory protection factors.

Protective gloves: Should be worn when any potential exists for skin contact. NBR or neoprene recommended.

Eye Protection: Chemical splash goggles or face shield recommended where splashing can occur.

Other Protective Equipment: Sufficient to minimize skin exposure. Coveralls with long sleeves if splashing is probable. Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

In Case of Spill or Leak: All sparks, flames and ignition sources must be restricted from the area. Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming, followed by recovering residual fluids using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

SAL 000006577

(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

CP038

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

Recycle as much of the recoverable product as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Not DOT regulated

IATA/IMO

Proper Shipping Name :
Not restricted

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302

The material does not contain ingredient(s) subject to the Act.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986,
TITLE III - SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances, 40 CFR
355

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements, 40 CFR 370

The material should be reported under the following EPA hazard categories:

- x Immediate (Acute Health Hazard)
- Delayed (Chronic Health Hazard)
- x Fire
- Sudden Release of Pressure
- Reactive

SAL 000006578

(REGULATORY INFORMATION - CONTINUED)

CP038

Not Applicable

Note: See the Hazard Determination Section for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals, 40 CFR 372
The material does not contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710
The material is in the TSCA Inventory of Chemical Substances (40 CFR 710) and/or is otherwise in compliance with TSCA.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116, Section 311
The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient	Reportable Quantity
Petroleum Hydrocarbon	Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

The material does not contain ingredient(s) subject to the Regulations.

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")

SAL 000006579

16-Oct-89

Conoco Material Safety Data Sheet

Page 7
MSDS No: GASCOO

CP038

(REGULATORY INFORMATION - CONTINUED)

The material does not contain ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT
To the best of our knowledge the material is not sold or produced in Pennsylvania. Please notify Conoco at the telephone number noted below if the material results in Pennsylvania commerce.

ADDITIONAL INFORMATION AND REFERENCES

Fire and Explosion Section revised.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS AN LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THE PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/10/16
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006580

Material Safety Data Sheet

conoco

Emergency Medical Telephone (800) 441-3637

LVT® 200

C P 0 3 7

I. MATERIAL IDENTIFICATION

Name

LVT® 200

CAS Registry Number

64742-46-7

Synonyms

Paraffinic/Naphthenic Solvent

Transportation Emergency Phone

1-(800) 424-9300 (Chemtrec)

Chemical Family

Mixed Petroleum Hydrocarbons

II. OSHA HAZARD DETERMINATION

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for other federal and state regulatory information.

Hazardous Ingredients

Paraffinic and Naphthenic
Hydrocarbons

CAS Registry Number

Mixture

Concentration

>99%

Hazardous Physical Properties

None

III. PHYSICAL DATA

Appearance and Odor

Clear, colorless liquid;
Kerosene-like odor

Specific Gravity (H₂O = 1)

0.82 - 0.83

Boiling Point

430° to 550°F

% Volatiles

Nil

Vapor Pressure

0.4 mm Hg @ 100°F

Solubility in Water

Insoluble

Vapor Density (Air = 1.0)

6.2

Evaporation Rate

Not Applicable

IV. REACTIVITY DATA

Stable: X Unstable:

Hazardous Decomposition Materials: Combustion products will include carbon dioxide and possibly carbon monoxide.

Conditions to Avoid: Excessive heat, flame and oxidizing materials.

Hazardous Polymerization: Will not occur.

V. FIRE AND EXPLOSION HAZARD DATA

LEL: 1.0 UEL: 6.0

Flash Point (Method used): 200°F (PM)

Handle and store in accordance with NFPA procedure for Class IIIB Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, CO₂, alcohol-resistant foam.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) Classification

Health 0 Fire 1 Reactivity 0

HAZARD RATING

Least-0 Slight-1 Moderate-2
High-3 Extreme-4

VI. TRANSPORTATION AND STORAGE

Storage Conditions: Store in accordance with National Fire Protection Association regulations.

Shipping Information:

DOT: Not Regulated

IATA/IMO: Not Restricted

VII. HEALTH HAZARD INFORMATION

Exposure Limits for LVT® 200

PEL: None Established

TLV: None Established

Exposure Limits for Petroleum Distillates

PEL: 400 ppm; 1600 mg/m³

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Extreme overexposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness or convulsions.

The product contains petroleum hydrocarbons, and as with many petroleum products, it may cause irritation to the eyes, lungs or skin after prolonged or repeated exposure.

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Carcinogenicity:

This material is not known to contain any chemical listed as a carcinogen or suspected carcinogen by OSHA, IARC, or NTP at a concentration greater than 0.1%.

CP037

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: All sparks, flames and ignition sources must be restricted from the area. Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming, followed by recovering residual fluids by using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

X. PRECAUTIONARY MEASURES

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection where necessary to maintain exposures below the acceptable limits in Section VII. Proper respirator selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure and published respiratory protection factors.

Ventilation: General mechanical ventilation normally adequate.

Protective Gloves: Should be worn when any potential exists for prolonged or repeated skin contact. Neoprene or vinyl recommended.

Eye Protection: Chemical splash goggles or face shield recommended where splashing can occur.

Other Protective Equipment: Sufficient to minimize skin exposure. Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

XI. REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302

Not Applicable

CP037

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories:

- | | |
|---|---|
| ☒ Immediate (Acute) Health Hazard | ☐ Sudden Release of Pressure |
| ☐ Delayed (Chronic) Health Hazard | ☐ Reactive |
| ☐ Fire | ☐ Not Applicable |

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material does not contain chemicals at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is in the TSCA Inventory of Chemical Substances (40 CFR 710) and/or is otherwise in compliance with TSCA.

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FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A, SECTION 311

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient

Petroleum Hydrocarbon

Reportable Quantity

Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

Not Applicable

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65)

The material does not contain ingredient(s) subject to the Act.

CP087

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

The material contains the following hazardous substances:

Categories: S = Special Hazardous Substance ($\geq 0.01\%$)

H = Hazardous Substance ($\geq 1.0\%$)

E = Environmental Hazard ($\geq 1.0\%$)

<u>Ingredient</u>	<u>CAS Registry Number</u>	<u>Category</u>
Petroleum Distillates	Mixture	H

Nonhazardous ingredient(s) information is withheld as a trade secret in accordance with Section 11 of the Act.

MSDS Code: GASC0192

DATE OF LATEST REVISION/REVIEW:

DEPARTMENT RESPONSIBLE FOR MSDS:

PRODUCT INFORMATION CONTACT:

11/89 - Replaces MSDS dated 6/89

Safety, Occupational Health & Environmental Affairs

Hazard Communication Analyst

Conoco Inc.

(713) 293-5550

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

(056873-03620 -50069903-QS HRDER)

DATE OF ISSUE
09/01/89SUPERSEDES
05/14/87

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS

N/A

TRADE NAME & SYNONYMS

MEGA QUICKSTIR HARDNER

CHEMICAL FAMILY

N/A

FORMULA

X<--MIXTURE

MANUFACTURERS NAME:

X-ERGDON, 4 PARTSMASER CO., DIV OF NCH

ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)

BOX 152170

IRVING, TEXAS 75015

PREPARED BY:

ROBERT P. RHOME/T.S.CHEM

PRODUCT CODE NUMBER

05 HRDER

EMERGENCY TELEPHONE NUMBER

214-438-1381

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
PHENOL	N/A	5PPM	5PPM	108-96-2
2,4,6 TRI(DIMETHYLAMINOMETHYL)	N/A	N/A	N/A	90-72-2
PHENDL				

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	N/A	SPEC GRAVITY (H2O=1)	1.44
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MEGA QUICKSTIR HARDNER

(CONTINUED)

SECTION III - PHYSICAL DATA

PAGE : 02

VAPOR PRESSURE (MM HG)	<0.1	COLOR	N/A
VAPOR DENSITY (AIR=1)	< AIR	ODDR	N/A
PH @ 100%	N/A	CLARITY	N/A
PERCENT VOLATILE BY VOLUME (%)	NIL	EVAPORATION RATE (BU AC = 1)	SLOWER
SOLUBILITY IN WATER	SLIGHT		
VISCOSITY	N/A		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	>250.0 FTAG	FLAMMABLE LIMITS	N/A	LEL	N/A	UEL	N/A
EXTINGUISHING MEDIA	"ALCOHOL" X<--FOAM	X<--CO2	X<--CHEMICAL	WATER SPRAY	<--OTHER		
SPECIAL FIRE FIGHTING PROCEDURES WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING. USE WATER TO COOL EXPOSED CONTAINERS. WATER STREAM DIRECTED INTO FIRE MAY CAUSE FROTHING WITH SUBSEQUENT SPREAD OF FIRE.							
UNUSUAL FIRE & EXPLOSION HAZARDS IRRITATING AND/OR TOXIC GASES OR FUMES MAY BE GENERATED BY THERMAL DECOMPOSITION OR COMBUSTION. CLOSED CONTAINERS MAY RUPTURE OR EXPLODE (DUE TO PRESSURE BUILD-UP) WHEN EXPOSED TO EXTREME HEAT.							
NFPA HAZARD RATING (0=INSIGNIFICANT; 1=SLIGHT; 2=MODERATE; 3=HIGH; 4=EXTREME): 1<--HEALTH 1<--FLAMMABILITY 0<--REACTIVITY <--SPECIAL							

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :
N/A

EFFECTS OF OVEREXPOSURE

EYES: SEVERE IRRITANT. MAY CAUSE PERMANENT CORNEAL INJURY.
SKIN: SEVERE IRRITANT. CORROSIVE. MAY CAUSE CHEMICAL BURNS AND BLISTER.
REPEATED OR PROLONGED OVEREXPOSURE MAY CAUSE SENSITIZATION.
MAY BE ABSORBED IN HARMFUL AMOUNTS.

SAL 000006586

(CONTINUED)

SECTION V - HEALTH HAZARD DATA

PAGE : 03

INHALATION: MAY CAUSE IRRITATION OF RESPIRATORY TRACT. OVEREXPOSURE MAY CAUSE HEADACHE, NAUSEA, AND VOMITING. MATERIAL ASPIRATED INTO LUNGS MAY CAUSE CHEMICAL PNEUMONITIS.
 INGESTION: MAY CAUSE IRRITATION/BURNS OF MOUTH, THROAT, AND STOMACH. SYMPTOMS INCLUDE NAUSEA, ABDOMINAL PAIN AND POSSIBLE COLLAPSE.
 SLIGHTLY TOXIC - PREEXISTING PULMONARY AND DERMATOLOGICAL DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO HAZARDOUS COMPONENTS.
 - CHRONIC - (LONG TERM EXPOSURE)

NONE OTHER THAN THOSE NOTED ON ACUTE.

PRIMARY ROUTE OF ENTRY: <-- INHALATION <-- INGESTION <-- ABSORPTION

EMERGENCY & FIRST AID PROCEDURES

INHALATION:
 REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
 ADMINISTER ARTIFICIAL RESPIRATION IF NOT BREATHING. OBTAIN MEDICAL ATTENTION.

EYE CONTACT:
 FLUSH WITH PLENTY OF WATER AT LEAST 15 MINUTES. OBTAIN IMMEDIATE MEDICAL ATTENTION.

SKIN CONTACT:
 REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREA(S) THOROUGHLY WITH SOAP AND WATER. CONSULT A PHYSICIAN.

INGESTION:
 DO NOT INDUCE VOMITTING.
 GIVE WATER OR MILK IF VICTIM IS CONSCIOUS AND NOT DROWSY.
 SHOULD VOMITTING OCCUR, BE SURE TO KEEP VICTIM'S HEAD BELOW KNEES TO AVOID ASPIRATION OF VOMITUS INTO THE LUNGS. OBTAIN IMMEDIATE MEDICAL ATTENTION.

NOTES TO PHYSICIAN :

N/A

SECTION VI - TOXICITY INFORMATION

PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	<--YES	NTP	<--YES	OSMA	<--YES	ACGIH	<--YES	OTHER	<--YES
X<--NO		X<--NO		X<--NO		X<--NO		X<--NO	X<--NO

N/A

SECTION VII - REACTIVITY DATA

STABILITY	X<--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
			SOURCES OF IGNITION.

MEGA QUICKSTIR HARDNER

(CONTINUED)

SECTION VII - REACTIVITY DATA

PAGE : 04

INCOMPATIBILITY (MATERIALS TO AVOID)
 STRONG BASES OR OXIDANTS. STRONG LEWIS OR MINERAL ACIDS.

HAZARDOUS DECOMPOSITION PRODUCTS
 ACRID SMOKE, OXIDES OF CARBON.

HAZARDOUS	WILL NOT	MAY	CONDITIONS TO AVOID
	X<--OCCUR	<--OCCUR	

POLYMERIZATION

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 VENTILATE AREA. WEAR APPROPRIATE PROTECTIVE EQUIPMENT DURING CLEANUP.
 ELIMINATE SOURCES OF IGNITION. SHUT OFF SOURCE OF LEAK IF SAFE TO DO SO.
 DIKE OR CONTAIN SPILL. ABSORB WITH INERT MATERIAL. SWEEP OR SHOVEL INTO CONTAINERS WITH LIDS. COVER LOOSELY AND STORE IN A WELL-VENTILATED AREA UNTIL DISPOSAL. WASH SPILL AREA WITH SOAP AND WATER.

WASTE DISPOSAL METHOD
 REVIEW ALL LOCAL, STATE AND FEDERAL REGULATIONS CONCERNING HEALTH AND POLLUTION FOR APPROPRIATE DISPOSAL PROCEDURES.

NEUTRALIZING AGENT

N/A

SECTION IX - SPECIAL PROTECTION INFORMATION

REQUIRED VENTILATION
 LOCAL EXHAUST AS NEEDED TO CONTROL VAPOR/DUST LEVELS TO BELOW RECOMMENDED LIMITS.

RESPIRATORY PROTECTION
 IF THE TLV IS EXCEEDED. IF USE IS PERFORMED IN A POORLY VENTILATED CONFINED SPACE OR AREA WITH LIMITED VENTILATION, USE NIOSH-APPROVED RESPIRATOR IN ACCORDANCE WITH 29 CFR 1910.134.
 USE NIOSH-APPROVED RESPIRATOR FOR DUSTS AND MISTS WHEN GRINDING OR MACHINING CURED COMPOUND.
 USE SELF-CONTAINED BREATHING APPARATUS IF MATERIAL IS TO BE SPRAYED OR WHEN BURNING OUT CURED EPOXY.

PROTECTIVE GLOVES
 IMPERVIOUS RUBBER.

SAL 000006587

(CONTINUED)

SECTION IX - SPECIAL PROTECTION INFORMATION PAGE : 05

GS612

EYE PROTECTION
CHEMICAL SAFETY GOGGLES.

OTHER PROTECTION
ACCESSIBLE EYE WASH AND SAFETY SHOWER. CLEAN
PROTECTIVE CLOTHING.

SECTION X - STORAGE AND HANDLING INFORMATION

STORAGE TEMPERATURE
000000<--MAX 000000<--MIN INDOOR HEATED REFRIGERATED OUTDOOR

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
FOR INDUSTRIAL USE ONLY. DO NOT TAKE INTERNALLY.
AVOID CONTACT WITH EYES, SKIN, AND CLOTHING.
AVOID BREATHING VAPOR/DUST/MIIST
WASH THOROUGHLY AFTER HANDLING
TIGHTLY RESEAL ALL PARTIALLY USED CONTAINERS.

OTHER PRECAUTIONS

SECTION XI - REGULATORY INFORMATION

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
PHENOL	108-95-2	0.004

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF
319 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF
1986 AND 40 CFR PART 372.

IF UE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT
FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE
JANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS
MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND
LABELED FOR MAINTAINING MOTOR VEHICLES.

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS
<--49 CFR <--IMCC <--TARIFF E D <--IATA <--MILITARY AIR (AFR 71-4)
SHIPPING NAME

MEGA QUICKSTIR HARDNER

(CONTINUED)

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

PAGE : 06

HAZARD CLASS	ID NUMBER	REPORT QTY
LABELS	LIMITED QTY	

UNIT CONTAINER	NET EXPLOSIVE WT.
DOT SPS CONTAINER	

AEROSOL PROPELLANT(S)

SECTION XIII - REFERENCES

N/A

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED
ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY
IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA
OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

X-ERGON, A PARTSMASER CO., DIV OF NCH, ASSUMES NO RESPONSIBILITY
FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE
OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE
PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH
UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

SAL 000006588

BETZ LABORATORIES, INC.
4636 SOMERTON ROAD, TREVOSE, PA. 19047
BETZ MATERIAL SAFETY DATA SHEET
24 HOUR EMERGENCY TELEPHONE (HEALTH OR ACCIDENT) 215/355-3300

G S 6 1 3

PRODUCT : POWERLINE 2280

(PAGE 1 OF 3)
EFFECTIVE DATE 02-27-89
PRINTED: 23-Mar-1989
REV: SEC.1

PRODUCT APPLICATION : FUEL TREATMENT

-----SECTION 1-----HAZARDOUS INGREDIENTS-----

INFORMATION ON PHYSICAL HAZARDS, HEALTH HAZARDS, PEL'S AND TLV'S FOR SPECIFIC PRODUCT INGREDIENTS AS REQUIRED BY THE OSHA HAZARD COMMUNICATIONS STANDARD IS LISTED. REFER TO SECTION 4 (PAGE 2) FOR OUR ASSESSMENT OF THE POTENTIAL ACUTE AND CHRONIC HAZARDS OF THIS FORMULATION.

MONOETHANOLAMINE (ETHANOLAMINE) ***CAS#141-43-5; COMBUSTIBLE; CORROSIVE;
IRRITANT; PEL/TLV: 3PPM (6PPM-STEL)

TRIETHYLENETETRAMINE ***[1,2-ETHANEDIAMINE, N,N-BIS(2-AMINOETHYL)];
CAS#112-24-3; CORROSIVE; POTENTIAL REPRODUCTIVE TOXIN; PEL: NONE; TLV: NONE.

-----SECTION 2-----TYPICAL PHYSICAL DATA-----

PH: AS IS	(APPROX.) 12.2	ODOR: NONE
FL.PT. (DEG.F):	>200	SETA(CC)
VAPOR PRESSURE (mmHG):	26	SP.GR. (70F) OR DENSITY: 1.015
VISC cps 70F:	6.6	VAPOR DENSITY (AIR=1): >1
EVAP.RATE: <1	ETHER=1	%SOLUBILITY (WATER): 100
PHYSICAL STATE: LIQUID		APPEARANCE: COLORLESS
		FREEZE POINT (DEG.F): 5

-----SECTION 3-----REACTIVITY DATA-----

STABLE

THERMAL DECOMPOSITION (DESTRUCTIVE FIRES) YIELDS ELEMENTAL OXIDES.

BETZ MATERIAL SAFETY DATA SHEET (PAGE 2 OF 3)

PRODUCT: POWERLINE 2280

EFFECTIVE DATE 02-27-89

-----SECTION 4-----HEALTH HAZARD EFFECTS-----

ACUTE SKIN EFFECTS *** PRIMARY ROUTE OF EXPOSURE

SEVERE IRRITANT TO THE SKIN.ABSORBED BY SKIN.SKIN SENSITIZER.

G S 6 1 3

ACUTE EYE EFFECTS ***

CORROSIVE TO THE EYES

ACUTE RESPIRATORY EFFECTS *** PRIMARY ROUTE OF EXPOSURE

VAPORS,GASES,MISTS AND/OR AEROSOLS CAUSE IRRITATION TO UPPER
RESPIRATORY TRACT

CHRONIC EFFECTS OF OVEREXPOSURE***

PROLONGED OR REPEATED OVEREXPOSURES MAY CAUSE LIVER AND KIDNEY TOXICITY,MAY
CAUSE REPRODUCTIVE SYSTEM TOXICITY,OR MAY CAUSE PRIMARY IRRITANT
DERMATITIS.

MEDICAL CONDITIONS AGGRAVATED ***

NOT KNOWN

SYMPTOMS OF EXPOSURE ***

INHALATION MAY CAUSE IRRITATION OF MUCOUS MEMBRANES AND RESPIRATORY TRACT;
SKIN CONTACT CAUSES SEVERE IRRITATION OR BURNS.

PRECAUTIONARY STATEMENT BASED ON TESTING RESULTS ***

MAY BE TOXIC IF ABSORBED THROUGH SKIN OR INHALED.

-----SECTION 5-----FIRST AID INSTRUCTIONS-----

SKIN CONTACT***

REMOVE CONTAMINATED CLOTHING.WASH EXPOSED AREA WITH A LARGE QUANTITY OF
SOAP SOLUTION OR WATER FOR 15 MINUTES

EYE CONTACT***

IMMEDIATELY FLUSH EYES WITH WATER FOR 15 MINUTES.IMMEDIATELY CONTACT A
PHYSICIAN FOR ADDITIONAL TREATMENT

INHALATION EXPOSURE***

REMOVE VICTIM FROM CONTAMINATED AREA TO FRESH AIR.APPLY APPROPRIATE
FIRST AID TREATMENT AS NECESSARY

INGESTION***

DO NOT FEED ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE VICTIM
DO NOT INDUCE VOMITING.IMMED.CONTACT PHYSICIAN.DILUTE CONTENTS OF
STOMACH USING 3-4 GLASSES MILK OR WATER

-----SECTION 6-----SPILL,DISPOSAL AND FIRE INSTRUCTIONS-----

SPILL INSTRUCTIONS***

VENTILATE AREA,USE SPECIFIED PROTECTIVE EQUIPMENT.CONTAIN AND ABSORB
ON ABSORBENT MATERIAL.PLACE IN WASTE DISPOSAL CONTAINER. THE WASTE
CHARACTERISTICS OF THE ABSORBED MATERIAL,OR ANY CONTAMINATED SOIL,
SHOULD BE DETERMINED IN ACCORDANCE WITH RCRA REGULATIONS.

FLUSH AREA WITH WATER. WET AREA MAY BE SLIPPERY. SPREAD
SAND/GRIT.

DISPOSAL INSTRUCTIONS***

WATER CONTAMINATED WITH THIS PRODUCT MAY BE SENT TO A SANITARY
SEWER TREATMENT FACILITY,IN ACCORDANCE WITH ANY LOCAL AGREEMENT,A
PERMITTED WASTE TREATMENT FACILITY OR DISCHARGED UNDER A NPDES PERMIT
PRODUCT(AS IS)-

INCINERATE OR BURY IN APPROVED LANDFILL

FIRE EXTINGUISHING INSTRUCTIONS***

FIREFIGHTERS SHOULD WEAR POSITIVE PRESSURE SELF-CONTAINED BREATHING
APPARATUS(FULL FACE-PIECE TYPE).

DRY CHEMICAL,CARBON DIOXIDE,FOAM OR WATER

BETZ MATERIAL SAFETY DATA SHEET (PAGE 3 OF 3)

PRODUCT: POWERLINE 2280

EFFECTIVE DATE 02-27-89

-----SECTION 7-----SPECIAL PROTECTIVE EQUIPMENT-----

USE PROTECTIVE EQUIPMENT IN ACCORDANCE WITH 29CFR SECTION 1910.132-134. USE RESPIRATORS WITHIN USE LIMITATIONS OR ELSE USE SUPPLIED AIR RESPIRATORS.

VENTILATION PROTECTION***

ADEQUATE VENTILATION TO MAINTAIN AIR CONTAMINANTS BELOW EXPOSURE LIMITS
RECOMMENDED RESPIRATORY PROTECTION***

IF VENTILATION IS INADEQUATE OR SIGNIFICANT PRODUCT EXPOSURE IS LIKELY,
USE A RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES.

RECOMMENDED SKIN PROTECTION***

GAUNTLET-TYPE NEOPRENE GLOVES, CHEMICAL RESISTANT APRON

WASH OFF AFTER EACH USE. REPLACE AS NECESSARY

RECOMMENDED EYE PROTECTION***

SPLASH PROOF CHEMICAL GOGGLES. FACE SHIELD

GS618

-----SECTION 8-----STORAGE AND HANDLING PRECAUTIONS-----

STORAGE INSTRUCTIONS***

KEEP DRUMS & PAILS CLOSED WHEN NOT IN USE.

PROTECT FROM FREEZING

HANDLING INSTRUCTIONS***

GENERAL-IMMEDIATELY REMOVE CONTAMINATED CLOTHING, WASH BEFORE REUSE
SPECIFIC- ALKALINE. CORROSIVE TO EYES. DO NOT MIX WITH ACIDIC MATERIAL.

THIS MSDS COMPLIES WITH THE OSHA HAZARD COMMUNICATION STANDARD

HAROLD M. HERSH (ENVIRONMENTAL INFORMATION COORDINATOR)

APPENDIX: REGULATORY INFORMATION

THE CONTENT OF THIS APPENDIX REPRESENTS INFORMATION KNOWN TO BETZ ON THE
EFFECTIVE DATE OF THIS MSDS. THIS INFORMATION IS BELIEVED TO BE ACCURATE.
ANY CHANGES IN REGULATIONS WILL RESULT IN UPDATED VERSIONS OF THIS DOCUMENT.

...TSCA: ALL COMPONENTS OF THIS PRODUCT ARE LISTED IN THE TSCA INVENTORY

...REPORTABLE QUANTITY(RQ) FOR UNDILUTED PRODUCT:

NOT APPLICABLE

...RCRA: IF THIS PRODUCT IS DISCARDED AS A WASTE, THE RCRA HAZARDOUS WASTE
IDENTIFICATION NUMBER IS: D002=CORROSIVE

...DOT HAZARD CLASSIFICATION: NOT APPLICABLE

...DOT SHIPPING DESIGNATION IS: NOT APPLICABLE

...THIS PRODUCT CONTAINS THESE CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER OR REPRODUCTIVE TOXICITY: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 302 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 313 CHEMICALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

...SARA SECTION 312 HAZARD CLASS: IMMEDIATE(ACUTE) AND DELAYED(CHRONIC)

...MICHIGAN CRITICAL MATERIALS: NONE PRESENT IN SIGNIFICANT AMOUNTS

NFPA/HMIS : HEALTH - 3 ; FIRE - 1 ; REACTIVITY - 0 ; SPECIAL - ALK ; PE - D

SAL 000006591

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MATERIAL SAFETY DATA SHEET

PG 1

MONOSODIUM PHOSPHATE 30%

G S 4 2 2

REVISION OF: 12-14-89

MAIL TO:

45000382
CONOCO INC
REFINING
P O BOX 37
WESTLAKE

LA 70669

ORDER NO: 420715751
PROD NO: 04173372

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: MONOSODIUM PHOSPHATE CAS NO.: 7558-80-7 ANHYDROUS
COMMON NAMES/SYNONYMS: SODIUM PHOSPHATE, VW&R CODE: 10049-21-5 HYDRATE
MONOBASIC, ANHYDROUS; PHOSPHORIC ACID,
MONOSODIUM SALT

FORMULA: NaH_2PO_4
HAZARD RATING (MANUFACTURER)

DATE ISSUED: 08/89
SUPERCEDES: 07/89

HEALTH: 0
FIRE: 0
REACTIVITY: 0
SPECIAL: NONE

HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM			HAZARD
			OSHA PEL	ACGIH TLV	OTHER LIMIT	
MONOSODIUM PHOSPHATE	7558-80-7	>99	NONE	NONE	NONE	NONE

-----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: N/A VAPOR PRESSURE, MM HG/20 DEG C: N/A
MELTING POINT, DEG F: LOSES WATER, 356 VAPOR DENSITY (AIR=1): N/A
SPECIFIC GRAVITY (WATER=1): 1.0 WATER SOLUBILITY, %: 48
BULK DENSITY
APPEARANCE AND ODOR: NO EVAPORATION RATE (BUTYL ACETATE=1): NIL
ODOR, WHITE GRANULES OR POWDER

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

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MONOSODIUM PHOSPHATE 30%

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IN CASE OF SKIN CONTACT: RINSE WITH WATER.

IF SWALLOWED: GIVE WATER TO DILUTE. MEDICAL ATTENTION IN CASE OF DISCOMFORT.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: BREATHING DUST MAY IRRITATE THE NOSE AND THROAT AND CAUSE COUGHING AND CHEST DISCOMFORT.

EYE CONTACT: DUSTS MAY IRRITATE THE EYES.

SKIN CONTACT: NONE CURRENTLY KNOWN.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA AND VOMITING.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

-----TOXICITY DATA-----

ORAL: RAT LD50 = 7,100 MG/KG

DERMAL: RABBIT > 7,940 MG/KG

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

-----PERSONAL PROTECTION-----

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING DUST EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: A RESPIRATOR IS NORMALLY NOT REQUIRED IF THIS PRODUCT IS USED WITH ADEQUATE VENTILATION.

EYE PROTECTION: SAFETY GLASSES WITH SIDE SHIELDS. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, AND GLOVES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: N/A

METHOD USED: N/A

FLAMMABLE LIMITS IN AIR, %

LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES: NONE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

-----HAZARDOUS REACTIVITY-----

STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

MONOSODIUM PHOSPHATE 30%

G S 4 2 2

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CONDITIONS TO AVOID: NONE

MATERIALS TO AVOID: NONE INDICATED.

HAZARDOUS DECOMPOSITION PRODUCTS: NONE INDICATED.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS. WEAR CHEMICAL GOGGLES IF A HALF MASK IS WORN. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP BAGS OR FIBER DRUMS DRY AT ALL TIMES. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: NONE.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

-----OTHER REGULATORY INFORMATION-----

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONSIDERED BY THE STATE OF CALIFORNIA'S SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH WARNINGS ARE NOW REQUIRED:

CHEMICAL	CAS NO.	%, WT
ARSENIC	7440-38-2	TRACE
CADMIUM	7440-43-9	TRACE
LEAD	7439-92-1	TRACE

-----NOTICE-----

**VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN. **

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS

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MATERIAL SAFETY DATA SHEET

PG 4

MONOSODIUM PHOSPHATE 30%

GS422

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INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT
RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER
PROCESS.

-----REVISION-----

12/89: ADDED ANOTHER CAS FOR THE HYDRATE.

**** E N D O F M S D S ****

PROD: 04173372 01:29:23 05 JAN 1990 CUST: 45000382 INVOICE: 420715751

SAL 000006595

TEXACO INC.
INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL
SAFETY DATA SHEET



NOTE: NO REPRESENTATION IS MADE AS TO THE ACCURACY OF THE INFORMATION
HEREIN. SEE PAGE 7 FOR CONDITIONS UNDER WHICH DATA ARE FURNISHED.

Trade Name and Synonyms 70203 MORPHOLINE		GS226		DISTRIBUTED BY	
Manufacturer's Name Texaco Chemical Company		Emergency Telephone No. (409) 722-		 Magnolia Chemicals & Solvents, Inc.	
Address 4800 Fournace Place P.O. Box 430 Bellaire, TX 77401		715 PATCH STREET SULPHUR, LA 70663			
Chemical Name and/or Family or Description Morpholine		PHONE: (318) 527-5077 1-800-827-5077			
THIS PRODUCT IS CLASSIFIED AS: ☒ HAZARDOUS BY DEFINITION NO(S) 1,2,4,5,9 ☐ NOT HAZARDOUS: ☐ ON ATTACHED EXPLANATION SHEETS					
WARNING STATEMENT: DANGER! FLAMMABLE CAUSES SEVERE EYE & SKIN BURNS & MAY CAUSE BLINDNESS HARMFUL IF SWALLOWED; MAY FORM SUSPECTED CANCER- CAUSING NITROSAMINES IF MIXED WITH NITRITES					
OCCUPATIONAL CONTROL PROCEDURES					
Protective Equipment (Type) Eyes: Chemical type goggles with face shield must be worn. Do not wear contact lenses. Skin: When handling large quantities subject to splashes and spills, impervious suits, gloves and rubber boots must be worn. Inhalation: Supplied air respiratory protection for cleaning large spills or upon entry into tanks, vessels, or other confined spaces. Ventilation: Local exhaust ventilation recommended					
Permissible Concentrations: Air: 20 ppm (70 mg/cubic meter) 8 hr. TWA (ACGIH 1986-87) ACGIH skin, see Add. Cmts. Pg.6. 20 ppm OSHA Permissible Exposure Limit (PEL)					
EMERGENCY AND FIRST AID PROCEDURES					
First Aid Eyes: Flush thoroughly with water for at least fifteen minutes. Get immediate medical attention. Skin: If drenched, remove contaminated clothing under safety shower and flood exposed areas with water. Get immediate medical attention. Wash clothing before reuse. Destroy contaminated shoes. Ingestion: Do NOT induce vomiting. Give large quantities of water. Call a doctor. Inhalation: Remove to fresh air; if not breathing apply artificial respiration. Get medical attention. Keep affected person warm and at rest. Other Instructions: None.					

45226



PHYSIOLOGICAL EFFECTS:		Code No.
Effects of Exposure		
Acute:		
Eyes:	Believed to be extremely irritating with possible permanent eye injury. Vapor may cause transient corneal edema (hazy vision)	
Skin:	Corrosive; expected to cause severe skin damage with burns and blistering. Toxic effects due to skin absorption possible.	
Respiratory System: May cause irritation of upper respiratory tract.		
Chronic:	Two-year inhalation oncogenic study negative in rats.	
Other: -		
Sensitization Properties:		
Skin: Yes ☐ No ☐ Unknown ☒ Respiratory: Yes ☐ No ☐ Unknown ☒		
Median Lethal Dose (LD₅₀ LC₅₀) (Species) Oral <u>1.05 g/kg (rat); moderately toxic</u> Inhalation <u>no deaths (rat), 12,000 ppm 8 hr; revers. respiratory tract injury</u> Dermal <u>.500 g/kg (rabbit); moderately toxic</u> Other <u>N. D.</u>		
Irritation Index, Estimation of Irritation (Species) Skin <u>Believed to be 6.6-8.0/8.0 (rabbit); corrosive</u> Eyes <u>Believed to be 80-110/110 (rabbit); extremely irritating</u> Symptoms of Exposure <u>See above and pg. 6 Additional Comments.</u>		
FIRE PROTECTION INFORMATION		
Ignition Temp. °F: <u>590</u> Flash Point °F. (Method) <u>95° F (TCC)</u>		
Flammable Limits (%) Lower <u>1.8</u> Upper <u>10.8</u>		
Products Evolved When Subjected to Heat or Combustion: <u>Ammonia, carbon monoxide, and carbon dioxide may be formed on burning in limited air supply.</u>		
Recommended Fire Extinguishing Agents And Special Procedures: <u>According to the NFPA Guide 325M, water soluble, flammable liquid fires may be extinguished by dry chemical, foam, or carbon dioxide. Water may be ineffective on flames, but should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.</u>		
Unusual or Explosive Hazards: <u>Explosive air-vapor mixtures may form.</u>		
SAL 000006597		

G S 2 2 6

**ENVIRONMENTAL PROTECTION****Waste Disposal Method:**

Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures and processes may change classification to non-hazardous or hazardous for reasons other than, or in addition to ignitability. (See Remarks for Waste Classification.)

Procedures in Case of Breakage or Leakage: (Transportation Spills Call CHEMTREC (800) 424-9300)

Eliminate all ignition sources including internal combustion engines and power tools. Ventilate area. Avoid breathing vapor. Use SCBA or supplied-air mask for lg spills or in confined areas. Contain spill. Remove with inert absorbant. Avoid all personal contact

Remarks:

Waste Classification: Product (as presently constituted) has the RCRA characteristic of ignitability and if discarded in its purchased form would have the hazardous waste number D001.

PRECAUTIONS**DANGER! FLAMMABLE**

CAUSES SEVERE EYE & SKIN BURNS & MAY CAUSE BLINDNESS

HARMFUL IF SWALLOWED; MAY FORM SUSPECTED CANCER-

CAUSING NITROSAMINES IF MIXED WITH NITRITES

Do not get in eyes, on skin or clothing.

Keep away from heat, sparks and flame.

Avoid breathing vapor or mist.

Keep container closed.

Use only in well-ventilated locations.

Wash thoroughly after handling.

Requirements for Transportation, Handling and Storage:

Transport, handle and store in accordance with OSHA Regulation 1910.106 and applicable DOT regulations.

DOT Proper Shipping Name: Morpholine

DOT Hazard Class (if applicable): Flammable liq. UN2054/Corros.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (°F) 263 Vapor Pressure 7 (mmHg)

Specific Gravity 1.0017 (H₂O=1) Vapor Density 3.0 (Air=1)

Appearance and Odor clear, colorless liq., ammonia odor

pH of undiluted product 11.2 Solubility Apprec

Percent Volatile by Volume 100 Evaporation N.D. (=1)

Viscosity 2.23 cP @ 20°C

Other -

Hazardous Polymerizations - Occur X Do not occur

The Material Reacts Violently With: (If others is checked below, see additional comments on page 6 for further details)

Air Water Heat Strong Oxidizers Others None of These
X X

N.D. - Not Determined
- Less Than

N.A. - Not Applicable
- Greater Than

SAL 000006598

GS226



COMPOSITION

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
*Morpholine	110918	20ppm ACGIH (SKIN) 20ppm OSHA (SKIN) 30ppm STEL (SKIN)	100.00

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

SARA TITLE III

I. Title III Section 302/304 Extremely Hazardous Substance Component	CAS No.	%	RQ (Lbs)	TPQ (Lbs)
NONE				

II. CERCLA Section 102(a) Hazardous Substance Component	CAS No.	%	RQ (Lbs)
NONE			

III. Title III Section 311 Hazard Categorization	Fire	Pressure	Reactive	Not Applicable
Acute Chronic				

IV. Title III Section 313 Toxic Chemicals Component	CAS No.	%
NONE		

SAL 000006599

G S 2 2 6



PRODUCT SHIPPING LABEL

Code
No.

70203

70203 MORPHOLINE

DANGER! FLAMMABLE

CAUSES SEVERE EYE & SKIN BURNS & MAY CAUSE BLINDNESS
HARMFUL IF SWALLOWED; MAY FORM SUSPECTED CANCER-
CAUSING NITROSAMINES IF MIXED WITH NITRITES

Do not get in eyes, on skin or clothing.

Keep away from heat, sparks and flame.

Avoid breathing vapor or mist.

Keep container closed.

Use only in well-ventilated locations.

Wash thoroughly after handling.

In case of contact, immediately flush eyes or skin with
plenty of water for at least 15 minutes while removing
contaminated clothing and shoes.

Call a doctor.

Wash clothing before reuse.

Destroy contaminated shoes.

If swallowed, DO NOT induce vomiting. Call a doctor.

Never give anything by mouth to an unconscious person.

In case of fire use foam, dry chemical or CO2.

Use water spray to keep containers cool.

Chemical/Common Name	CAS No.	Range in %
*Morpholine	110918	100.00

*Hazardous according to OSHA (1910.1200) or one or more state Right-To-Know lists.

HMIS

Health : 3 Reactivity : 0
Flammability: 3 Special : -

DOT Proper Shipping Name: Morpholine

DOT Hazardous Class : Flammable liq. UN2054/Corros.

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204)

Texaco Inc.
2000 Westchester Avenue
White Plains, New York 10650

For Additional Information Concerning:

Fuels/Lubricants/Antifreezes
call (914) 831-3400 (EXT.204)
Chemicals
call (512) 459-8543
Transportation Spills
call CHEMTREC (800) 424-9300

SAL 000006600

6 S 2 2 6



ADDITIONAL COMMENTS

Code
No.

70203

STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1988)

No critical materials present.

DO NOT USE sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Aquatic toxicity rating: TLM-96 HRS = 100-1000 PPM; practically NON-TOXIC. ACGIH "SKIN" NOTATION- appropriate measures should be taken to prevent cutaneous absorption since the TLV is based on overexposure to the mucous membranes. Like many aliphatic amines, this product is not extensively biodegraded under laboratory conditions of the five day test. Reacts violently with acids.

SAL 000006601

To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.

By F. E. Bentley Title Coordinator of Product Safety
Date 04-19-88 ☐ New ☒ Revised, Supersedes 10-14-87

N.D. - Not Determined N.A. - Not Applicable

M A T E R I A L S A F E T Y D A T A S H E E T
EM SCIENCE
A DIVISION OF EM INDUSTRIES
111 WOODCREST
CHERRY HILL, N.J. 08034-0395

PREPARATION DATE: MAY 26, '88

INFORMATION PHONE NUMBER.:
(609) 354-9200
CHEMTREC EMERGENCY NUMBER:
1-800-424-9300

GS557

NFPA HAZARD RATINGS

HEALTH: 2 FLAMMABILITY: 0
REACTIVITY : 0 SPECIAL HAZARDS.:

SECTION I - GENERAL INFORMATION

CATALOG NUMBER(S): SX0759 SX0760 SX0761 SX0763 SX0765
 6647 6639
CHEMICAL NAME.....: SODIUM SULFATE, ANHYDROUS
TRADE NAME.....: SALT CAKE; DISODIUM SULFATE
C.A.S. NUMBER.....: 7757-82-6
CHEMICAL FAMILY...: INORGANIC SALT
FORMULA.....:
 NA2SO4
MOLECULAR WEIGHT.: 142.04
DOT SHIPPING NAME: (NON-REGULATED)
DOT NUMBER.....: (NONE)

SECTION II - HAZARDOUS INGREDIENTS

NONE OTHER THAN SPECIFIED PRODUCT.

SECTION III- PHYSICAL DATA

BOILING POINT (C 760 MM HG): N/A
MELTING POINT (C).....: 888C
SPECIFIC GRAVITY(H2O = 1).....: 2.671
VAPOR PRESSURE..(MM HG).....: N/A 20C
PERCENT VOLATILE BY VOL (%): N/A
VAPOR DENSITY (AIR=1).....: N/A
EVAPORATION RATE (BUAC=1).....: N/A
SOLUBILITY IN WATER (%).....: 21
APPEARANCE AND ODOR.....: WHITE CRYSTALLINE GRANULES OR POWDER
MSDS-SX0759 PAGE # : 01

SAL 000006602

SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT (F).....: NONCOMBUSTIBLE
 FLAMMABLE LIMITS LEL %.: N/A
 FLAMMABLE LIMITS UEL %.: N/A
 EXTINGUISHING MEDIA.....:
 ANY SUITABLE FOR ADJACENT MATERIAL
 FIRE FIGHTING PROC.....:
 WEAR SELF-CONTAINED BREATHING APPARATUS
 FIRE & EXPL. HAZARDS...:
 EMITS TOXIC FUMES ON THERMAL DECOMPOSITION

SECTION V - HEALTH HAZARD DATA (ACUTE AND CHRONIC)

ACGIH TLV/OSHA PEL (TWA).....: NONE ESTABLISHED
 TOXICITY DATA.....: ORL-MUS LD50: 5989 MG/KG
 SYMPTOMS OF EXPOSURE:
 -MAY BE IRRITATING TO EYES, SKIN, NASAL AND RESPIRATORY PASSAGES
 MAY BE HARMFUL IF SWALLOWED
 MEDICAL COND. AGGRAVATED BY EXP: DATA NOT AVAILABLE.
 ROUTES OF ENTRY.....: INHALATION, INGESTION
 CARCINOGENICITY.....:
 THE MATERIAL IS NOT LISTED AS A CANCER CAUSING AGENT.
 EMERGENCY FIRST AID.....:
 GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE
 SKIN: WASH THOROUGHLY WITH SOAP AND WATER
 EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES
 DUST INHALATION: REMOVE TO FRESH AIR
 INGESTION: IF CONSCIOUS, INDUCE VOMITING

SECTION VI - REACTIVITY DATA

STABILITY.....: YES
 CONDITIONS TO AVOID: NONE INDICATED
 MATERIALS TO AVOID.....: () WATER () ACIDS
 () BASES () CORROSIVES () OXIDIZERS
 (X) OTHER: ALUMINUM (+ HEAT)
 HAZARDOUS POLYMERIZATION.: DOES NOT OCCUR
 HAZARDOUS DECOMPOSITION..: SOX, NA2O

SECTION VII - ENVIRONMENTAL PROTECTION PROCEDURES

SPILL RESPONSE:
 -TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL
 FLUSH AREA WITH WATER
 WASTE DISPOSAL: TO BE PERFORMED IN COMPLIANCE WITH ALL CURRENT LOCAL,
 STATE AND FEDERAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION INFORMATION

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VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION:
 -MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD
 OR WITH ADEQUATE VENTILATION
 PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO
 PREVENT SKIN CONTACT
 SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES

SECTION IX - SPECIAL PROTECTION INFORMATION

HANDLING & STORAGE

-KEEP CONTAINER CLOSED
 STORE AT CONTROLLED ROOM TEMPERATURE
 DO NOT BREATHE DUST
 DO NOT GET IN EYES
 AVOID PROLONGED OR REPEATED SKIN CONTACT
 WORK/HYGIENIC PRACTICES: WASH THOROUGHLY AFTER HANDLING. DO NOT TAKE
 INTERNALLY. EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

SECTION X - OTHER INFORMATION

COMMENTS.....:

TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE
 ADVERSE REPRODUCTIVE EFFECTS

REVISION HISTORY.....: 09/01/81, 2/84, 1/24/87, 10/27/87

N/A = NOT AVAILABLE:

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MATERIAL SAFETY DATA SHEET



One Oak Way
Berkeley Heights, NJ 07922-2727
Emergency Telephone # (201) 736-6066
Non-Emergency Telephone # (201) 771-4644
Reason for Re-Issue: UPDATE

Issue Date: 11/02/89
Issue Number: 2
Supersedes Date: 07/07/89

I. PRODUCT IDENTIFICATION.

Product Name: FLEXGEL
Chemical Name/Synonym: CABLE FILLING COMPOUND
Product Code/Comcode: 105181960
HMDB Number: 6671

Label Codes

Health: 0-NON-TOXIC
Fire: 1-MILDLY COMBUSTIBLE
Reactivity: 0-NON-REACTIVE

II. HAZARDOUS INGREDIENTS.

<u>Component:</u>	<u>CAS #</u>	<u>%</u>	<u>TLV(ACGIH)</u>	<u>PEL(OSHA)</u>
POLYETHYLENE COPOLYMER	----	< 10	N.D.	N.D.
SEVERELY SOLVENT REFINED HEAVY PARAFFINIC PETROLEUM OIL	64741-88-4	< 90	5 MG/M3 MIST	5 MG/M3 OIL MIST

COMMENTS: THE INFORMATION PRESENTED IN THIS MSDS PERTAINS TO ALL CABLE PRODUCTS CONTAINING FLEXGEL. TO IDENTIFY CABLES CONTAINING FLEXGEL SEE CABLE CODES LISTED IN THE PRECAUTIONARY LABEL SPACE OF THIS MSDS UNDER SECTION X SPECIAL PRECAUTIONS.

III. PHYSICAL PROPERTIES.

Appearance/Odor: YELLOW RUBBER-LIKE MATERIAL WITH NEARLY NO ODOR.
Specific Gravity: .87 Vapor Density (Air=1): > 14
Boiling Point: N.D. Melting Point: 196 F
Vapor-Pressure: NIL mm Hg at 20 C Solubility in Water: INSOLUBLE
Evaporation Rate (ET-ETHER=1): .0002pH: N/A
% Volatiles by Volume: NONE

IV. HEALTH HAZARD SUMMARY.

PRIMARY ROUTES OF EXPOSURE.

ORAL: SKIN: X EYE: INHALATION:

Effects of Overexposure:

NONE EXPECTED WHEN EXPOSURE IS BY INHALATION, SKIN, OR INGESTION.
EYE CONTACT MAY CAUSE TEMPORARY IRRITATION. NO PERMANENT DAMAGE EXPECTED.

**G S 6 0 7**

Listed as a Carcinogen or Potential Carcinogen By the Following Agencies?

NTP: NO

IARC: NO

OSHA: NO

Toxicity Study Information:

THE TOXICOLOGICAL PROPERTIES OF THIS MATERIAL MAY NOT BE FULLY EVALUATED.

FLEXGEL - PRACTICALLY NON-TOXIC WHEN INGESTED; LD50 > 15 G/KG.

V. FIRST AID PROCEDURES.**Eye:**

FLUSH WITH WATER. IF IRRITATION PERSISTS, OBTAIN MEDICAL ATTENTION.

Skin:

NOT EXPECTED TO BE A PROBLEM. WIPE OFF SKIN AND WASH WITH SOAP AND WATER

Inhalation: NOT EXPECTED TO BE A PROBLEM.

Ingestion:

GIVE LIQUIDS AND INDUCE VOMITING UNLESS VICTIM IS UNCONSCIOUS. OBTAIN MEDICAL ASSISTANCE. SMALL AMOUNTS WHICH ACCIDENTALLY ENTER MOUTH SHOULD BE RINSED OUT UNTIL TASTE IS GONE.

Notes to Physician:

NONE

VI. FIRE AND EXPLOSION HAZARD DATA.

Flash Point: 420 F by Autoignition Temp: N.D.
Flammable Limits: LEL: N.D. % UEL: N.D. %

Extinguishing Media:

DRY CHEMICAL, CARBON DIOXIDE, FOAM.

Special Firefighting Procedures:

WEAR SELF CONTAINED BREATHING APPARATUS WHEN FIGHTING FIRE IN CONFINED SPACE.

Unusual Fire and Explosion Hazards:

NONE

VII. REACTIVITY DATA.**Stability: STABLE****Conditions to Avoid:**

OPEN FLAMES, EXPOSURE TO EXCESSIVE HEAT OR OTHER IGNITION SOURCES.

Incompatibility (Materials to Avoid):

NONE

Hazardous Decomposition Products:

THERMAL DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE.



Hazardous Polymerization: WILL NOT OCCUR
Conditions to Avoid: NONE

G S 6 0 7

VIII. SPECIAL PROTECTION INFORMATION.

Ventilation:

GENERAL VENTILATION SHOULD BE ADEQUATE.

Respiratory Protection:

RESPIRATORS ARE NOT REQUIRED.

Protective Gloves:

GLOVES ARE NOT REQUIRED.

Eye Protection:

SAFETY GLASSES ARE RECOMMENDED.

Other Clothing and/or Equipment:

NONE NORMALLY REQUIRED.

IX. ENVIRONMENTAL INFORMATION.

Steps to be Taken in Case Material is Released or Spilled:

ABSORB WITH VERMICULITE, CLAY, OR SIMILAR MATERIAL. PICK UP MATERIAL AND PLACE IN CONTAINER FOR DISPOSAL.

Waste Disposal Method:

DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL RULES AND REGULATIONS. INCINERATION MAY BE BEST METHOD OF DISPOSAL.

TSCA Status:

ALL COMPONENTS APPEAR ON THE TSCA CHEMICAL SUBSTANCE INVENTORY

X. SPECIAL PRECAUTIONS.

Storage and Handling Requirements:

USE GOOD PERSONAL HYGIENE WHEN WORKING WITH THIS MATERIAL.

Precautionary Label

CABLES WITH THE FOLLOWING CABLE CODES CONTAIN FLEXGEL: CODES WITH PREFIXES KA, KG, WG, AND WA FOLLOWED BY 2JR, 4JR, 9JR, 2WR, 4WR, 9WR, 2AR, 4AR, 9AR AND PREFIXES WG AND WA FOLLOWED BY 6JR, 6WR, AND 6AR. PREFIX BDW FOLLOWED BY 3/22-C, 2/19-C, 2/19-FCC, 3/19-GRF, 2/22-GRF, 3/22-FCC, SEB-2/22, 2/19-GRF, AND PREFIX BSW FOLLOWED BY 2/22-FCC, 5/22-FCC, 2/22-C, 5/22-C. ALL CABLE CODES WITH THE FOLLOWING PREFIXES CONTAIN FLEXGEL: AFAW, AFAWUM, AFAY, AFBW, AFBWUM, AFMW, AFMWUM, AFMY, APTW, APTWUM, MFMWUM, AFTY, KFAW, KFAWUM, KGAW, KGAWUM, MFMW, MFMWUM, CGAW, CGAWUM.



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N.D. = Not Determined. N/A = Not Applicable.

While information in this fact sheet has been compiled from reference materials and other sources believed to be reliable, its accuracy and completeness is not guaranteed, nor is any responsibility assumed or implied for any loss or damage resulting from inaccuracies or omissions. Any specific evaluation will involve professional judgement by the user's industrial hygiene personnel.

SAL 000006608



United Catalysts Inc.
Girdler and CCI Catalysts

Post Office Box 32370
Louisville, Kentucky 40232

Telephone 502-634-7200
Telex 204190, 204239
Facsimile 502-637-3732

MATERIAL SAFETY DATA SHEET
N--239

CA 047

SECTION I PRODUCT IDENTIFICATION

Trade Name and Synonyms

N-239

Chemical Family

Formula

Inorganic

$Al_2O_3 + CoO + La_2O_3 + MoO_3$

SECTION II HAZARDOUS INGREDIENTS

Hazardous Components in the Solid Mixture

<u>COMPONENT</u>	<u>CAS No.</u>	<u>%</u>	<u>OSHA/PEL</u>	<u>ACGIH/TLV</u>
Aluminum oxide	1344-28-1	80-90	10.0 mg/m ³	10.0 mg/m ³
Cobalt oxide	1304-96-6	1-5	0.05 mg/m ³	0.05 mg/m ³
Lanthanum oxide	1312-81-8	1-5	*NIA	*NIA
Molybdenum trioxide	1313-27-5	10-15	10.0 mg/m ³	10.0 mg/m ³

SECTION III PHYSICAL DATA

Appearance and Odor: Blue extrusions. No odor.

Melting Point: Greater than 800°C, greater than 1450°F.

Solubility in Water: Insoluble.

Bulk Density: 37 lbs./cu. ft.

Percent Volatile by Weight at 1000°F: Less than 5%.

SECTION IV FIRE EXPLOSION DATA

Fire and Explosion Hazard

Negligible fire and explosion hazard when exposed to heat or flame by reaction with incompatible substances.

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Updated: September 6, 1989

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Flash Point
Nonflammable.

Firefighting Media
Dry chemical, water spray, or foam.
For larger fires, use water spray fog or foam.

Firefighting
Nonflammable solids, liquids or gases: Cool containers that are exposed to flames with water from the side until well after fire is out. For massive fire in enclosed area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of the tank due to fire.

SECTION V HEALTH HAZARD DATA

Health hazards may arise from inhalation, ingestion, and/or contact with the skin and/or eyes.

Alumina particles deposited in the eye may cause necrosis of the cornea. Ingestion may cause stomach and intestinal distress. Salts of alumina may cause dermatoses, eczema, conjunctivitis, and irritation of the mucous membranes of the upper respiratory tract. Prolonged inhalation of alumina dust may result in pneumoconiosis. Lung damage (Shaver's Disease) may result from inhalation of finely divided aluminum oxide particles; it is complicated by silica and oxides of iron in the inhaled air.

Excessive inhalation of cobalt may cause irritation of the respiratory tract; asthma-like symptoms with cough, dyspnea, chest tightness and wheezing; lung damage; and pneumoconiosis. Ingestion may produce nausea and vomiting, diarrhea, and sensation of hotness. Chronic ingestion may cause blood abnormalities (polycythemia), increased clotting time, hyperplasia of the bone marrow and thyroid gland, cardiomyopathy, and damage to the pancreas in sensitive individuals. prolonged or repeated contact with the skin, in the absence of proper hygienic practices may result in dryness, irritation and/or an allergic dermatitis. Contact with the eye may cause redness, irritation, and/or conjunctivitis.

Research data on cobalt and cobalt compounds based on animal injection studies indicates that cobalt may be a possible carcinogen.

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N₂339

Cobalt oxide reacts violently with hydrogen peroxide. Lanthanum dust is a serious fire hazard when exposed to flame; it can react vigorously with oxidizing materials. Reacts violently with nitric acid, phosphorus (above 400°C), air, and halogens. Dust is moderately explosive when exposed to flame or by chemical reaction. Incompatible with H₂, C, N, B, Se, Si, and S. Molybdenum trioxide explodes on contact with molten magnesium. Reacts violently with interhalogens (e.g., bromine pentafluoride, chlorine trifluoride). Incandescent reaction with hot sodium, potassium, or lithium. Emits toxic fumes of molybdenum when heated to decomposition.

SECTION VII SPILL OR LEAK PROCEDURES

Notify safety personnel of spills or leaks. Clean-up personnel need protection against inhalation of dusts or fumes. Eye protection is required. Vacuuming and/or wet methods of cleanup are preferred. Place in appropriate containers for disposal, keeping airborne particulates at a minimum.

Disposal

Consult applicable local, state, and federal regulations to select the method of disposal. Recover metal components by reprocessing whenever possible.

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiratory Protection

Provide a NIOSH/MSHA jointly approved respirator in the absence of proper environmental control. Contact your safety equipment supplier for proper mask type.

Ventilation

Provide general and/or local exhaust ventilation to keep exposures below the TLV. Ventilation used must be designed to prevent spots of dust accumulation or recycling of dusts.

Protective Clothing

Wear protective clothing, including long sleeves and gloves, to prevent repeated or prolonged skin contact.

Eye Protection

Chemical splash goggles designed in compliance with OSHA regulations are recommended. Consult your safety equipment supplier.

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Prolonged excessive inhalation of lanthanum may result in pneumonitis or granuloma of the lung. Lanthanum may cause delayed blood clotting, leading to hemorrhages. Overexposure may lead to hemoglobinemia. Symptoms of exposure are chills, fever, headache, muscle pains, abdominal cramps, nausea, malaise, and hemoglobinuria. Skin contact, in the absence of proper hygienic practices, may result in irritation and skin granulomas. Eye contact may cause irritation and/or conjunctivitis.

Molybdenum trioxide may cause irritation of the eyes and mucous membranes. Prolonged, excessive inhalation may affect the liver, kidneys, and red blood cells; cause hypothyroidism; and/or produce molybdenum-induced gout. Ingestion of excessive amounts may produce signs of copper deficiency.

First Aid (Inhalation)

Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention immediately.

First Aid (Ingestion)

If large amounts have been ingested, give emetics to cause vomiting. Stomach siphon may be applied as well. Milk and fatty acids should be avoided. Get medical attention immediately.

First Aid (Eyes)

Wash eyes immediately and carefully for 30 minutes with running water, lifting upper and lower eyelids occasionally. Get prompt medical attention.

First Aid (Skin)

To avoid repeated or prolonged contact with this chemical, use good hygienic practices. Wash with soap and a large amount of water. Get medical attention if irritation or inflammation develops.

SECTION VI REACTIVITY DATA

Reactivity

Is stable under normal temperatures and pressures in sealed containers. Hazardous polymerization will not occur. Finely divided particles may result in fire or explosion. Aluminum oxide is incompatible with hot chlorinated rubber. Exothermic reaction above 200°C with halocarbon vapors produces toxic HCl and phosgene.

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IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Silica and Some Silicates, Volume 42, Lyon, World Health Organization, International Agency for Research on Cancer, 1987.

Kentucky Occupational Safety and Health Standards for General Industry, 29 CFR Part 910 as adopted by 803 KAR 2:020 with Amendments as of July 31, 1986, Promulgated by Occupational Safety and Health Administration, U.S. Department of Labor, Kentucky Occupational Safety and Health Program, Kentucky Labor Cabinet, Commerce Clearing House, Inc., Chicago 1986.

Occupational Diseases, A Guide to their Recognition, U. S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control, NIOSH, Revised Edition, June 1977.

Patty's Industrial Hygiene and Toxicology, Clayton, G.D., Clayton, F.E., eds., John Wiley and Sons, New York, 3rd Edition, Volume 2, A-C, 1981.

TLVs^R Threshold Limit Values and Biological Exposure Indices for 1988-1989, American Conference of Governmental Industrial Hygienists, Cincinnati, OH, 1988.

MSDS's from Suppliers of Raw Materials.

SECTION XI

The information presented herein is believed to be accurate but is not warranted. Recipients are advised to confirm in advance that the information is current and applicable to meet their circumstances.

* No Information Available

Doc. 115

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MATERIAL SAFETY DATA SHEET
n N-239

SECTION IX REGULATORY INFORMATION

This product contains substances which appear on lists of the indicated act or agency.

- XX** American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values for Chemical Substances in the Work Environment
- California Proposition 65
- Clean Air Act 40 CFR 61
- Clean Water Act 40 CFR 116
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) 40 CFR 302
- International Agency for Research on Cancer (IARC) Monographs on the Evaluation of Carcinogenic Risks to Humans Volumes 1-42.
- NTP Annual Report on Carcinogens
- XX** Occupational Safety and Health Administration (OSHA) 29 CFR 1910
- Resource Conservation and Recovery Act (RCRA) 40 CFR 261 Subpart C
- XX** Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III Section 313 40 CFR 372
- XX** Toxic Substances Control Act (TSCA) 40 CFR 700

SECTION X BIBLIOGRAPHY

Clinical Toxicology of Commercial Products, Fifth Edition, Gosselin, Smith, Hodge, Williams and Wilkins, Baltimore, 1984.

Dangerous Properties of Industrial Materials, Sax, N. Irving, ed., Van Nostrand Reinhold Company, New York, 7th Edition, 1989.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs, Volumes 1-42, Lyon: World Health Organization, International Agency for Research on Cancer, 1987.

SAL 000006613

28-Sep-89

Conoco Material Safety Data Sheet

Page 1

MATERIAL IDENTIFICATION

NUMBER : IPBC0020
NAME : CASINGHEAD GASOLINE

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Straight Run Gasoline

NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
-----------------------	------------

Hydrocarbons (Aromatic & Paraffinic)

*Benzene

71-43-2

- * Regulated as a toxic chemical under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Hazardous Physical Properties:

Class 1A Flammable Liquid per NFPA Code No. 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 15-20 PSI @ 100 deg F
Vapor Density : Not Applicable
Solubility in Water : Slightly soluble
Form : Liquid
Color : Colorless
API Gravity : 70-90
Distillation Range : 70-300 deg F

CI045

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HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Oxides of carbon.
incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Less than ambient

FIRE AND EXPLOSION HAZARDS

Class IA Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:
Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:
Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs, or monkeys. Also, the significance of the
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Conoco Material Safety Data Sheet

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(HEALTH HAZARD INFORMATION - CONTINUED)

tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100-700 deg F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons which may cause irritation to eyes, skin, and lungs after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues.

Carcinogenicity

The following components are listed by IARC, NTP, OSHA, or ACGIH as carcinogens. A 'P' indicates a Proposed Carcinogen.

Chemical	IAR	NTP	OSH	ACG
Benzene		X	X	X

DuPont controls the following chemicals as potential carcinogens :
Benzene .

Exposure Limits for CASINGHEAD GASOLINE

TLV ** (ACGIH) : None Established
 PEL (OSHA) : None Established
 Other : Exposure Limit for Petroleum Distillates.
 PEL: 400 ppm, 1600 mg/m³

Other Applicable Exposure Limits:

Exposure Limits for Benzene

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(HEALTH HAZARD INFORMATION - CONTINUED)

AEL • (DuPont): 1 ppm - 8 & 12 Hr. TWA
5 ppm - 15 Min. TWA
TLV ** (ACGIH) : 10 ppm, 30 mg/m3 (A2)
PEL (OSHA) : 1 ppm - 8 Hr. TWA
5 ppm - (Short term exposure limit)
0.5 ppm - Action level

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Avoid breathing vapors or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits.

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Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved

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(PROTECTION INFORMATION - CONTINUED)

respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: Neoprene or NBR recommended.

Eye Protection: Where the possibility of splashing exists, a face shield is recommended.

Other Protective Equipment: Sufficient protective apparel should be worn to minimize potential skin contact with this material.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

SHIPPING INFORMATION

DOT

Proper Shipping Name	:	Gasoline
Hazard Class	:	Flammable liquid
UN/NA No.	:	UN 1203
DOT Label(s)	:	Flammable liquid
DOT Placard	:	Flammable

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

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C1045

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MSDS No: 1PBC00...

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006620

28-Sep-89

Conoco Material Safety Data Sheet

Page 1

MATERIAL IDENTIFICATION

NUMBER : IPBC0080
 NAME : STABILIZER OVERHEAD LIQUID

 CHEMICAL FAMILY : Petroleum Hydrocarbons
 CAS NUMBER : Mixture
 NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0
 WHMIS CLASSIFICATION :
 Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
 P.O. Box 2197
 Houston, TX 77252
 GENERAL INFORMATION PHONE : 1-(713)293-5550
 TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
 MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Aromatic & Paraffinic)	Mixture
*Benzene	71-43-2
Hydrogen Sulfide	7783-06-4

- Regulated as a toxic chemical under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Hazardous Physical Properties:
 Class IA Flammable Liquid per NFPA Code No. 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 15-200 PSI @ 100 deg F
 Vapor Density : > 1 (Air = 1.0)
 Solubility in Water : Slightly soluble
 Form : Liquid
 Color : Colorless
 Specific Gravity : (H2O = 1) 0.5 - 0.7
 API Gravity : 70-140
 Distillation Range : -125 - +400 deg F (Includes traces of hydrocarbons, hexanes, and higher molecular weight.)

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HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Decomposition Products: Oxides of carbon and sulfur. Incomplete combustion may produce carbon monoxide.

Conditions to Avoid: It is flammable. Reactive with oxidizing agents. Corrosive to many materials when moist.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Class IA Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:

Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:

Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs.

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(HEALTH HAZARD INFORMATION - CONTINUED)

dogs, or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100-700 deg F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons which may cause irritation to eyes, skin, and lungs after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues.

Carcinogenicity

The following components are listed by IARC, NTP, OSHA, or ACGIH as carcinogens. A 'P' indicates a Proposed Carcinogen.

Chemical	IAR	NTP	OSH	ACG
Benzene	X	X	X	X

DuPont controls the following chemicals as potential carcinogens :
Benzene .

Exposure Limits for STABILIZER OVERHEAD LIQUID

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

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(HEALTH HAZARD INFORMATION - CONTINUED)

Other : Exposure Limits for Petroleum Distillate
PEL: 400 ppm, 1600 mg/m3

Other Applicable Exposure Limits:

Exposure Limits for Benzene

AEL • (DuPont): 1 ppm - 8 & 12 Hr. TWA
5 ppm - 15 Min. TWA
TLV ** (ACGIH) : 10 ppm, 30 mg/m3 (A2)
PEL (OSHA) : 1 ppm - 8 Hr. TWA
5 ppm - (Short term exposure limit)
0.5 ppm - Action level

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION

If hydrogen sulfide is present, the following applies:
Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive pressure full facepiece, self-contained or supplied-air NIOSH approved respirators before attempting the rescue.

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(FIRST AID - CONTINUED)

Remove victim to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep warm and at rest. Call a physician.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits.

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: Neoprene or NBR recommended.

Eye Protection: Where the possibility of splashing exists, a face shield is recommended.

Other Protective Equipment: Sufficient protective apparel should be worn to minimize potential skin contact with this material.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material. Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

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(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

Recycle as much of the recoverable material as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Petroleum distillate
Hazard Class : Flammable liquid
UN/NA No. : UN 1268
DOT Label(s) : Flammable liquid
DOT Placard : Flammable

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

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CI047

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MATERIAL IDENTIFICATION

NUMBER : ITAIL090
NAME : PROPANE INTERMEDIATE STREAM

CHEMICAL FAMILY : Paraffin Hydrocarbons

TRADE NAMES / SYNONYMS :
Mixture of propane and propylene
Cat Poly Propane
Casinghead or PBC Propane
Alky Propane
GRP P-P
FCC P-P

CAS NUMBER : 74-98-6
NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrogen Sulfide	7783-06-4
Hydrocarbons (gaseous alkanes)	Mixture

Hazardous Physical Properties:
Compressed Gas, Flammable.

The material is hazardous as defined by OSHA's Hazard
Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Boiling Point : -54 to -44 deg F
Vapor Pressure : Approx. 10,000 mmHg or 200 psia @ 100 deg F
Vapor Density : 1.56 (Air = 1.0)
% Volatiles : (by volume) 100
Solubility in Water : Insoluble
Form : Gas (liquid under pressure)
Color : Colorless
Specific Gravity : Gas; Liquid 0.5-0.6 (H2O = 1)
Odor : Propane sold for use as fuel
contains mercaptan odorant.

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HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Oxides of carbon
and sulfur.

Conditions to Avoid: Strong oxidizing materials.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Method : TCC
Flammable Limits in Air, % by Vol.
LEL : 2.2
UEL : 9.5
Flash Point: Below ambient or approximately -156 deg F

FIRE AND EXPLOSION HAZARDS

Handle and store in accordance with NFPA procedure for
Compressed Gas, Flammable.

EXTINGUISHING MEDIA

If gas has ignited, do not extinguish. Stop gas flow.
Allow to burn out.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Do not fight fire. Shut off source of fuel, if possible and without
risk. Cool tank/container with water spray.
If a leak or spill has not ignited, use water spray to
disperse the gas and to protect personnel attempting to
stop a leak.

Unusual Fire and Explosion Hazards: Highly flammable.
Products of combustion may contain carbon monoxide, carbon
dioxide and other toxic materials. Do not enter enclosed or
confined space without proper protective equipment including
respiratory protection.

HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Inhalation:

Signs and Symptoms of Exposure/Medical Conditions Aggravated
by Exposure:

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(HEALTH HAZARD INFORMATION - CONTINUED)

Overexposure may cause central nervous system depression. Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. Contact with liquified gas may cause frostbite.

If hydrogen sulfide is present, low concentrations are irritating to the eyes, skin, and respiratory tract. At higher concentrations, respiratory paralysis and loss of ability to smell hydrogen sulfide may occur.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for PROPANE INTERMEDIATE STREAM

AEL * (DuPont): None Established
TLV ** (ACGIH) : Simple Asphyxiant
PEL (OSHA) : 1,000 ppm, 1,800 mg/m3

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL * (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

Immediately consult a physician for possible frostbite.

EYE CONTACT

Immediately consult a physician for possible frostbite.

INHALATION

If hydrogen sulfide is present, the following applies:
Rescue personnel must use good judgment to minimize

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28-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: ITAIL09

(FIRST AID - CONTINUED)

their risk. Because hydrogen sulfide can cause death, rescuers must wear positive-pressure, full-facepiece, self-contained or supplied-air, NIOSH-approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Keep warm and at rest. Call a physician.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Storage and use areas should be well ventilated. Fans or blowers should be used in enclosed areas.

Personal Protective Equipment

Respiratory Protection: Personnel should never enter high concentrations except for rescue. Self-contained respiratory equipment should be used.

Protective Gloves: Should be used to prevent frostbite which can be caused by rapid evaporation.

Eye Protection: Chemical goggles or face shield when changing valves, hoses, etc. Use full facepiece where respiratory protection is required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Remove source of heat, sparks, flame, impact, friction or electricity. Keep upwind of leak - evacuate until gas has dispersed. Dissipate vapor with water spray.

Waste Disposal

If spilled as a liquid, this product will evaporate completely. Vapors should be dispersed mechanically, if possible.

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C1047

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SHIPPING INFORMATION

DOT

Proper Shipping Name :
Liquified Petroleum Gas
Hazard Class : Flammable gas
UN/NA No. : UN 1075
DOT Label(s) : Flammable gas
DOT Placard : Flammable

STORAGE CONDITIONS

Store in well ventilated area. Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006631

CHLORINE LIQUIDIFIED GAS

REVISION OF: 12-29-89

G S 120

REQUESTED FOR:

45079636
CONOCO INCORDER NO:
PROD NO: 04099972P O BOX 51277
LAFAYETTE

LA 70503

VAN WATERS & ROGERS, INC., SUBSIDIARY OF UNIVAR
1500 NORTON BLVD. SEATTLE, WA 98104-1564 (408) 435-8700

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: CHLORINE
COMMON NAME/SYNONYMS: CHLORINE
EPA REG. NO. 350-177CAS NO.: 7782-50-5
VWR CODE: P1011FORMULA: Cl_2
HAZARD RATING (NFPA 49)
HEALTH: 3
FLAME: 0
REACTIVITY: 0
SPECIAL: OXYDATE ISSUED: 08/89
SUPERCEDES: 07/87
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	Z	EXPOSURE LIMITS, PPM			HAZARD
		OSHA PEL	ACGIH TLV	OTHER LIMIT	
CHLORINE	99.5	0.5	1	1.0 CEILING	HAZARD TOXIC CORROSIVE: COMPRESSED GAS

PHYSICAL PROPERTIES

BOILING POINT, DEG F: -29	VAPOR PRESSURE, MM HG/20 DEG C: 4800
MELTING POINT, DEG F: -150	VAPOR DENSITY (AIR=1): 2.5
SPECIFIC GRAVITY (WATER=1): 1.41 (LIQUID)	WATER SOLUBILITY, %: 0.7
APPEARANCE AND ODOR:	EVAPORATION RATE (BUTYL ACETATE=1): N/A
GREENISH-YELLOW GAS OR LIQUID, SUFFOCATING, PUNGENT ODOR	

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: TREAT FOR INHALATION EXPOSURE FIRST. IMMEDIATELY FLUSH SKIN WITH LOTS OF RUNNING WATER FOR 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. WASH BEFORE REUSE. GET

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CHLORINE LIQUIFIED GAS

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IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: INHALATION.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS ARE EXTREMELY CORROSIVE TO THE NOSE, THROAT, AND MUCOUS MEMBRANES. BRONCHITIS, PULMONARY EDEMA, AND CHEMICAL PNEUMONITIS MAY OCCUR. IRRITATION, COUGHING, CHEST PAIN, AND DIFFICULTY IN BREATHING MAY OCCUR WITH BRIEF EXPOSURE WHILE PROLONGED EXPOSURE MAY RESULT IN MORE SEVERE IRRITATION AND TISSUE DAMAGE. BREATHING HIGH CONCENTRATIONS MAY RESULT IN DEATH.

EYE CONTACT: VAPORS, LIQUID, AND MISTS ARE EXTREMELY CORROSIVE TO THE EYES. BRIEF CONTACT OF THE VAPORS WILL BE SEVERELY IRRITATING. BRIEF CONTACT OF THE LIQUID OR MISTS WILL SEVERELY DAMAGE THE EYES AND PROLONGED CONTACT MAY CAUSE PERMANENT EYE INJURY WHICH MAY BE FOLLOWED BY BLINDNESS.

SKIN CONTACT: LIQUID CHLORINE WILL BURN THE SKIN. HIGH CONCENTRATIONS OF GAS WILL IRRITATE THE SKIN AND MAY FORM BLISTERS.

SWALLOWED: SWALLOWING IS UNLIKELY BECAUSE CHLORINE IS A GAS AT ROOM TEMPERATURE AND PRESSURE. INGESTION OF LIQUID WOULD CAUSE SEVERE INTERNAL INJURIES.

CHRONIC EFFECTS OF EXPOSURE: MAY CAUSE CORROSION OF THE TEETH, SKIN IRRITATION, AND REDUCED RESPIRATORY CAPACITY.

MEDICAL CONDITIONS: GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

-----TOXICITY DATA-----

ORAL: NO DATA FOUND BECAUSE CHLORINE IS A GAS AT ROOM TEMPERATURE.

DERMAL: NO DATA FOUND BECAUSE CHLORINE IS A GAS AT ROOM TEMPERATURE.

INHALATION: HUMAN LC50 = 878 PPM/30 MIN; RAT LC50 = 298 PPM/1 HR;
MOUSE LC50 = 137 PPM/1 HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

OTHER DATA: THE ODOUR THRESHOLD FOR CHLORINE GAS IS 0.02-0.2 PPM ALTHOUGH OLFATORY FATIGUE MAY DEVELOP AFTER CHRONIC LOW LEVEL EXPOSURES. AT 0.2-0.5 PPM IN AIR THERE ARE NO REPORTED LONG-TERM EFFECTS; 1-3 PPM IRRITATE THE NOSE AND EYES; 6 PPM IRRITATE THE THROAT; 30 PPM CAUSES INTENSE COUGHING; 40-60 PPM MAY CAUSE SERIOUS DAMAGE; 100 PPM MAY CAUSE LETHAL DAMAGE; 1000 PPM MAY BE FATAL WITH A FEW DEEP BREATHS.

-----PERSONAL PROTECTION-----

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL. PROVIDE SUITABLE VENTING FOR LOW LYING AREAS.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THE VAPOR OR MIST CONCENTRATION AT THE POINT OF USE. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ACID GASES/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACEPIECE UNLESS A FULL

CHLORINE LIQUIFIED GAS

REVISION OF: 12-29-86

CS120

FACEMASK RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: NONE

FLAMMABLE LIMITS IN AIR, %

METHOD USED: N/A

LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE. CHLORINE WILL SUPPORT COMBUSTION.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE. TANKS AND CYLINDERS WILL RELEASE CHLORINE WHEN FUSIBLE METAL SAFETY PLUGS MELT AT 125 DEG F.

UNUSUAL FIRE AND EXPLOSION HAZARDS: CHLORINE WILL SUPPORT THE BURNING OF COMBUSTIBLE MATERIALS JUST AS OXYGEN DOES. FLAMMABLE GASES AND VAPORS CAN FORM EXPLOSIVE MIXTURES WITH CHLORINE. LIQUID CHLORINE CAN IGNITE SOLID METALS SUCH AS ALUMINUM, CARBON STEEL, AND FINELY DIVIDED IRON.

HAZARDOUS REACTIVITY

ABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

ADDITIONS TO AVOID: INTENSE LOCAL HEAT

MATERIALS TO AVOID: REDUCING AGENTS, COMBUSTIBLE MATERIALS, ORGANIC CHEMICALS, FINELY DIVIDED METALS AND WATER.

HAZARDOUS DECOMPOSITION PRODUCTS: CHLORINE DOES NOT DECOMPOSE BUT REACTS WITH WATER TO FORM HYDROCHLORIC ACID AND WITH CARBON MONOXIDE TO FORM PHOSGENE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: ONLY SPECIALLY TRAINED PERSONNEL SHOULD ATTEMPT REPAIRS. WEAR ACID-RESISTANT SLICKER SUIT AND COMPLETE PROTECTIVE EQUIPMENT INCLUDING RUBBER GLOVES, RUBBER BOOTS, AND CHEMICAL GOGGLES AND FACE SHIELD. WEAR SELF-CONTAINED BREATHING APPARATUS. STOP THE FLOW OF GAS. IF THE LEAK CANNOT BE STOPPED IN PLACE AND IS IN AN ENCLOSED PLACE, MOVE THE CONTAINER TO THE OPEN AIR IF IT IS SAFE TO DO SO. SHIFT THE CONTAINER SO GAS, RATHER THAN LIQUID, LEAKS. REPAIR THE LEAK OR APPLY AN EMERGENCY KIT. NEVER APPLY WATER TO A CHLORINE LEAK.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS: STORE IN A COOL, DRY AREA OUT OF DIRECT SUNLIGHT AND PROTECTED FROM MOISTURE. STORE AWAY FROM OTHER COMPRESSED GASES, INCOMPATIBLE MATERIALS, AND COMBUSTIBLE MATERIALS. USE AN APPROVED CHLORINE WRENCH ONLY.

PAK AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: DO NOT ATTEMPT TO HANDLE, STORE, OR USE CHLORINE

1011

MATERIAL SAFETY DATA SHEET

PG 4

CHLORINE LIQUIDIFIED GAS

REVISION OF: 12-29-89

WITHOUT A COMPLETE REVIEW BY ALL PERSONNEL OF THE CHLORINE INSTITUTE'S CHLORINE MANUAL. ALSO, ATTENDANCE AT A VAN WATERS & ROGERS, INC. SEMINAR ON CHLORINE HANDLING IS SUGGESTED.

5120

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS, INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

-----OTHER REGULATORY INFORMATION-----

DO NOT DETACH THIS SECTION FROM THE MSDS AND BE SURE TO INCLUDE THIS SECTION WHEN COPYING THE MSDS.

THIS PRODUCT IS A TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 312 OF TITLE 11 OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

-----NOTICE-----

VAN WATERS & ROGERS, INC. ("VWR") EXPRESSLY DISCLAIMS ALL EXPRESS & IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VWR MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VWR'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

-----REVISION-----

07/89: REVISED PEL.

08/89: CHANGED HEADING AND CONTACT INFORMATION.

**** E N D O F M S D S ****

PROD: 04099972 14:10:07 05 JAN 1990 CUST: 45079636 INVOICE:

SAL 000006635

Material Safety Data Sheet



Emergency Medical Telephone (800) 441-3637

DECTOL R.O. OILS 32, 46, 68, 100

GS128

I. MATERIAL IDENTIFICATION

Name

Dectol R.O. Oils 32, 46, 68, 100

CAS Registry Number

Mixture; See Section XI

Synonyms

Petroleum Lubricating and Hydraulic Oil

Product Code

7302/7304/7306/7308

Chemical Family

Petroleum Hydrocarbons

Transportation Emergency Phone

1-(800) 424-9300 (Chemtrec)

II. OSHA HAZARD DETERMINATION

The material is not hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for federal and state regulatory information.

Hazardous Ingredients

CAS Registry Number

Concentration

None

Hazardous Physical Properties

None

III. PHYSICAL DATA

Appearance and Odor

Light brown liquid;
Pungent sweet odor

Specific Gravity (H₂O = 1)

0.87

Boiling Point/Range

650° - 1200°F

% Volatiles (by volume)

Nil

Vapor Pressure

Nil

Solubility in Water

Insoluble

Vapor Density (Air = 1.0)

> 1

Evaporation Rate (Ether = 1)

Nil

IV. REACTIVITY DATA

Stable: X Unstable:

Hazardous Decomposition Materials: Hazardous gases/vapors produced are carbon dioxide. Incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

V. FIRE AND EXPLOSION HAZARD DATAFlash Point (Method used): 290°F (PMCC)Autoignition Temperature: 680°F

Handle and store in accordance with NFPA procedure for Class IIIB Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, CO₂, foam.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) ClassificationHealth 0 Fire 1 Reactivity 0HAZARD RATINGLeast-0 Slight-1 Moderate-2
High-3 Extreme-4**VI. TRANSPORTATION AND STORAGE**

Storage Conditions:

Store in accordance with National Fire Protection Association regulations.

Shipping Information:

DOT: Not Regulated

IATA/IMO: Not Restricted

VII. HEALTH HAZARD INFORMATION

Exposure Limits for Dectol R.O. Oils 32, 46, 68, 100

PEL: None EstablishedCeiling Value: None EstablishedTLV: None Established

Primary Routes of Exposure/Entry: Skin.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Mouse skin painting studies have shown that highly solvent-refined petroleum distillates, which are similar to ingredients in this product, have not caused skin tumors. The product does not pose a significant health hazard, but as with many petroleum products, poor hygienic practices or inadequate engineering design that allow prolonged or repeated exposure may cause minor skin irritation.

Carcinogenicity:

None of the components in this material are listed as carcinogens by NTP, IARC, or OSHA.

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Gastric lavage by qualified personnel may be considered, depending on quantity of material ingested.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming, followed by recovering residual fluids by using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

X. PRECAUTIONARY MEASURES

Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: Should be worn when the potential exists for prolonged or repeated skin exposure. NBR or neoprene recommended.

Eye Protection: Safety glasses with side shields; chemical splash goggles if splashing is probable.

Other Protective Equipment: Coveralls with long sleeves if splashing is probable. Launder contaminated clothing before reuse.

XI. REGULATORY INFORMATION**FEDERAL REGULATIONS**

CERCLA, 40 CFR 302

Not Applicable

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III
SECTIONS 302, 304, 311, 312, 313**

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories:

☐ Immediate (Acute) Health Hazard	☐ Sudden Release of Pressure
☐ Delayed (Chronic) Health Hazard	☐ Reactive
☐ Fire	☒ Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material does not contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is a mixture as defined by TSCA. The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies on the assurance of responsible third parties in providing this statement.

6 S 1 2 8

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D
The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, Regulations 40 CFR 262, 263, 264 and 268 may apply.

**FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116,
SECTION 311**

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient

Petroleum Hydrocarbon

Reportable Quantity

Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

Not Applicable

FOREIGN REGULATIONS

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)

The material is not a WHMIS Controlled Product.

STATE REGULATIONS

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986
(PROPOSITION 65)**

The material does not contain ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

This material does not contain any ingredient(s) subject to the Act. Nonhazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of the Act.

MSDS Code: HYDC0020

DATE OF LATEST REVISION/REVIEW:

DEPARTMENT RESPONSIBLE FOR MSDS:

PRODUCT INFORMATION CONTACT:

8/89 - Replaces MSDS dated 4/89

Environmental and Occupational Health Services

MSDS Analyst

Conoco Inc.

(713) 293-5550

SAL 000006639

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

CHESTERTON®

MATERIAL SAFETY DATA SHEET

G S 179

A. W. CHESTERTON COMPANY
Middlesex Industrial Park/Route 93, Stoneham, MA 02180

Emergency Telephone No. 617-438-7000 (Day)
617-438-7013 (Night)

Section I

Date of Prep. September 1, 1987

MSDS No. 122-2

Product Name 255 Gel Cleaner

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard
0 = Minimal Hazard

HEALTH	2
FLAMMABILITY	3
REACTIVITY	1
Personal Protection	*

* - See Section VIII - Special Protection Information

General Use and Precautionary Information

Removes grease and oil without scrubbing. The principal hazard is from exposure to high vapor concentrations. Vapor build-up will most frequently occur in poorly ventilated or enclosed areas. Frequent skin contact could defat the skin. The product is also classified as flammable.

Section II - HAZARDOUS INGREDIENTS

Ingredients/Synonyms	CAS No.	% WL	OSHA-PPEL ppm mg/m3	ACGIH-TLV ppm mg/m3	Vapor Pressure
Stoddard Solvent	8052-41-3	40-45	500 2900	100 525	10 mm Hg
Potassium Hydroxide	1310-58-3	1-3	- -	(ceiling)2	-
Isopropyl Alcohol	67-63-0	5-10	400 980	400 980	90 mm Hg

Section III - PHYSICAL DATA

Initial Boiling Point 82°C (180°F)

Percent Volatile (by volume) 82

Vapor Density >1
(Air = 1)

Evaporation Rate <1
(Ether = 1)

Weight Per Gallon 7.2 lbs (0.9 kg/l)

Section IV - FIRE AND EXPLOSION DATA

Flash Point 32°C (90°F)
Closed Cup

LEL 0.9%

DOT Shipping Name Compounds, Cleaning, Liquid

DOT Hazard Class Flammable Liquid

DOT UN/NA # NA1993

Extinguishing Media Carbon Dioxide, dry chemical, foam or water fog

Unusual Fire and Explosion Hazards None

Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.

SAL 000006641

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Product Name: 256 Gel Cleaner		Date: September 1, 1987
Section V — REACTIVITY DATA		
Stability Stable Hazardous Decomposition Products Carbon Monoxide, Aldehydes and other toxic fumes. Hazardous Polymerization ☐ May Occur ☒ Will Not Occur	Conditions to Avoid Open flames and red hot surfaces. Materials to Avoid Strong oxidizers like liquid chlorine and concentrated oxygen.	
Section VI — HEALTH HAZARD DATA		
Primary Route of Exposure Under Normal Use Inhalation, skin and eye contact. Acute Effects Direct eye contact may result in eye irritation. Inhalation of vapor concentrations in excess of the PEL/TLV may result in eye and respiratory tract irritation and dizziness and headaches. Chronic Effects Prolonged or repeated skin contact may defat the skin and cause skin irritation. Emergency and First Aid Procedures Inhalation Remove to fresh air. If not breathing, administer artificial respiration. Contact physician. Eye/Skin Contact Wash skin with soap and water. Flush eyes for at least 15 minutes with large amounts of water. Contact physician if irritation persists. Ingestion Do not induce vomiting. Contact physician immediately.		
Section VII — SPILL OR RELEASE PROCEDURES		
Steps to be Taken in Case Material is Spilled or Released Evacuate area. Provide adequate ventilation. Contain spill to a small area. Flush away from ignition sources with water. Pick up with absorbent material (e.g., sand, clay, sawdust, etc.) and transfer to a suitable container for disposal. Waste Disposal Method Incinerate absorbed material. Check local, state and federal regulations.		
Section VIII — SPECIAL PROTECTION INFORMATION		
Respiratory Protection Not normally needed. If PEL/TLV is exceeded, use approved organic vapor respirator. Ventilation No special requirements. If PEL/TLV is exceeded, provide adequate ventilation.	Protective Gloves Chemical resistant gloves (e.g., Butyl). Eye Protection Safety goggles Other None	
Section IX — SPECIAL PRECAUTIONS		
Precautions in Handling and Storing Keep containers closed when not in use. Other Precautions None		
SAL 000006642		
The information contained herein is based on data provided from suppliers of the materials used and not on the mixture itself, and is believed to be correct. However, no warranty is expressed or implied regarding the accuracy of the data. Since the information contained herein may be applied under conditions beyond our control, the persons receiving it shall make their own determination of the suitability of the product for their particular purposes.		



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MATERIAL SAFETY DATA SHEET

97367 (4-85)

MSDS NUMBER ▶

5,250-4

PAGE 1

24 HOUR EMERGENCY ASSISTANCE			GENERAL MSDS ASSISTANCE		
SHELL: 713-473-9461 CHEMTREC: 800-424-9300			SHELL: 713-241-4819		
ACUTE HEALTH + + 2	FIRE 1	REACTIVITY 0	HAZARD RATING ▶ LEAST - 0 SLIGHT - 1 MODERATE - 2 HIGH - 3 EXTREME - 4		
*For acute and chronic health effects refer to the discussion in Section III					



SECTION I	NAME
PRODUCT ▶	TRIETHYLENE GLYCOL
CHEMICAL NAME ▶	TEG
CHEMICAL FAMILY ▶	GLYCOL
SHELL CODE ▶	32378

SECTION II-A		PRODUCT/INGREDIENT	
NO.	COMPOSITION	CAS NUMBER	PERCENT
P	TRIETHYLENE GLYCOL	MIXTURE	100
1	DIETHYLENE GLYCOL	111-46-6	4.2
2	TRIETHYLENE GLYCOL	112-27-6	95
3	TETRAETHYLENE GLYCOL	112-60-7	1.8

SECTION II-B		ACUTE TOXICITY DATA	
NO.	ACUTE ORAL LD50	ACUTE DERMAL LD50	ACUTE INHALATION LC50
1	14.8 G/KG - RAT	11.9 G/KG - RABBIT	NONE
2	>15 G/KG - RAT	NONE	NONE
3	30.8 ML/KG - RAT	20 ML/KG - RABBIT	SATO. AIR-B HRS-RAT-NO DEATHS

SECTION III HEALTH INFORMATION

THE HEALTH EFFECTS NOTED BELOW ARE CONSISTENT WITH REQUIREMENTS UNDER THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200).

EYE CONTACT

PRODUCT IS MILDLY IRRITATING TO THE EYES.

SKIN CONTACT

PRODUCT IS SLIGHTLY IRRITATING TO THE SKIN. SKIN SENSITIZATION TESTING IN 25 HUMAN VOLUNTEERS DID NOT FIND ANY SENSITIZATION TO OCCUR.

INHALATION

GENERALLY CONSIDERED TO HAVE A LOW ORDER OF ACUTE INHALATION TOXICITY BUT VAPORS OF COMPONENT 1 MAY BE IRRITATING TO THE LUNGS.

INGESTION

BASED ON PRODUCT TESTING, PRODUCT IS GENERALLY CONSIDERED TO HAVE A LOW ORDER OF ACUTE ORAL TOXICITY BUT INGESTION OF COMPONENT 1 MAY PRODUCE CNS DEPRESSION AND KIDNEY DAMAGE, WHICH MAY BE FATAL, AND LIVER DAMAGE.

SAL 000006643

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65333

PRODUCT NAME: TRIETHYLENE GLYCOL

MSDS 5,250-4
PAGE 2**SIGNS AND SYMPTOMS**

IRRITATION AS NOTED ABOVE. EARLY TO MODERATE CNS (CENTRAL NERVOUS SYSTEM) DEPRESSION MAY BE EVIDENCED BY GIDDINESS, HEADACHE, DIZZINESS AND NAUSEA; IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH MAY OCCUR. KIDNEY DAMAGE MAY BE EVIDENCED BY CHANGES IN URINE OUTPUT, URINE APPEARANCE OR EDEMA (SWELLING FROM FLUID RETENTION). LIVER DAMAGE MAY BE EVIDENCED BY LOSS OF APPETITE, JAUNDICE (YELLOWISH SKIN COLOR) AND SOMETIMES PAIN IN THE UPPER ABDOMEN ON THE RIGHT SIDE.

AGGRAVATED MEDICAL CONDITIONS

PREEXISTING SKIN, EYE AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT. IMPAIRED LIVER AND KIDNEY FUNCTIONS FROM PREEXISTING DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.

SECTION IV OCCUPATIONAL EXPOSURE LIMITS

NO.	PEL/TWA	OSHA	PEL/CEILING	TLV/TWA	ACGIH	TLV/STEL	OTHER
-----	---------	------	-------------	---------	-------	----------	-------

NONE ESTABLISHED.

SECTION V EMERGENCY AND FIRST AID PROCEDURES**EYE CONTACT**

FLUSH EYES WITH PLENTY OF WATER FOR 15 MINUTES WHILE HOLDING EYELIDS OPEN. GET MEDICAL ATTENTION.

SKIN CONTACT

FLUSH SKIN WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ATTENTION.

INHALATION

REMOVE VICTIM TO FRESH AIR AND PROVIDE OXYGEN IF BREATHING IS DIFFICULT. GET MEDICAL ATTENTION.

INGESTION

DO NOT GIVE LIQUIDS IF VICTIM IS UNCONSCIOUS OR VERY DROWSY. OTHERWISE, GIVE NO MORE THAN 2 GLASSES OF WATER AND INDUCE VOMITING BY GIVING 30CC (2 TABLESPOONS) SYRUP OF IPECAC.* IF IPECAC IS UNAVAILABLE, GIVE 2 GLASSES OF WATER AND INDUCE VOMITING BY TOUCHING FINGER TO BACK OF VICTIM'S THROAT. KEEP VICTIM'S HEAD BELOW HIPS WHILE VOMITING. GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN

IF VICTIM IS A CHILD, GIVE NO MORE THAN 1 GLASS OF WATER AND 15CC (1 TABLESPOON) SYRUP OF IPECAC. IF SYMPTOMS SUCH AS LOSS OF GAG REFLEX, CONVULSIONS OR UNCONSCIOUSNESS OCCUR BEFORE EMESIS, GASTRIC LAVAGE SHOULD BE CONSIDERED FOLLOWING INTUBATION WITH A CUFFED ENDOTRACHEAL TUBE.

SECTION VI SUPPLEMENTAL HEALTH INFORMATION

NONE IDENTIFIED.

SAL 000006544

SECTION VII PHYSICAL DATABOILING POINT: 540
(DEG F)SPECIFIC GRAVITY: 1.1
(H2O=1)VAPOR PRESSURE: <0.01 @
(MM HG) 68 DEG F

65333

PRODUCT NAME: TRIETHYLENE GLYCOL

MSDS 5,250-4
PAGE 3

MELTING POINT: 19
(DEG F)

SOLUBILITY: COMPLETE
(IN WATER)

VAPOR DENSITY: 5
(AIR=1)

EVAPORATION RATE (N-BUTYL ACETATE = 1): 0.001

APPEARANCE AND ODOR:
COLORLESS, SLIGHTLY VISCOUS LIQUID. MILD ODOR.

SECTION VIII

FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
305 DEG F TCC

FLAMMABLE LIMITS /% VOLUME IN AIR
LOWER: N/AP UPPER: N/AP

EXTINGUISHING MEDIA
USE WATER FOG, "ALCOHOL" FOAM, DRY CHEMICAL OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS
MATERIAL WILL NOT BURN UNLESS PREHEATED. DO NOT ENTER CONFINED FIRE SPACE WITHOUT FULL BUNKER GEAR (HELMET WITH FACE SHIELD, BUNKER COATS, GLOVES AND RUBBER BOOTS), INCLUDING A POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS WITH WATER.

SECTION IX

REACTIVITY

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS AND MATERIALS TO AVOID:
AVOID CONTACT WITH STRONG OXIDIZING AGENTS

HAZARDOUS DECOMPOSITION PRODUCTS
CARBON MONOXIDE AND UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED DURING COMBUSTION.

SECTION X

EMPLOYEE PROTECTION

RESPIRATORY PROTECTION
USE A NIOSH-APPROVED RESPIRATOR AS REQUIRED TO PREVENT OVEREXPOSURE. IN ACCORD WITH 29 CFR 1910.134, USE EITHER AN ATMOSPHERE-SUPPLYING RESPIRATOR OR AN AIR-PURIFYING RESPIRATOR FOR ORGANIC VAPORS.

PROTECTIVE CLOTHING
AVOID CONTACT WITH EYES. WEAR CHEMICAL GOGGLES IF THERE IS LIKELIHOOD OF CONTACT WITH EYES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. WEAR CHEMICAL-RESISTANT GLOVES AND OTHER CLOTHING AS REQUIRED TO MINIMIZE CONTACT.

ADDITIONAL PROTECTIVE MEASURES
USE VENTILATION AS REQUIRED TO CONTROL VAPOR CONCENTRATIONS. EYE WASH FOUNTAINS AND SAFETY SHOWERS SHOULD BE AVAILABLE FOR EMERGENCY USE.

SECTION XI

ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES
MAY BURN ALTHOUGH NOT READILY IGNITABLE. USE CAUTIOUS JUDGMENT WHEN CLEANING UP LARGE SPILLS. *** LARGE SPILLS *** WEAR RESPIRATOR AND PROTECTIVE CLOTHING AS APPROPRIATE. SHUT OFF SOURCE OF LEAK IF SAFE TO DO SO. DIKE AND CONTAIN. REMOVE WITH VACUUM TRUCKS OR PUMP TO STORAGE/SALVAGE VESSELS. SOAK UP RESIDUE WITH AN ABSORBENT SUCH AS CLAY, SAND OR OTHER SUITABLE MATERIAL; DISPOSE OF PROPERLY. FLUSH AREA WITH WATER TO REMOVE TRACE RESIDUE. *** SMALL SPILLS *** TAKE UP WITH AN ABSORBENT MATERIAL AND DISPOSE OF PROPERLY.



65833

ENVIRONMENTAL DATA SHEET

EDS NUMBER ► 5,250

PAGE 1

57448 (8-87)

PRODUCT ► TRIETHYLENE GLYCOL

PRODUCT
CODE ► 32378

SECTION I

PRODUCT/COMPOSITION

NO.	COMPONENT	CAS NUMBER	PERCENT
P	TRIETHYLENE GLYCOL	MIXTURE	100
1	DIETHYLENE GLYCOL	111-46-6	4.2

SECTION II

SARA TITLE III INFORMATION

NO.	EH5 RQ (LBS) (*1)	EH5 TPQ (LBS) (*2)	SEC 313 (*3)	313 CATEGORY (*4)	311/312 CATEGORIES (*5)
-----	----------------------	-----------------------	-----------------	----------------------	----------------------------

1

H-1

FOOTNOTES

- *1 = REPORTABLE QUANTITY OF EXTREMELY HAZARDOUS SUBSTANCE, SEC.302
- *2 = THRESHOLD PLANNING QUANTITY, EXTREMELY HAZARDOUS SUBSTANCE, SEC 302
- *3 = TOXIC CHEMICAL, SEC 313
- *4 = CATEGORY AS REQUIRED BY SEC 313 (40 CFR 372.65 C), MUST BE USED ON TOXIC RELEASE INVENTORY FORM
- *5 = HAZARD CATEGORY FOR SARA SEC. 311/312 REPORTING
 - HEALTH H-1 = IMMEDIATE (ACUTE) HEALTH HAZARD H-2 = DELAYED (CHRONIC) HEALTH HAZARD
 - PHYSICAL P-3 = FIRE HAZARD P-4 = SUDDEN RELEASE OF PRESSURE HAZARD
 - P-5 = REACTIVE HAZARD

SECTION III

ENVIRONMENTAL RELEASE INFORMATION

KEEP OUT OF SURFACE WATERS, SEWERS, AND WATERWAYS ENTERING OR LEADING TO SURFACE WATERS. NOTIFY AUTHORITIES IF ANY EXPOSURE TO THE GENERAL PUBLIC OR ENVIRONMENT OCCURS OR IS LIKELY TO OCCUR.

SECTION IV

RCRA INFORMATION

PLACE IN AN APPROPRIATE DISPOSAL FACILITY IN COMPLIANCE WITH LOCAL REGULATIONS.

SAL 000006646

333

PRODUCT NAME: TRIETHYLENE GLYCOL

EDS 5,250
PAGE 2

THE INFORMATION CONTAINED HEREIN IS BASED ON THE DATA AVAILABLE TO US AND IS BELIEVED TO BE CORRECT. HOWEVER, SHELL MAKES NO WARRANTY, EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. SHELL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.

DATE PREPARED: OCTOBER 15, 1987

SHELL OIL COMPANY
ENVIRONMENTAL AFFAIRS
P. O. BOX 4320
HOUSTON, TX 77210

FOR ADDITIONAL INFORMATION ON THIS ENVIRONMENTAL DATA PLEASE CALL
(713) 241-2252

FOR EMERGENCY ASSISTANCE PLEASE CALL
SHELL: (713) 473-9481
CHEMTREC: (800) 424-9300

SAL 000006647

C1043

28-Sep-89

Page 1

Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : IPBC0060
NAME : RICH SPONGE OIL, RICH OIL
CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Absorber Oil
Absorber Lean Oil
CAS NUMBER : Mixture
NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252
GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Aromatic & Paraffinic)	Mixture
*Naphthalene	91-20-3
Hydrogen Sulfide	7803-06-4

- * Regulated as a toxic chemical under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Hazardous Physical Properties:

Class 1A Flammable Liquid per NFPA Code No. 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : Approximately 2 PSI @ 100 deg F
Vapor Density : Not Applicable
Solubility in water : Slightly soluble
Form : Liquid
Color : Bronze
API Gravity : 15 - 20
Distillation Range : 100 - 700 deg F

SAL 000006648

SHEA 001162, 001163

CI043

10/SEP/07

Canada Material Safety Data Sheet

Page 2
MSDS No: IPBC0060

HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Decomposition Products: Oxides of carbon and sulfur. Incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Less than ambient

FIRE AND EXPLOSION HAZARDS

Class 1A Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical, CO2,
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:
water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:
Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs, or monkeys. Also, the significance of the liver

SAL 000006649

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Conoco Material Safety Data Sheet

Page 3
MSDS No: IPBC0060

(HEALTH HAZARD INFORMATION - CONTINUED)

tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100-700 deg F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons, and as with many petroleum products, it may cause irritation to the eyes, lungs, or skin after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Naphthalene is a potential irritant to eyes, skin, and lungs and may damage the blood, eye, and kidney after prolonged or repeated exposure.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for RICH SPONGE OIL, RICH OIL

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Naphthalene

AEL • (DuPont): None Established
TLV ** (ACGIH) : 10 ppm, 50 mg/m3
STEL 15 ppm, 75 mg/m3

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(HEALTH HAZARD INFORMATION - CONTINUED)

PEL (USHA) : 10 ppm, 50 mg/m³
STEL 15 ppm, 75 mg/m³

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m³
STEL 15 ppm, 21 mg/m³
PEL (USHA) : 10 ppm, 14 mg/m³
STEL 15 ppm, 21 mg/m³

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION

If hydrogen sulfide is present, the following applies:
Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive-pressure, full-facepiece, self-contained or supplied-air, NIOSH-approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep warm and at rest. Call a physician.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

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Conoco Material Safety Data Sheet

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MSDS No: 118C0005

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: Neoprene or NBR recommended.

Eye Protection: Face shield is recommended if splashing may occur.

Other Protective Equipment: None normally required.

***** SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

Recycle as much of the recoverable material as possible.

***** SHIPPING INFORMATION

DOT

Proper Shipping Name :
Petroleum distillate
Hazard Class : Flammable liquid
UN/NA No. : UN 1268

SAL 000006652

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Conoco Material Safety Data Sheet

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MSDS No: 12BC006

(SHIPPING INFORMATION - CONTINUED)

DOT Label(s) : Flammable liquid
DOT Placard : Flammable

.....
STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.
.....

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

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Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006653

CI041

28-Sep-89

Conoco Material Safety Data Sheet

Page 1

MATERIAL IDENTIFICATION

NUMBER : ITAIL080
NAME : PBC DEETHANIZER TAIL GAS

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Deethanizer OH Gas
Alky Deethanizer OH Gas

CAS NUMBER : Mixture
NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

CSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrogen Sulfide	7783-06-4
Hydrocarbons (Gaseous Alkanes)	Mixture

Hazardous Physical Properties:
Compressed Gas, Flammable.

The material is hazardous as defined by OSHA's Hazard
Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 100 - 200 PSI
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Slightly soluble
Form : Gas
Color : Colorless
Specific Gravity : Not Applicable
Distillation Range : -128 to +30 deg F (contains
ethane through butanes.)

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CI041

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Conoco Material Safety Data Sheet

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MSDS No: ITAIL0.

HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Oxides of carbon.
May produce carbon monoxide by incomplete combustion.

Conditions to Avoid: Flammable gas. Reactive with
oxidizing agents.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Handle and store in accordance with NFPA procedure for
Compressed Gas, Flammable.

EXTINGUISHING MEDIA

If gas has ignited, do not extinguish. Stop gas flow.
Allow to burn out.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Stop flow of gas. Use
water to keep fire-exposed containers cool and to protect
personnel effecting the shutoff. If a leak or spill has not
ignited, use water spray to disperse the gas and to protect
personnel attempting to stop a leak.

Unusual Fire and Explosion Hazards: Highly flammable.
Products of combustion may contain carbon monoxide, carbon
dioxide and other toxic materials. Do not enter enclosed or
confined space without proper protective equipment including
respiratory protection.

HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated
by Exposure:
Overexposure may cause weakness, headache, nausea,
confusion, blurred vision, drowsiness, and other nervous
system effects; greater exposure may cause dizziness,

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Conoco Material Safety Data Sheet

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MSDS No: ITAIL080

(HEALTH HAZARD INFORMATION - CONTINUED)

slurred speech, flushed face, unconsciousness, or convulsions.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. May cause frostbite when skin is exposed to compressed air.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for PBC DEETHANIZER TAIL GAS

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL * (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
 STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
 STEL 15 ppm, 21 mg/m3

* AEL is DuPont's Acceptable Exposure Limit.

** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

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Conoco Material Safety Data Sheet

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MSDS No: ITAILC

(FIRST AID - CONTINUED)

INHALATION

If hydrogen sulfide is present, the following applies: Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive-pressure, full-facepiece, self-contained or supplied-air, NIOSH-approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If breathing stops, begin artificial resuscitation. If breathing is difficult, give oxygen. Keep victim warm and at rest. Seek medical attention.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: None required.

Eye Protection: Use a full facepiece with the respirator when the atmospheric concentration of hydrogen sulfide exceeds the permissible exposure limit.

Other Protective Equipment: None normally required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Remove source of heat, sparks, flame, impact, friction or electricity. Keep upwind of leak - evacuate until gas has dispersed.

Waste Disposal

When feasible, vapors should be dispersed mechanically.

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Conoco Material Safety Data Sheet

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MSDS No: ITAIL080

SHIPPING INFORMATION

Not to be transported by truck, rail, air, or water.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

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Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006658

28-Sep-89

Conoco Material Safety Data Sheet

Page 1

MATERIAL IDENTIFICATION

NUMBER : ITAIL097
 NAME : SOUR WATER STRIPPER ACID GAS

 CHEMICAL FAMILY : Petroleum Hydrocarbons
 TRADE NAMES / SYNONYMS :
 Sour Water Stripper Overhead Gas
 Sour Water Stripper Gas

 CAS NUMBER : Mixture
 NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
 WHMIS CLASSIFICATION :
 Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
 P.O. Box 2197
 Houston, TX 77252
 GENERAL INFORMATION PHONE : 1-(713)293-5550
 TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
 MEDICAL EMERGENCY PHONE : 1-(800)441-3637

 OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrogen Sulfide	7783-06-4
Hydrocarbons (Gaseous Alkanes)	Mixture

Hazardous Physical Properties:
 Compressed Gas, Flammable.

The material is hazardous as defined by OSHA's Hazard
 Communication Standard, 29 CFR 1910.1200.

 PHYSICAL DATA

Vapor Pressure : 50 - 150 PSI @ 100 deg F
 Vapor Density : > 1 (Air = 1.0)
 Solubility in Water : Very soluble
 Form : Gas
 Color : Colorless
 Distillation Range : -258 to +100 deg F (contains
 methane through pentanes)

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CI040

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Conoco Material Safety Data Sheet

Page 2
MSDS No: ITAIL

HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Decomposition Products: Oxides of carbon, nitrogen and sulfur; sulfur if burned in oxygen-deficient atmosphere.

Conditions to Avoid: Flammable gas. Reactive with oxidizing agents. Heat can be generated if reacted with alkaline materials. Wet gas is corrosive.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Less than ambient.

FIRE AND EXPLOSION HAZARDS

Handle and store in accordance with NFPA procedure for Compressed Gas, Flammable.

EXTINGUISHING MEDIA

If gas has ignited, do not extinguish. Stop gas flow. Allow to burn out.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Stop flow of gas. Use water to keep fire-exposed containers cool and to protect personnel effecting the shutoff. If a leak or spill has not ignited, use water spray to disperse the gas or vapor and to protect personnel attempting to stop a leak.

Unusual Fire and Explosion Hazards: Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Inhalation.

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Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:
Overexposure may cause weakness, headache, nausea,

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MSDS No: ITAIL097

(HEALTH HAZARD INFORMATION - CONTINUED)

confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. May cause frostbite when skin is exposed to compressed gas.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for SOUR WATER STRIPPER ACID GAS

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL * (DuPont): 10 ppm - 8 & 12 Hr. IWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

* AEL is DuPont's Acceptable Exposure Limit.
** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician. See physician for possible frostbite.

EYE CONTACT

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MSDS No: ITAILC

(FIRST AID - CONTINUED)

In case of contact, immediately flush eyes with plenty of water :
at least 15 minutes. Call a physician. See physician for possible
frostbite.

INHALATION

If hydrogen sulfide is present, the following applies:
Rescue personnel must use good judgment to minimize
their risk. Because hydrogen sulfide can cause death,
rescuers must wear positive-pressure, full-facepiece,
self-contained or supplied-air, NIOSH-approved
respirators before attempting the rescue.

Remove victim to fresh air immediately. If not
breathing, give artificial respiration. If breathing is
difficult, give oxygen. Keep warm and at rest. Call a
physician.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain
atmospheric concentrations below permissible exposure limits

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved
respiratory protection equipment where atmospheric
concentrations exceed permissible exposure limits.

Protective Gloves: None required.

Eye Protection: Use a full facepiece with the respirator
when the atmospheric concentration of hydrogen sulfide
exceeds the permissible exposure limit.

Other Protective Equipment: None normally required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS
before proceeding with clean up. Use appropriate PERSONAL
PROTECTIVE EQUIPMENT during clean up.
Evacuate personnel, thoroughly ventilate area, use self-contained
breathing apparatus. Remove source of heat, sparks, flame, impact
friction or electricity. Keep upwind of leak - evacuate until gas
has dispersed. Dissipate vapor with water spray.

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MSDS No: ITAIL097

(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

When feasible, vapors should be dispersed mechanically.

SHIPPING INFORMATION

Not to be transported by truck, rail, air, or water.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

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Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006663

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Conoco Material Safety Data Sheet

Page 1

MATERIAL IDENTIFICATION

NUMBER : ITAIL040
 NAME : CTU OVERHEAD/DEBUTANIZER GAS

CHEMICAL FAMILY : Petroleum Hydrocarbons
 TRADE NAMES / SYNONYMS :
 Primary Tower Overhead Gas
 Crude Unit Wet Gas
 LSR Stabilizer Overhead Gas

CAS NUMBER : Mixture
 NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
 WHMIS CLASSIFICATION :
 Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
 P.O. Box 2197
 Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
 TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
 MEDICAL EMERGENCY PHONE : 1-(800)441-3637

 OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Gaseous alkanes)	Mixture
*Benzene	71-43-2
Hydrogen Sulfide	7783-06-4

- Regulated as a toxic chemical under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Hazardous Physical Properties:
 Compressed Gas, Flammable

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

 PHYSICAL DATA

Vapor Pressure : 100 - 200 psi
 Vapor Density : > 1 (Air = 1.0)
 Solubility in Water : Slightly soluble
 Form : Gas
 Color : Colorless
 API Gravity : Not Applicable
 Distillation Range : -258 - +400 deg F (Includes traces of hydrocarbons, hexanes, and higher molecular weight.)

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SHEA 001997

C1039

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Conoco Material Safety Data Sheet

Page 2
MSDS No: ITA1LO

(PHYSICAL DATA - CONTINUED)

HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Oxides of carbon and sulfur. May produce carbon monoxide.

Conditions to Avoid: Highly flammable gas. Reactive with oxidizing agents. Corrosive to many materials when wet.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Handle and store in accordance with NFPA procedure for Compressed Gas, Flammable.

EXTINGUISHING MEDIA

If gas has ignited, do not extinguish. Stop flow of gas. Allow to burn out.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:
Stop flow of gas. Use water to keep fire exposed containers cool and to protect personnel effecting the shutoff. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak.

Unusual Fire and Explosion Hazards:
Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Inhalation. SAL 000006665

Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:

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MSDS No: ITAII040

(HEALTH HAZARD INFORMATION - CONTINUED)

The product contains petroleum hydrocarbons which may cause irritation to eyes, skin, and lungs after prolonged or repeated exposure.

Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions. Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. Contact with compressed or liquified gas may cause frostbite.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues.

Carcinogenicity

The following components are listed by IARC, NTP, OSHA, or ACGIH as carcinogens. A 'P' indicates a Proposed Carcinogen.

Chemical	IAR	NTP	OSH	ACG
Benzene	X	X	X	X

DuPont controls the following chemicals as potential carcinogens :
Benzene .

Exposure Limits for CTU OVERHEAD/DEBUTANIZER GAS

TLV ** (ACGIH) : None Established
 PEL (OSHA) : None Established
 Other : Exposure Limits for Petroleum Distillate
 PEL: 400 ppm, 1600 mg/m³

Other Applicable Exposure Limits:

Exposure Limits for Benzene

AEL • (DuPont): 1 ppm - 8 & 12 Hr. TWA
 5 ppm - 15 Min. TWA
 TLV ** (ACGIH) : 10 ppm, 30 mg/m³ (A2)
 PEL (OSHA) : 1 ppm - 8 Hr. TWA
 5 ppm - (Short term exposure limit)

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Conoco Material Safety Data Sheet

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MSDS No: ITAIL040

(PROTECTION INFORMATION - CONTINUED)

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: None required.

Eye Protection: Use a full facepiece with the respirator when the atmospheric concentration of hydrogen sulfide exceeds the permissible exposure limit.

Other Protective Equipment: None required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Remove source of heat, sparks, flame, impact, friction or electricity. Keep upwind of leak - evacuate until gas has dispersed.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. When feasible, vapors should be dispersed mechanically.

SHIPPING INFORMATION

Not to be transported by truck, rail, air, or water.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

.....
The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING

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Conoco Material Safety Data Sheet

Page 1

MATERIAL IDENTIFICATION

NUMBER : ITAIL010
NAME : ACID GAS/SOUR GAS (SULFUR PLANT)

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
 Acid Gas
 Regenerator Overhead Gas
 Sulfur Recovery Unit Tail Gas

NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
WHMIS CLASSIFICATION :
 Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
 P.O. Box 2197
 Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrogen Sulfide	7783-06-4
Hydrocarbons (Gaseous Alkanes)	Mixture

Hazardous Physical Properties:
 Compressed Gas, Flammable.

The material is hazardous as defined by OSHA's Hazard
Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 100 - 200 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Very Soluble
Form : Gas
Color : Colorless
Specific Gravity : Not Applicable
Distillation Range : -258 to +400 deg F (includes traces
of hydrocarbons, hexanes, and
higher molecular weight)

SAL 000006670

SHEA 001690, 001694

C1039

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Conoco Material Safety Data Sheet

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MSDS No: ITAILC-C

(HEALTH HAZARD INFORMATION - CONTINUED)

0.5 ppm - Action level

Exposure Limits for Hydrogen Sulfide

AEL * (DuPont): 10 ppm - 8 & 12 Hr. TWA

TLV ** (ACGIH) : 10 ppm, 14 mg/m3

STEL 15 ppm, 21 mg/m3

PEL (OSHA) : 10 ppm, 14 mg/m3

STEL 15 ppm, 21 mg/m3

* AEL is DuPont's Acceptable Exposure Limit.

** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INHALATION

If hydrogen sulfide is present, the following applies: Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive pressure full facepiece, self-contained or supplied-air NIOSH approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If breathing stops, begin artificial resuscitation. If breathing is difficult, give oxygen. Keep victim warm and at rest. Seek medical attention.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain at concentrations below permissible exposure limits.

Personal Protective Equipment

SAL 000006667

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Conoco Material Safety Data Sheet

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MSDS No: ITAILO10

(HEALTH HAZARD INFORMATION - CONTINUED)

due to oxygen displacement. Frostbite may occur when exposed to compressed gas.

If hydrogen sulfide is present, low concentrations are irritating to the eyes, skin, and respiratory tract. At higher concentrations, respiratory paralysis and loss of ability to smell hydrogen sulfide may occur.

The product may contain low concentrations of ammonia and thus enhance the irritant properties of the product.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for ACID GAS/SOUR GAS (SULFUR PLANT)

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician. See physician for possible frostbite.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. See physician for possible frostbite.

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MSDS No: ITAIL04J

(STORAGE CONDITIONS - CONTINUED)

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SAL 000006669

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Conoco Material Safety Data Sheet

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(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

accordance with applicable Federal, State/Provincial, and Local regulations.

When feasible, vapors should be dispersed mechanically.

SHIPPING INFORMATION

Not to be transported by truck, rail, air, or water.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

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713-293-5550

28-Sep-89

Page 1

Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : IHYSU140
NAME : HDS STRIPPER OVERHEAD GAS

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
HDS Unit Stripper OH Gas

CAS NUMBER : Mixture
NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Gaseous Alkanes)	Mixture
Hydrogen Sulfide	7783-06-4

Hazardous Physical Properties:
Compressed Gas, Flammable.

The material is hazardous as defined by OSHA's Hazard
Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 100 - 1200 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Slightly soluble
Form : Gas
Color : Colorless
Specific Gravity : Not Applicable
Distillation Range : -420 to +400 deg F (includes traces
of hydrocarbons, hexanes, and
higher molecular weight)

C1037

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Conoco Material Safety Data Sheet

Page 2
MSDS No: ITAILC

HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Decomposition Products: Sulfur dioxide;
sulfur if burned in oxygen-deficient atmosphere.

Conditions to Avoid: Flammable gas. Reactive with
oxidizing agents. Heat can be generated if reacted with
alkaline materials. Wet gas is corrosive.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Handle and store in accordance with NFPA procedure for
Compressed Gas, Flammable.

EXTINGUISHING MEDIA

If gas has ignited, do not extinguish. Stop gas flow.
Allow to burn out.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Stop flow of gas. Use
water to keep fire-exposed containers cool and to protect
personnel effecting the shutoff. If a leak or spill has not
ignited, use water spray to disperse the gas or vapor and to
protect personnel attempting to stop a leak.

Unusual Fire and Explosion Hazards: Highly flammable.
Products of combustion may contain carbon monoxide, carbon
dioxide and other toxic materials. Do not enter enclosed or
confined space without proper protective equipment including
respiratory protection.

HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Inhalation.

SAL 000006671

Signs and Symptoms of Exposure/Medical Conditions Aggravated
by Exposure:

Overexposure may cause central nervous system depression.
Large concentrations in ambient air can cause asphyxiation

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Conoco Material Safety Data Sheet

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MSDS No: IHYSU140

HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Overexposure may cause central nervous system depression. Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. Contact with liquified gas may cause frostbite.

If hydrogen sulfide is present, low concentrations are irritating to the eyes, skin, and respiratory tract. At higher concentrations, respiratory paralysis and loss of ability to smell hydrogen sulfide may occur.

The product may contain low concentrations of ammonia and thus enhance the irritant properties of the product.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for HDS STRIPPER OVERHEAD GAS

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

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Conoco Material Safety Data Sheet

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(FIRST AID - CONTINUED)

INHALATION

If hydrogen sulfide is present, the following applies:
Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive-pressure, full-facepiece, self-contained or supplied-air, NIOSH-approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep warm and at rest. Call a physician.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: None required.

Eye Protection: Use a full facepiece with the respirator when the atmospheric concentration of hydrogen sulfide exceeds the permissible exposure limit.

Other Protective Equipment: None normally required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Remove source of heat, sparks, flame, impact friction or electricity. Keep upwind of leak - evacuate until gas has dispersed. Dissipate vapor with water spray.

Waste Disposal

SAL 000006673

Treatment, storage, transportation and disposal must be in

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Conoco Material Safety Data Sheet

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MSDS No: ITAIL010

(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

accordance with applicable Federal, State/Provincial, and Local regulations.

When feasible, vapors should be dispersed mechanically.

SHIPPING INFORMATION

Not to be transported by truck, rail, air, or water.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

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SAL 000006674

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Page 1

Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : IHYSU140
NAME : HDS STRIPPER OVERHEAD GAS

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
HDS Unit Stripper OH Gas

CAS NUMBER : Mixture
NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Gaseous Alkanes)	Mixture
Hydrogen Sulfide	7783-06-4

Hazardous Physical Properties:
Compressed Gas, Flammable.

The material is hazardous as defined by OSHA's Hazard
Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 100 - 1200 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Slightly soluble
Form : Gas
Color : Colorless
Specific Gravity : Not Applicable
Distillation Range : -420 to +400 deg F (includes traces
of hydrocarbons, hexanes, and
higher molecular weight)

CI036

28-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: IHYSU1

HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Decomposition Products: Produces sulfur dioxide when burned in excess air. Normal combustion produces carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions to Avoid: It is a highly flammable gas. Reactive with oxidizing agents. Heat can be generated if reacted with alkaline materials. It is corrosive to many materials when moist

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Handle and store in accordance with NFPA procedure for Compressed Gas, Flammable.

EXTINGUISHING MEDIA

If gas has ignited, do not extinguish. Stop gas flow. Allow to burn out.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Stop flow of gas. Use water to keep fire-exposed containers cool and to protect personnel effecting the shutoff. If a leak or spill has not ignited, use water spray to disperse the gas or vapor and to protect personnel attempting to stop a leak.

Unusual Fire and Explosion Hazards: Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

SAL 000006676

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Conoco Material Safety Data Sheet

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HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Overexposure may cause central nervous system depression. Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. Contact with liquified gas may cause frostbite.

If hydrogen sulfide is present, low concentrations are irritating to the eyes, skin, and respiratory tract. At higher concentrations, respiratory paralysis and loss of ability to smell hydrogen sulfide may occur.

The product may contain low concentrations of ammonia and thus enhance the irritant properties of the product.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for HDS STRIPPER OVERHEAD GAS

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

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Conoco Material Safety Data Sheet

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FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician. See physician for possible frostbite.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. See physician for possible frostbite.

INHALATION

If hydrogen sulfide is present, the following applies: Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive-pressure, full-facepiece, self-contained or supplied-air, NIOSH-approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Keep warm and at rest. Call a physician.

***** PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentration exceeds permissible exposure limit.

Protective Gloves: None required.

Eye Protection: Use a full facepiece with the respirator when the atmospheric concentration of hydrogen sulfide exceeds the permissible exposure limit.

Other Protective Equipment: None normally required.

SAL 000006678

28-Sep-89

Conoco Material Safety Data Sheet

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SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Remove source of heat, sparks, flame, impact, friction or electricity. Keep upwind of leak - evacuate until gas has dispersed. Dissipate vapor with water spray.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

When feasible, vapors should be dispersed mechanically.

SHIPPING INFORMATION

Not to be transported by truck, rail, air, or water.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

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Conoco Inc.
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28-Sep-89

Page 1

Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : IHYSU120
NAME : HDS SEPARATOR GAS

CHEMICAL FAMILY : Petroleum Hydrocarbons
CAS NUMBER : Mixture
NFPA RATING : Health: 1 Flammability: 4 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
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MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Gaseous Alkanes)	Mixture
Hydrogen Sulfide	7783-06-4

Hazardous Physical Properties:
Compressed Gas, Flammable.

The material is hazardous as defined by OSHA's Hazard
Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 100 - 1200 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Slightly soluble
Form : Gas
Color : Colorless
Specific Gravity : Not Applicable
Distillation Range : -420 to +400 deg F (includes traces
of hydrocarbons, hexanes, and
higher molecular weight)

HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Produces sulfur dioxide
when burned in excess air. Normal combustion forms carbon
dioxide; incomplete combustion may produce carbon monoxide.

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Conoco Material Safety Data Sheet

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(HAZARDOUS REACTIVITY - CONTINUED)

Conditions to Avoid: It is a highly flammable gas. Reactive with oxidizing agents. Heat can be generated if reacted with alkaline materials. It is corrosive to many materials when moist.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Handle and store in accordance with NFPA procedure for Compressed Gas, Flammable.

EXTINGUISHING MEDIA

If gas has ignited, do not extinguish. Stop gas flow. Allow to burn out.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures: Stop flow of gas. Use water to keep fire-exposed containers cool and to protect personnel effecting the shutoff. If a leak or spill has not ignited, use water spray to disperse the gas or vapor and to protect personnel attempting to stop a leak.

Unusual Fire and Explosion Hazards: Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Route of Exposure/Entry: Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

SAL 000006681

28-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: IHYSU120

(HEALTH HAZARD INFORMATION - CONTINUED)

the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. May cause frostbite when skin is exposed to compressed gas.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for HDS SEPARATOR GAS

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician. See physician for possible frostbite.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. See physician for possible frostbite.

INHALATION

If hydrogen sulfide is present, the following applies:

SAL 000006682

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Conoco Material Safety Data Sheet

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MSDS No: IHYSU1

(FIRST AID - CONTINUED)

Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive-pressure, full-facepiece, self-contained or supplied-air, NIOSH-approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep warm and at rest. Call a physician.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: None required.

Eye Protection: Use a full facepiece with the respirator when the atmospheric concentration of hydrogen sulfide exceeds the permissible exposure limit.

Other Protective Equipment: None normally required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Remove source of heat, sparks, flame, impact, friction or electricity. Keep upwind of leak - evacuate until gas has dispersed. Dissipate vapor with water spray.

Waste Disposal

SAL 000006683

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. When feasible, vapors should be dispersed mechanically.

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28-Sep-89

Conoco Material Safety Data Sheet

Page 5
MSDS No: IHYSU120

SHIPPING INFORMATION

Not to be transported by truck, rail, air, or water.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

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Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006684

C1029

28-Sep-89

Page 1

Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : IHYSU080
NAME : HYDRODESULFURIZED LIGHT & HEAVY NAPHTHA

CHEMICAL FAMILY : Petroleum Hydrocarbons

TRADE NAMES / SYNONYMS :
Desulfurized reforming naphthas
Sweet Naphta
Reformer Feed
Desulfurized Cracked Gasoline

CAS NAME : Naphtha (petroleum), hydrodesulfurized light
Number: 64742-73-0
Naphtha (petroleum), hydrodesulfurized heavy
Number: 64742-82-1

NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0

WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

USHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Aromatic & Paraffinic)	Mixture
*Benzene	71-43-2
Hydrogen Sulfide	7783-06-4

- Regulated as a toxic chemical under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Hazardous Physical Properties:

Class IA Flammable Liquid per NFPA Code No. 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 2 - 20 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Nil
Form : Liquid
Color : Clear

SAL 000006685

CI029

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Conoco Material Safety Data Sheet

Page 2
MSDS No: IHYSUOL

(PHYSICAL DATA - CONTINUED)

API Gravity : 34 - 59
Distillation Range : -4 to +446 deg F

HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Normal combustion forms carbon dioxide; incomplete may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point : ambient
Flammable Limits in Air, % by Vol.
LEL : < 1
UEL : 8

FIRE AND EXPLOSION HAZARDS

Class 1A Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:
Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:
Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

SAL 000006686

28-Sep-89

Conoco Material Safety Data Sheet

Page 3

MSDS No: IHYSU080

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions

Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs, or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100-700 deg F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons which may cause irritation to eyes, skin, and lungs after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues.

Carcinogenicity

The following components are listed by IARC, NTP, OSHA, or ACGIH as carcinogens. A 'P' indicates a Proposed Carcinogen.

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20-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: IHYSUOL

(HEALTH HAZARD INFORMATION - CONTINUED)

Benzene

X X X X

DuPont controls the following chemicals as potential carcinogens :
Benzene .

Exposure Limits for HYDRODESULFURIZED LIGHT & HEAVY NAPHTHA

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established
Other : Exposure limit for Petroleum Distillate:
PEL: 400 ppm; 1600 mg/m3

Other Applicable Exposure Limits:

Exposure Limits for Benzene

AEL * (DuPont): 1 ppm - 8 & 12 Hr. TWA
5 ppm - 15 Min. TWA
TLV ** (ACGIH) : 10 ppm, 30 mg/m3 (A2)
PEL (OSHA) : 1 ppm - 8 Hr. TWA
5 ppm - (Short term exposure limit)
0.5 ppm - Action level

Exposure Limits for Hydrogen Sulfide

AEL * (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call

SAL 000006688

28-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: 1HYSU080

(FIRST AID - CONTINUED)

a physician.

INHALATION

If hydrogen sulfide is present, the following applies: Rescue personnel just use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive pressure full facepiece, self-contained or supplied-air NIOSH approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If breathing stops, begin artificial resuscitation. If breathing is difficult, give oxygen. Keep victim warm and at rest. Seek medical attention.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits.

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: NBR recommended.

Eye Protection: Where the possibility of splashing exists, a face shield is recommended.

Other Protective Equipment: Sufficient protective apparel should be worn to minimize potential skin contact with this material.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent liquid from entering sewers.

SAL 000006689

CI029

28-Sep-89

Conoco Material Safety Data Sheet

Page 6
MSDS No: IHYSUOL

(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

Recover as much of the material as possible by such methods as vacuuming, using explosion-proof equipment.

Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Petroleum naphtha
Hazard Class : Flammable liquid
UN/NA No. : UN 1255
DOT Label(s) : Flammable liquid
DOT Placard : Flammable

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006690

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Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : 1THCR060
NAME : LIGHT & HEAVY THERMAL CRACKED NAPHTHA

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Coker Gasoline
Thermal Cracked Gasoline
GRP Gasoline
Thermal Gasoline
Primary lower bottoms

CAS NAME : Naphtha (petroleum), light thermal cracked
Number: 64741-74-8
Naphtha (petroleum), heavy thermal cracked
Number: 64741-83-9

NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Aromatic & Paraffinic)	— Mixture
*Benzene	71-43-2
Hydrogen Sulfide	7783-06-4

- * Regulated as a toxic chemical under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Hazardous Physical Properties:
Class 1A Flammable Liquid per NFPA Code No. 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 4 - 12 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Nil
Form : Liquid

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SHEA 001502, 001512

CI022

08-Sep-87

Conoco Material Safety Data Sheet

Page 2
MSDS No: 17HCR050

(PHYSICAL DATA - CONTINUED)

Color : Yellow
API Gravity : 58 - 67
Distillation Range : 20 - 430 deg F

HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat, and flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flammable Limits in Air, % by Vol.
LEL : 4.1
UEL : 8
Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Class 1A Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical, CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:
Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:
Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

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Conoco Material Safety Data Sheet

Page 3
MSDS No: ITHCR060

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs, or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100-700 deg F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons which may cause irritation to eyes, skin, and lungs after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues.

Carcinogenicity

The following components are listed by IARC, NTP, OSHA, or ACGIH as carcinogens. A 'P' indicates a Proposed Carcinogen.

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Lonoco Material Safety Data Sheet

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MSDS No: ITHCRO.

(HEALTH HAZARD INFORMATION - CONTINUED)

Benzene

X X X X

DuPont controls the following chemicals as potential carcinogens :
Benzene .

Exposure Limits for LIGHT & HEAVY THERMAL CRACKED NAPHTHA

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established
Other : Exposure Limits for Petroleum Distillate
PEL: 400 ppm, 1600 mg/m3

Other Applicable Exposure Limits:

Exposure Limits for Benzene

AEL • (DuPont): 1 ppm - 8 & 12 Hr. TWA
5 ppm - 15 Min. TWA
TLV ** (ACGIH) : 10 ppm, 30 mg/m3 (A2)
PEL (OSHA) : 1 ppm - 8 Hr. TWA
5 ppm - (Short term exposure limit)
0.5 ppm - Action level

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of

SAL 000006404

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Conoco Material Safety Data Sheet

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MSDS No: ITHCR060

(FIRST AID - CONTINUED)

water. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION

If hydrogen sulfide is present, the following applies: Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive pressure full facepiece, self-contained or supplied-air NIOSH approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If breathing stops, begin artificial resuscitation. If breathing is difficult, give oxygen. Keep victim warm and at rest. Seek medical attention.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits.

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: NBR recommended.

Eye Protection: Where the possibility of splashing exists, a face shield is recommended.

Other Protective Equipment: Sufficient protective apparel should be worn to minimize potential skin contact with this material.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Remove source of heat, sparks, flame, impact, friction or

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Conoco Material Safety Data Sheet

Page 6
MSDS No: 1THCRO.

(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

electricity. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system. Recycle as much of the recoverable material as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Petroleum naphtha
Hazard Class : Flammable liquid
UN/NA No. : UN 1255
DOT Label(s) : Flammable liquid
DOT Placard : Flammable

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, Tx 77252
713-293-5550

SAL 000006696

CI021

28-Sep-89

Conoco Material Safety Data Sheet

Page 1

MATERIAL IDENTIFICATION

NUMBER : ITHCR100
 NAME : COKE BLOWDOWN
 CHEMICAL FAMILY : Petroleum Hydrocarbons
 TRADE NAMES / SYNONYMS :
 Blowdown Slop Oil
 CAS NUMBER : Mixture
 NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0
 WHMIS CLASSIFICATION :
 Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
 P.O. Box 2197
 Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
 TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
 MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Gaseous Alkanes)	Mixture
Hydrogen Sulfide	7783-06-4

Hazardous Physical Properties:
 Class 1A Flammable Liquid per NFPA Code 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 0 - 3 PSI @ 100 deg F
 Vapor Density : > 1 (Air = 1.0)
 Solubility in Water : Nil
 Form : Liquid
 Color : Brown
 API Gravity : 9.4 - 30.2
 Distillation Range : 80 - 1000 deg F

HAZARDOUS REACTIVITY

Instability : Stable.
 Hazardous Decomposition Products: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

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SHEA 001490

CI021

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Conoco Material Safety Data Sheet

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MSDS No: ITHCRI

(HAZARDOUS REACTIVITY - CONTINUED)

Conditions to Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point : Below ambient

FIRE AND EXPLOSION HAZARDS

Class 1A Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:

Water may be ineffective to extinguish, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:

Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions

Aggravated by Exposure:

Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Hydrogen sulfide may be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

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Conoco Material Safety Data Sheet

Page 3
MSDS No: 1THCR100

(HEALTH HAZARD INFORMATION - CONTINUED)

Large concentrations in ambient air can cause asphyxiation due to oxygen displacement. May cause frostbite when skin is exposed to compressed gas.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for COKER BLOWDOWN

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL * (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

***** FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION

If hydrogen sulfide is present, the following applies:
Rescue personnel must use good judgment to minimize

CI021

28-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: ITHCRI

(FIRST AID - CONTINUED)

their risk. Because hydrogen sulfide can cause death, rescuers must wear positive pressure full facepiece, self-contained or supplied-air NIOSH approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If breathing stops, begin artificial resuscitation. If breathing is difficult, give oxygen. Keep victim warm and at rest. Seek medical attention.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits.

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limits.

Protective Gloves: NBR recommended.

Eye Protection: Where possibility of splashing exists, a face shield is recommended.

Other Protective Equipment: Sufficient to minimize potential skin contact with the material.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorb material.

Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

SAL 000006700

CI021

28-Sep-89

Conoco Material Safety Data Sheet

Page 5
MSDS No: ITHCR100

(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system. Recycle as much of the recoverable material as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Petroleum distillate
Hazard Class : Flammable liquid
UN/NA No. : UN 1268
DOT Label(s) : Flammable liquid
DOT Placard : Flammable

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006701

27-Sep-89

Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : IPOLY040
NAME : POLYMERIZATION NAPHTHA

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
CAT POLY GASOLINE

CAS NAME : Naphtha (petroleum), polymn.
CAS NUMBER : 64741-72-6
NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Aromatic & Paraffinic)	Mixture

Hazardous Physical Properties:
Class 1A Flammable Liquid per NFPA Code No. 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to the Regulatory Information Section of this MSDS for other federal and state regulatory information.

PHYSICAL DATA

Vapor Pressure : 6 - 14 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Nil
Form : Liquid
Color : Yellow
API Gravity : 58.5 - 72.1
Distillation Range : 70 - 440 deg F

SAL 000006702

C1020

27-Sep-89

Conoco Material Safety Data Sheet

Page 2
MSDS No: IPOLYC

HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Decomposition Products: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point: Less than ambient

FIRE AND EXPLOSION HAZARDS

Class 1A Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:

Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:

Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions
Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the

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(HEALTH HAZARD INFORMATION - CONTINUED)

kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs, or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100-700 deg F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons which may cause irritation to the eyes, skin, and lungs after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for POLYMERIZATION NAPHTHA

TLV • (ACGIH)	: None Established
PEL (OSHA)	: None Established
Other	: Exposure Limits for Petroleum Distillate
	PEL: 400 ppm, 1600 mg/m ³

* TLV is a registered trademark.

Safety Precautions

Wash clothing after use.

FIRST AID

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

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(FIRST AID - CONTINUED)

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

VENTILATION

Natural ventilation is adequate. Mechanical ventilation required only in emergency or extreme conditions, such as confined spaces.

Personal Protective Equipment

RESPIRATORY PROTECTION

None normally required except under unusual circumstances such as described in Section V. Select appropriate NIOSH-approved respiratory protection where necessary to maintain exposures below the acceptable limits in the Health Hazard Section. Proper respiratory selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure and published respirator protection factors.

PROTECTIVE GLOVES

Should be worn when the potential exists for prolonged or repeated skin exposure. Neoprene or NBR recommended.

EYE PROTECTION

Chemical splash goggles or face shield recommended where splashing can occur.

OTHER PROTECTIVE EQUIPMENT

None normally required. Avoid prolonged skin contact and maintain good personal hygiene and laundering. SAL 000006705

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(PROTECTION INFORMATION - CONTINUED)

contaminated clothing.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

Recycle as much of the recoverable product as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name	:
Gasoline	
Hazard Class	: Flammable liquid
UN/NA No.	: UN 1203
DOT Label(s)	: Flammable liquid
DOT Placard	: Flammable

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302
Not Applicable

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986,
TITLE III - SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances, 40 CFR
J55

SAL 000006706

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(REGULATORY INFORMATION - CONTINUED)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements, 40 CFR 370

The material should be reported under the following EPA hazard categories:

- x Immediate (Acute Health Hazard)
- Delayed (Chronic Health Hazard)
- x Fire
- Sudden Release of Pressure
- Reactive
- Not Applicable

Note: See the Hazard Determination Section for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals, 40 CFR 372
The material does not contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710
This material is in the TSCA Inventory of Chemical Substances and/or is otherwise in compliance with TSCA.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPARTS C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT,
40 CFR 116.4A, Section 311

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(REGULATORY INFORMATION - CONTINUED)

is considered hazardous if spilled in navigable waters.

Ingredient	Reportable Quantity
Petroleum Hydrocarbon	Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS,
49 CFR 171-178
Not Applicable

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT
OF 1986 ("PROPOSITION 65")
The material does not contain any ingredient(s) subject to
the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT
To the best of our knowledge the material is not sold
or produced in Pennsylvania. Please notify Conoco at the
telephone number noted below if the material results in
Pennsylvania commerce.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/27
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006708

CI013

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Page 1

Conoco Material Safety Data Sheet

MATERIAL IDENTIFICATION

NUMBER : ICTCR060
NAME : LIGHT & HEAVY CATALYTIC CRACKED NAPHTHA

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Light & Heavy FCC Gasoline
FCC Gasoline

CAS NAME : Naphtha (petroleum), light catalytic cracked
Number: 64741-55-5
Naphtha (petroleum), heavy catalytic cracked
Number: 64741-54-4

NFPA RATING : Health: 1 Flammability: 3 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Hydrocarbons (Aromatic & Paraffinic)	Mixture
*Benzene	71-43-2
Hydrogen Sulfide	7783-06-4

* Regulated as a toxic chemical under section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Hazardous Physical Properties:
Class IA Flammable Liquid per NFPA Code No. 30-1987.

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : 1 - 15 PSI @ 100 deg F
Vapor Density : > 1 (Air = 1.0)
Solubility in Water : Nil
Form : Liquid
Color : Yellow
API Gravity : 30 - 67
Distillation Range : -4 to +446 deg F

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C1013

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Conoco Material Safety Data Sheet

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MSDS No: ICTCROL

(PHYSICAL DATA - CONTINUED)

HAZARDOUS REACTIVITY

Instability : Stable.
Hazardous Decomposition Products: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flammable Limits in Air, % by Vol.
LEL : < 1
UEL : 8
Flash Point: Below ambient.

FIRE AND EXPLOSION HAZARDS

Class IA Flammable Liquid (NFPA).

EXTINGUISHING MEDIA

Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:
Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:
Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

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C1013

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Conoco Material Safety Data Sheet

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(HEALTH HAZARD INFORMATION - CONTINUED)

Benzene

X X X X

DuPont controls the following chemicals as potential carcinogens :
Benzene .

Exposure Limits for LIGHT & HEAVY CATALYTIC CRACKED NAPHTHA

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established
Other : Exposure Limits for Petroleum Distillate
PEL: 400 ppm; 1600 mg/m3

Other Applicable Exposure Limits:

Exposure Limits for Benzene

AEL • (DuPont): 1 ppm - 8 & 12 Hr. TWA
5 ppm - 15 Min. TWA
TLV ** (ACGIH) : 10 ppm, 30 mg/m3 (A2)
PEL (OSHA) : 1 ppm - 8 Hr. TWA
5 ppm - (Short term exposure limit)
0.5 ppm - Action level

Exposure Limits for Hydrogen Sulfide

AEL • (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Wash clothing after use.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call

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Conoco Material Safety Data Sheet

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HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions

Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs, or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100-700 deg F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons which may cause irritation to eyes, skin, and lungs after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Hydrogen sulfide can be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues.

Carcinogenicity

The following components are listed by IARC, NTP, OSHA, or ACGIH as carcinogens. A 'P' indicates a Proposed Carcinogen.

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(SPILL, LEAK AND DISPOSAL INFORMATION - CONTINUED)

waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material.

Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system. Recycle as much of the recoverable material as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Petroleum naphtha
Hazard Class : Flammable liquid
UN/NA No. : UN 1255
DOT Label(s) : Flammable liquid
DOT Placard : Flammable

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services
Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006713

28-Sep-89

Conoco Material Safety Data Sheet

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(FIRST AID - CONTINUED)

a physician.

INHALATION

If hydrogen sulfide is present, the following applies: Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive pressure full facepiece, self-contained or supplied-air NIOSH approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If breathing stops, begin artificial resuscitation. If breathing is difficult, give oxygen. Keep victim warm and at rest. Seek medical attention.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: Sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits.

Personal Protective Equipment

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection equipment where atmospheric concentrations exceed permissible exposure limit.

Protective Gloves: None recommended.

Eye Protection: Where the possibility of splashing exists, a face shield is recommended.

Other Protective Equipment: Sufficient protective apparel should be worn to minimize potential skin contact with this material.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

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NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Remove source of heat, sparks, flame, impact, friction or electricity. Dike spill. Prevent liquid from entering sewers,

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Conoco Material Safety Data Sheet

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MATERIAL IDENTIFICATION

NUMBER : ICRDIO20
NAME : ATMOSPHERIC TOWER RESID

CHEMICAL FAMILY : Petroleum Hydrocarbons
TRADE NAMES / SYNONYMS :
Crude Unit Resids (Sweet)(Sour)
Atmospheric Reduced Crude
Atmospheric Topped Crude

CAS NUMBER : 64741-45-3
NFPA RATING : Health: 0 Flammability: 1 Reactivity: 0
WHMIS CLASSIFICATION :
Not Applicable.

MANUFACTURER/DISTRIBUTOR: Conoco Inc.
P.O. Box 2197
Houston, TX 77252

GENERAL INFORMATION PHONE : 1-(713)293-5550
TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

OSHA HAZARD DETERMINATION

Hazardous Ingredients	CAS Number
Polynuclear Aromatic Hydrocarbons	Mixture
Hydrogen Sulfide	7783-06-4

Hazardous Physical Properties:
Not Applicable

The material is hazardous as defined by OSHA's Hazard
Communication Standard, 29 CFR 1910.1200.

PHYSICAL DATA

Vapor Pressure : Nil PSI @ 100 deg F
Vapor Density : Not Applicable
Solubility in Water : Nil
Form : Viscous liquid
Color : Black
API Gravity : 9.4 - 24.8
Distillation Range : > 600 - 1500 deg F

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CI001

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Conoco Material Safety Data Sheet

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HAZARDOUS REACTIVITY

Instability : Stable.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, oxides of sulfur and nitrous oxides when burned.

Conditions to Avoid: Strong oxidizers, heat, flame.

Hazardous Polymerization: Will not occur.

FIRE AND EXPLOSION DATA

Flash Point : 200-450 deg F
Method : PM

FIRE AND EXPLOSION HAZARDS

Class IIIB Combustible Liquid (NFPA).

EXTINGUISHING MEDIA

Water Spray. Dry Chemical. CO2.
Foam.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Special Fire Fighting Procedures:

Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards:

Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

HEALTH HAZARD INFORMATION

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions

Aggravated by Exposure:

Mouse skin painting studies have shown that nonsolvent-refined petroleum distillates having a distillation end-point above 700 deg F, and which are similar to ingredients in this product, caused skin tumors. This animal data should be interpreted cautiously since these studies involved repeated exposure of shaved skin which was never washed free of test material; the resulting

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Conoco Material Safety Data Sheet

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(HEALTH HAZARD INFORMATION - CONTINUED)

skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. Also, limited studies of carcinogenic oils have shown that washing the animals' skin with soap and water between applications greatly reduces tumor formation. These studies demonstrate the effectiveness of cleansing the skin after contact. The product may contain polynuclear aromatic hydrocarbons (PNAs) which have caused cancer involving skin and internal organs in laboratory animals. The product may produce a phototoxic reaction when contaminated skin is exposed to sunlight. The effect is similar in appearance to an exaggerated sunburn and is temporary in duration.

Hydrogen sulfide may be irritating at low concentrations to the eyes, skin, and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis, and death may occur.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for ATMOSPHERIC TOWER RESIDU

TLV ** (ACGIH) : None Established
PEL (OSHA) : None Established
Other : Exposure Limits for Coal Tar Pitch
Volatiles:
PEL: 0.2 mg/m3
TLV: 0.2 mg/m3

Other Applicable Exposure Limits:

Exposure Limits for Hydrogen Sulfide

AEL * (DuPont): 10 ppm - 8 & 12 Hr. TWA
TLV ** (ACGIH) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3
PEL (OSHA) : 10 ppm, 14 mg/m3
STEL 15 ppm, 21 mg/m3

- * AEL is DuPont's Acceptable Exposure Limit.
- ** TLV is a registered trademark.

Safety Precautions

Do not breathe vapor or mist. Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling. Wash clothing after use.

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C1001

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Conoco Material Safety Data Sheet

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MSDS No: ICRD10.

FIRST AID

SKIN CONTACT

In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION

If hydrogen sulfide is present, the following applies: Rescue personnel must use good judgment to minimize their risk. Because hydrogen sulfide can cause death, rescuers must wear positive pressure full facepiece, self-contained or supplied-air NIOSH approved respirators before attempting the rescue.

Remove victim to fresh air immediately. If breathing stops, begin artificial resuscitation. If breathing is difficult, give oxygen. Keep victim warm and at rest. Seek medical attention.

NOTES TO PHYSICIAN

Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Ventilation: In confined spaces, use mechanical ventilation adequate to reduce hydrogen sulfide concentrations to acceptable levels.

Personal Protective Equipment

Respiratory Protection: None normally required. If high concentrations of hydrogen sulfide are present, air-supplied respirators should be used in the positive-pressure, continuous-flow, or pressure-demand mode.

Protective Gloves: Neoprene or NBR recommended.

Eye Protection: Safety glasses; chemical goggles if splashing may occur.

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CI 001

28-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: ICRDIU20

(PROTECTION INFORMATION - CONTINUED)

Other Protective Equipment: None normally required.

SPILL, LEAK AND DISPOSAL INFORMATION

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Dike spill. Prevent liquid from entering sewers, waterways or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry or other absorbent material. Nonrecoverable material, contaminated soil, and debris should be placed in proper containers for ultimate disposal.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system. Recycle as much of the recoverable material as possible.

SHIPPING INFORMATION

DOT

Proper Shipping Name :
Not regulated.

STORAGE CONDITIONS

Store in accordance with National Fire Protection Assn regulations.

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufactures. In these instances, Conoco, in good faith, relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Date of latest Revision : 89/09/28
Responsibility for MSDS : Env. & Occ. Health Services

SAL 000006719

CI001

28-Sep-89

Conoco Material Safety Data Sheet

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MSDS No: ICRD10.

(STORAGE CONDITIONS - CONTINUED)

Conoco Inc.
PO Box 2197
Houston, TX 77252
713-293-5550

SAL 000006720

S.C. Johnson Wax
Racine, Wisconsin 53403-5011
Phone: (414) 631-2777
Emergency Phone: (414) 631-2000

HMIS RATING	
Health	2
Flammability	0
Reactivity	0

MATERIAL SAFETY DATA SHEET G S 5 9 9

SECTION I-PRODUCT IDENTIFICATION

Product Name: GP FORWARD CLEANER			Product Code: 14520-006
Chemical or Common Name: NA	Date Issued: 04/11/89	Supersedes: 01/22/88	Prepared by: Terry A. Meyers Chemical Info. Adm.

SECTION II-INGREDIENT INFORMATION

Ingredient	Weight %	Exposure Limit
Sodium Hydroxide (CAS #1310-73-2)	1-3	2 MG\M3 ACGIH\OSHA CEILING
Sodium Silicate (CAS #1344-09-8)	3-6	NOT ESTABLISHED
Nonylphenol Polyethylene Glycol Ether (CAS #26027-38-3)	1-4	NOT ESTABLISHED
Water	80-90	NA

SECTION III-PHYSICAL DATA

APPEARANCE/ODOR: Clear, green liquid	SPECIFIC GRAVITY (H2O=1): 1.0
VAPOR PRESSURE (mm Hg): NA	PERCENT VOLATILE BY VOLUME (%): NA
SOLUBILITY IN WATER: Complete	VAPOR DENSITY (AIR=1): NA
FREEZING POINT (°F): ND	BOILING POINT (°F): above 200
pH: 12.5min. (Undiluted)	EVAPORATION RATE (BUTYL ACETATE=1): ND

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT (°F) (METHOD USED): NA
FLAMMABLE LIMITS: NA
EXTINGUISHING MEDIA: Foam , CO2 , Dry Chemical , Water Fog
SPECIAL FIREFIGHTING PROCEDURES: Normal fire fighting procedures may be used. Cool and use caution when approaching or handling fire-exposed containers.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Corrosive Material (See Sections VI, VIII). Container may burst in heat of fire.

SECTION V-HEALTH HAZARD DATA

PRIMARY ROUTE OF ENTRY: Skin Contact
SIGNS AND SYMPTOMS: Direct contact of product with eyes can cause severe irritation. Prolonged or repeated contact of undiluted product with skin may cause irritation. If taken internally, product may cause corrosive damage to mouth, throat or stomach.

S.C. Johnson Wax
1525 Howe Street
Racine, Wisconsin 53403

GP FORWARD CLEANER
Product Number: 14520
Serial Number: 6

SECTION V-HEALTH HAZARD DATA (cont.)

FIRST AID PROCEDURES: Flush eyes with water for 15 minutes. If irritation persists, seek medical aid. Wash skin with plenty of water. If irritation persists, seek medical aid. If product is swallowed, drink large amounts of water or milk and seek medical aid.

SECTION VI-REACTIVITY DATA

STABILITY: Stable

STABILITY-CONDITIONS TO AVOID: None known

INCOMPATIBILITY: Strong acids (e.g., muriatic acid).

HAZARDOUS DECOMPOSITION PRODUCTS: When exposed to fire, produces normal products of combustion.

HAZARDOUS POLYMERIZATION: Will Not Occur

HAZARDOUS POLYMERIZATION-CONDITIONS TO AVOID: None known

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Absorb with oil-dri or similar inert material. Sweep or scrape up and containerize. Rinse affected area thoroughly with water. Wear/use appropriate protective equipment.

WASTE DISPOSAL INFORMATION: For undiluted product: Disposal is regulated under the Resource Conservation and Recovery Act as a corrosive waste. Disposal of regulated quantities should be by neutralization at a permitted facility in accordance with all Federal/State regulations and local ordinances regarding disposal of corrosive wastes. Waste from normal product use may be sewerred to a public-owned treatment works (POTW) in compliance with applicable Federal, State, and local pretreatment requirements.

SECTION VIII-SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: No special requirements under normal use conditions.

VENTILATION: NSR

PROTECTIVE GLOVES: Any impervious material.

EYE PROTECTION: For undiluted product: Chemical workers splash-proof goggles

OTHER PROTECTIVE MEASURES: Use good personal hygiene practices. Launder contaminated equipment before reuse.

SECTION IX-SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING: CAUTION: Eye irritant. For industrial use only. Do not get in eyes.

S.C. Johnson Wax
1525 Howe Street
Racine, Wisconsin 53403

GP FORWARD CLEANER

Product Number: 14520

Serial Number: 6

GS599

SECTION IX-SPECIAL PRECAUTIONS (cont.)

OTHER HANDLING AND STORAGE CONDITIONS: Keep out of reach of children. Store in a cool, dry place with adequate ventilation. Keep from freezing. Wash thoroughly after handling. Product residue may remain on/in empty containers. All precautions for handling the product must be used in handling the empty container and residue.

SECTION X-ADDITIONAL INFORMATION

ADDITIONAL INFORMATION: NA

NA-Not Applicable, NE-Not Established, NSR-No Special Requirement, ND-Not Determined for this product
The information herein is given in good faith. No warranty, expressed or implied, is made. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations. The information contained in this form is confidential and is submitted solely for your organization's internal use.

MATERIAL SAFETY DATA SHEET
TO BE USED TO COMPLY WITH
OSHA'S HAZARD COMMUNICATION STANDARD,
29 CFR 1910.1200. STANDARD MUST BE
CONSULTED FOR SPECIFIC REQUIREMENTS.

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH
ADMINISTRATION
(NON-MANDATORY FORM)
FORM APPROVED OMB NO. 1218-0072

IDENTITY (AS USED ON LABEL AND LIST)
LIQUI-NOX

GS451

SECTION I

MANUFACTURER'S NAME:	EMERGENCY TELEPHONE NUMBER:
ALCONOX, INC.	(212)-473-1300
ADDRESS:	TELEPHONE NUMBER FOR INFORMATION:
215 PARK AVENUE SOUTH	(212)-473-1300
NEW YORK, NEW YORK 10003	DATE PREPARED:
	JULY 1, 1987

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

THERE ARE NO INGREDIENTS IN LIQUI-NOX WHICH APPEARED ON THE OSHA STANDARD.
29 CFR 1910 SUBPART Z.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 214 F	SPECIFIC GRAVITY (H2O=1): 1.075
VAPOR PRESSURE (MMHG): NO DATA	MELTING POINT: N.A.
VAPOR DENSITY (AIR=1): NO DATA	EVAPORATION RATE: NO DATA (BUTYL ACETATE=1)
SOLUBILITY IN WATER: COMPLETELY SOLUBLE IN ALL PROPORTIONS	
APPEARANCE AND ODOR: YELLOW LIQUID - PRACTICALLY ODORLESS	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): NONE CLEVELAND OPEN CUP)	FLAMMABLE LIMITS:
EXTINGUISHING MEDIA:	LEL: N.A. UEL: N.A.
WATER, DRY CHEMICAL, FOAM, CO2, SAND/EARTH	
SPECIAL FIRE FIGHTING PROCEDURES:	
FOR FIRES INVOLVING THIS MATERIAL DO NOT ENTER WITHOUT PROTECTIVE EQUIPMENT AND SELF CONTAINED BREATHING APPARATUS.	
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE	

SAL 000006724

SECTION V - REACTIVITY DATA **GS451**

STABILITY: STABLE CONDITIONS TO AVOID: NONE
INCOMPATIBILITY (MATERIALS TO AVOID): NONE
HAZARDOUS DECOMPOSITION OR BYPRODUCTS: SO2 MAY BE RELEASED ON BURNING
HAZARDOUS POLYMERIZATION WILL NOT OCCUR
CONDITIONS TO AVOID: NONE

SECTION VI - HEALTH HAZARD DATA

ROUTES OF ENTRY: INHALATION-NO SKIN-YES INGESTION-YES
HEALTH HAZARDS (ACUTE AND CHRONIC):
SKIN CONTACT MAY PROVE LOCALLY IRRITATING. INGESTION MAY CAUSE DISCOMFORT
AND/OR DIARRHEA.
CARCINOGENICITY: NTP: NO IARC MONOGRAPHS: NO OSHA REGULATED: NO
SIGNS AND SYMPTOMS OF EXPOSURE:
PROLONGED SKIN CONTACT MAY CAUSE DRYING AND/OR CHAPPING.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
ONE

EMERGENCY AND FIRST AID PROCEDURES:
EYES-FLUSH WITH PLENTY OF WATER FOR 15 MINUTES SKIN-FLUSH WITH
WATER INGESTION-DRINK LARGE QUANTITIES OF WATER, GET MEDICAL ATTENTION FOR
DISCOMFORT

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
MATERIAL FOAMS PROFUSELY. RECOVER AS MUCH AS POSSIBLE WITH ABSORBENT
MATERIAL AND RINSE REMAINDER TO SEWER. MATERIAL IS COMPLETELY BIODEGRADABLE.

WASTE DISPOSAL METHOD:
SMALL QUANTITIES MAY BE DISPOSED OF IN SEWER. LARGE QUANTITIES SHOULD
BE SOAKED UP WITH ABSORBENT MATERIAL AND DISPOSED OF ACCORDING TO LOCAL
ORDINANCES.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
NONE REQUIRED - VISCOSITY OF MATERIAL INCREASES AT VERY LOW TEMPERATURES.

OTHER PRECAUTIONS:
NO SPECIAL REQUIREMENTS OTHER THAN THE GOOD INDUSTRIAL HYGIENE AND SAFETY
PRACTICES EMPLOYED WITH ANY INDUSTRIAL CHEMICAL.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE):

SAL 000006725

GS451

VENTILATION: LOCAL EXHAUST: NORMAL
MECHANICAL (GENERAL): N.A.
PROTECTIVE GLOVES: RECOMMENDED
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:
NOT REQUIRED
WORK/HYGIENIC PRACTICES:
NO SPECIAL PRACTICES REQUIRED

SPECIAL: N.A.
OTHER: N.A.
EYE PROTECTION: RECOMMENDED



UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.



Specialty Chemicals Division

MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 08/10/89

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

PRODUCT NAME: UCARSOL HS Solvent 101

G S 3 3 9

CHEMICAL NAME: Mixture

CHEMICAL FAMILY: Alkanolamines

FORMULA: Trade Secret

MOLECULAR WEIGHT: Mixture

SYNONYMS: None

CAS # and Trade Secret
CAS NAME: Alkanolamines

II. PHYSICAL DATA (Determined on typical material)

BOILING POINT, 760 mm Hg: 143.7 C (290.7 F)

FREEZING POINT: -47 C (-53 F)

SPECIFIC GRAVITY (H₂O = 1):
1.0478 at 20/20 C

VAPOR PRESSURE AT 20°C:
2.4 mm Hg (0.320 kPa)

VAPOR DENSITY (air = 1):
3.21

SOLUBILITY IN WATER by wt:
100

EVAPORATION RATE
(Butyl Acetate = 1): 0.28

APPEARANCE AND ODOR: Clear, yellow liquid; amine odor

Copyright 1987, 1988, 1989 Union Carbide Chemicals & Plastics Tech. Corp.
UNION CARBIDE is a trademark of Union Carbide Corporation USA.
UCARSOL is a trademark of Union Carbide Chemicals & Plastics Tech. Corp.
EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.
Specialty Chemicals Division
39 Old Ridgebury Road, Danbury, CT. 06817-0001

SAL 000006727

PRODUCT NAME: UCARSOL HS Solvent 101

III. INGREDIENTS

<u>MATERIAL</u>	<u>%</u>	<u>TLV (Units)</u>	<u>HAZARD</u>
Trade Secret-Alkanolamine Mixture	100	None established	See Section V

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 280 F (138 C), Cleveland Open Cup ASTM D 92
(test method(s)):

FLAMMABLE LIMITS IN AIR, LOWER: Not determined
% by volume: UPPER: Not determined

EXTINGUISHING MEDIA: Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use CO2 or dry chemical media for small fires.

SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: During a fire, oxides of nitrogen may be produced.

V. HEALTH HAZARD DATA

TLV AND SOURCE: None established by OSHA or ACGIH.

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING: Moderately toxic. May cause irritation of the mouth, throat, esophagus, and stomach. There may be discomfort or pain in the mouth, throat, chest and abdomen, with nausea, vomiting, diarrhea, difficulty in swallowing, weakness, thirst, dizziness, and drowsiness. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

SKIN ABSORPTION: No evidence of adverse effects from available information.

INHALATION: Short-term adverse health effects are not expected from exposure to any vapor generated at ambient temperature.

SKIN CONTACT: Contact for a short period may cause local redness and possibly mild swelling. Sustained contact, and particularly if under occluded conditions, may cause itching or discomfort, marked redness, swelling, fissures and ulceration, and the development of bleeding in the inflamed area.

EYE CONTACT: Vapor may cause temporary disturbance of vision. (See "Notes to Physician.") Splashes of liquid in the eye will cause pain, excess tear production, and blinking. There may be moderate to marked conjunctivitis, as evidenced by excess redness and swelling of the conjunctiva. Corneal injury may develop.

EFFECTS OF REPEATED OVEREXPOSURE: No evidence of adverse effects from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Because of its irritating properties, this material may aggravate an existing dermatitis.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN**HEALTH HAZARD EVALUATION:** Not a mutagenic in an Ames test.

Do not mix this product with nitrites or other nitrosating agents because nitrosamines may be formed. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

OTHER EFFECTS OF OVEREXPOSURE:

May react with nitrites to form a nitrosamine. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:

If patient is conscious, give two glasses of water or milk at once. Do not induce vomiting. Obtain medical attention without delay.

SKIN:

Remove contaminated clothing and wash skin with soap and water. Wash clothing before reuse. If irritation persists or contact has been prolonged, obtain medical attention.

INHALATION:

Remove to fresh air.

EYES:

Immediately flush eyes thoroughly with water and continue washing for several minutes. Obtain medical attention.

NOTES TO PHYSICIAN:

Irritant to skin and moderately irritant to the eye. Due to the potentially marked irritant effects in the upper alimentary mucosa, and the possibility for an aspiration hazard, it is recommended that vomiting not be induced mechanically or pharmacologically. If it is considered appropriate to evacuate the stomach contents, this should be undertaken with caution to avoid perforation of the inflamed or ulcerated areas, and to avoid aspiration (e.g. gastric lavage in the presence of endotracheal intubation.) Exposure to the vapor may cause minor transient edema of the corneal epithelium. This condition, referred to as "glauropsia," "blue haze," or "blue-gray haze," produces a blurring of vision against a general bluish haze and the appearance of halos around bright objects. The effect disappears spontaneously within a few hours of the end of an exposure, and leaves no sequelae. Although not detrimental to the eye per se, glauropsia predisposes an affected individual to physical accidents and reduces the ability to undertake skilled tasks such as driving a motorized vehicle.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID:

WARNING: Do not mix this product with nitrites or other nitrosating agents because nitrosamines may be formed. Nitrosamines may cause cancer.

INCOMPATIBILITY (materials to avoid):

Avoid strong acids and strong oxidizing agents.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

Burning can produce nitrogen oxides, carbon monoxide, and/or carbon dioxide.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID:

None

VII. SPILL OR LEAK PROCEDURES

PRODUCT NAME: UCARSOL HS Solvent 101

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Wear suitable protective equipment, especially eye protection. Collect for disposal. Toxic to fish; avoid discharge to natural waters.

WASTE DISPOSAL METHOD: It is recommended that disposal of this material be performed by incineration, biological treatment or by other means in full compliance with Federal, State, and local regulations. See Section IX.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):

Use self-contained breathing apparatus in high vapor concentrations.

VENTILATION:

This product should be handled in covered equipment, in which case general (mechanical) room ventilation is expected to be satisfactory. Special, local ventilation is recommended at points where vapors can be expected to escape to the workplace air.

PROTECTIVE GLOVES:

Rubber

EYE PROTECTION:

Monogoggles

OTHER PROTECTIVE EQUIPMENT:

Eye bath, safety shower, and chemical apron

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

WARNING: HARMFUL IF SWALLOWED.
CAUSES EYE AND SKIN IRRITATION.
ASPIRATION MAY CAUSE LUNG DAMAGE.

Do not swallow.

Avoid contact with eyes, skin and clothing.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, may be formed.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS:

DISPOSAL: This product is expected to be toxic to aquatic life at relatively low concentrations in water. Dispose of by incineration or by other means meeting Federal, State or local regulations. Laboratory tests indicate that it is rapidly biodegraded at very low concentration (~10 ppm) in water.

WARNING: Hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below those published in the literature as "autoignition" or "ignition" temperatures. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time, and are influenced by pressure changes.

Ignition may occur at typical elevated-temperature process conditions, especially in processes operating under vacuum if subjected to sudden ingress of air, or outside process equipment operating under elevated pressure if sudden escape of vapors or mists to the atmosphere occurs.

Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained.

X. REGULATORY INFORMATION

SAL 000006730**STATUS ON SUBSTANCE LISTS:**

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

PENNSYLVANIA Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

**** NONE ****

Toxic Substances Control Act(TSCA) STATUS:

The ingredients of this product are on the TSCA inventory.

65339

PRODUCT NAME: UCARSOL HS Solvent 101

PAGE 6

CALIFORNIA SCAQMD RULE 443.1 VOC'S:

Volatiles = substances with a vapor pressure of ≥ 0.5 mmHg at 104 C (219.2 F).

This product contains:

993.65 g/liter VOC

1048.24 g/liter of Material less Exempted Compounds

OTHER REGULATORY INFORMATION:

EPA Hazard Categories: Immediate Health, Delayed Health

NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Chemicals and Plastics Company.

We believe that the information contained herein is current as of the date of this Material Safety Data Sheet.

Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Chemicals and Plastics Company, it is the user's obligation to determine the conditions of safe use of the product.

REVISED SECTIONS:

Section V and Section IX.

PC: 55886

F NUMBER: 800028

SAL 000006732



MATERIAL SAFETY DATA SHEET

PRODUCT VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number **G S 2 5 4**
Medical (312) 920-1510 (24 hours)

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: VI-SEP 449 EMULSION BREAKER

DESCRIPTION: Oxyalkylate resins and isopropanol in a hydrocarbon solvent

NFPA 704M/HMIS RATING: 2/2 HEALTH 3/3 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredients as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazards.

INGREDIENTS	CAS #	APPROX.%
Heavy aromatic naphtha	64742-94-5	1-5
Isopropanol	67-63-0	5-10
Heavy aromatic distillate	67891-79-6	20-40
Ethylbenzene	100-41-4	1-5
Xylene	1330-20-7	5-10

SECTION 3 PRECAUTIONARY LABEL INFORMATION

WARNING: Flammable. Causes irritation to skin and eyes. Prolonged inhalation of vapor may be harmful. Do not use, store, spill or pour near heat, sparks, or open flame. Keep container closed when not in use. Do not get in eyes, on skin or on clothing. Wear goggles or face shield when handling. Avoid prolonged or repeated breathing of vapors. Use with adequate ventilation. Do not take internally. Store in a cool area.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

SECTION 4 FIRST AID INFORMATION

EYES: Flush with water for 15 minutes. Call a physician.
SKIN: Flush with water for 15 minutes.
INGESTION: Do not induce vomiting. Give water. Call a physician.
INHALATION: Remove to fresh air. Treat symptoms. Call a physician.

NOTE TO PHYSICIAN: No specific antidote is known. Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions,



MATERIAL SAFETY DATA SHEET

PRODUCT VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number
Medical (312) 920-1510 (24 hours)

SECTION 4 FIRST AID INFORMATION

(CONTINUED)

do not induce vomiting or give water.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTES OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: Can cause moderate irritation.
SKIN CONTACT: Can cause moderate irritation.
INHALATION: Prolonged inhalation of vapor may be harmful.

SYMPTOMS OF EXPOSURE:

ACUTE: Inhalation of high concentrations of product can cause nausea, dizziness, vomiting, stupor or unconsciousness.

CHRONIC: Prolonged skin contact with product can cause dry skin and defatting resulting in irritation and dermatitis.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

ACUTE TOXICITY STUDIES: No toxicity studies have been conducted on this product.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Dark green	FORM: Liquid	ODOR: Hydrocarbon
SOLUBILITY IN WATER:	Dispersible	
SPECIFIC GRAVITY:	0.95 @ 60 Degrees F	
FLASH POINT:	58 Degrees F (TOC)	ASTM D-56

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: 58 Degrees F (TOC) ASTM D-56

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, alcohol foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For large fires, use water spray or fog, thoroughly drenching the burning material.



MATERIAL SAFETY DATA SHEET

PRODUCT VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number **6 S 2 5 4**
Medical (312) 920-1510 (24 hours)

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂ may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: Respiratory protection is not normally needed. If significant mists or aerosols are generated, wear a NIOSH approved or equivalent respirator, (ANSI Z 88.2, 1980 for requirements and selection).

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended.

PROTECTIVE EQUIPMENT: Use impermeable gloves and chemical splash goggles (ANSI Z 87.1 requirements and selection of gloves, goggles, shoes, etc.) when attaching feeding equipment or doing maintenance.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (312-920-1510)

SPILL CONTROL AND RECOVERY:

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 10.



66 S 254

MATERIAL SAFETY DATA SHEET

PRODUCT VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number
Medical (312) 920-1510 (24 hours)

SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

Keep the spill away from heat, sparks, flames and welding operations. Ventilate area and evacuate employees from exposure if the airborne concentration exceeds the TLV. Refer to Section 14.

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous Waste D001.

As a hazardous liquid waste, it must be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to a licensed industrial waste landfill (Hazardous Waste Treatment, Storage and Disposal facility). A hazardous liquid waste can also be incinerated in accordance with local, state, and federal regulations.

SECTION 12 ENVIRONMENTAL INFORMATION

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - FLAMMABLE LIQUID, N.O.S.
FLAMMABLE LIQUID UN 1993
CONTAINS - ISOPROPANOL, XYLENE

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:
Based on our hazard evaluation, the following ingredients in this product are hazardous and the reasons are shown below.

Isopropanol - Flammable, irritant
Heavy aromatic naphtha - Irritant
Heavy aromatic distillate - Skin irritant
Ethylbenzene - Eye irritant
Xylene - Eye irritant

Isopropanol = TWA 400 ppm, STEL 500 ppm ACGIH/TLV
985 mg/m³, 1230 mg/m³ ACGIH/TLV
Ethylbenzene = TWA 100 ppm, STEL 150 ppm ACGIH/TLV



MATERIAL SAFETY DATA SHEET

PRODUCT VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number **65254**
Medical (312) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

Xylene = TWA 100 ppm, STEL 150 ppm ACGIH/TLV
434 mg/m³, 543 mg/m³ ACGIH/TLV
434 mg/m³, 651 mg/m³ ACGIH/TLV

Isopropanol = TWA 400 ppm, STEL 500 ppm OSHA/PEL
980 mg/m³, 1225 mg/m³ OSHA/PEL

Ethylbenzene = TWA 100 ppm, STEL 150 ppm OSHA/PEL
435 mg/m³, 655 mg/m³ OSHA/PEL

Xylene = TWA 100 ppm, STEL 150 ppm OSHA/PEL
435 mg/m³, 655 mg/m³ OSHA/PEL

Heavy aromatic naphtha = 100 ppm TLV
Manufacturer's recommendation

CERCLA/SUPERFUND, 40 CFR 117, 302:
Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):
This product does not contain ingredients listed in Appendix A and B as an
Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS
(40 CFR 370):

Our hazard evaluation has found this product to be hazardous. The product
should be reported under the following EPA hazard categories:

XX Immediate (acute) health hazard
— Delayed (chronic) health hazard
XX Fire hazard
— Sudden release of pressure hazard
— Reactive hazard

Under Section 311, submittal of MSDS's or a list of product names to the local
emergency planning commission, state emergency response commission and local
fire department is required after October 17, 1987 if you have:

- 10,000 pounds or more of a hazardous substance, or
- 500 pounds or the threshold planning quantity, whichever
is less, of an extremely hazardous substance.

After October 17, 1989, MSDS(s), or a list of product names for all hazardous



MATERIAL SAFETY DATA SHEET

PRODUCT VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number
Medical (312) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

substances between zero (0) and 10,000 pounds, not previously reported, must be submitted.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product contains the following ingredient(s), (with CAS # and % range) which appear(s) on the List of Toxic Chemicals.

Ethylbenzene	100-41-4	1-5
Xylene	1330-20-7	5-10

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The chemical ingredients in this product are on the 8(b) Inventory List (40 CFR 710).

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:

If this product becomes a waste, it does meet the criteria of a hazardous waste as defined under RCRA 40 CFR 261 (consult Section 11).

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 (formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

This product contains the following ingredients covered by the Clean Water Act:

Ethylbenzene - Section 307, 311

Xylene - Section 311

CLEAN AIR ACT, 40 CFR 60, SECTION 111, 40 CFR 61, SECTION 112:

This product contains the following ingredients covered by the Clean Air Act:

Isopropanol - Section 111

Ethylbenzene - Section 111

Xylene - Section 111

STATE REGULATIONS:

CALIFORNIA PROPOSITION 65:

None of the chemicals on the current Proposition 65 list are known to be present in this product.

MICHIGAN CRITICAL MATERIALS:

This product contains the following substance(s) identified on the Michigan Critical Materials Register:

Ethylbenzene, Xylene



MATERIAL SAFETY DATA SHEET

PRODUCT

VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number

Medical (312) 920-1510 (24 hours)

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SECTION 14 REGULATORY INFORMATION

(CONTINUED)

STATE RIGHT TO KNOW LAWS:

Regulated in those states using the TLV for isopropanol, ethylbenzene, and xylene as a criteria for listing.

INTERNATIONAL REGULATIONS:

This is a WHMIS controlled product under The House of Commons of Canada Bill C-70. The product contains the following substance(s), from the Ingredient Disclosure List or has been evaluated based on its toxicological properties, to contain the following hazardous ingredient(s):

Chemical Name	CAS #	% Concentration Range
Heavy aromatic naphtha	64742-94-5	1-5
Isopropanol	67-63-0	5-10
Heavy aromatic distillate	67891-79-6	20-40
Ethylbenzene	100-41-4	1-5
Xylene	1330-20-7	5-10

SECTION 15 ADDITIONAL INFORMATION

F 302605

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Admur, M. O., eds., Macmillian Publishing Company, Inc., N. Y., 2nd edition, 1980.



MATERIAL SAFETY DATA SHEET

PRODUCT VI-SEP 449 EMULSION BREAKER

Emergency Telephone Number

Medical (312) 920-1510 (24 hours)

SECTION 17 BIBLIOGRAPHY

(CONTINUED)

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

PATY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

PREPARED BY: John J. Kasper, MSc., Manager Product Safety

DATE CHANGED: 09/20/89

DATE PRINTED: 11/01/89

P1129

MATERIAL SAFETY DATA SHEET

48192

Pg 1

HYDROCHLORIC ACID 22 BE

REVISION OF: 12-11-89

MAIL TO:

45000382
CONOCO INC
REFINING
P O BOX 37
WESTLAKE

LA 70669

ORDER NO: 450508343
PROD NO: 04310054VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: HYDROCHLORIC ACID
COMMON NAMES/SYNONYMS: HYDROCHLORIC
ACID; MURIATIC ACIDCAS NO.: 7647-01-0
VW&R CODE: P1129FORMULA: H CL
HAZARD RATING (NFPA 49)
HEALTH: 3
FIRE: 0
REACTIVITY: 0
SPECIAL: NONEDATE ISSUED: 12/89
SUPERCEDES: 11/89
HAZARD RATING SCALE:
0-MINIMAL 3-SERIOUS
1-SLIGHT 4-SEVERE
2-MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM			HAZARD
			OSHA PEL	ACGIH TLV	OTHER LIMIT	
HYDROCHLORIC ACID	7647-01-0	27-37	5	5	NONE	CORROSIVE
WATER	7732-18-5	BALANCE	NONE	NONE	NONE	NONE

-----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: 150 - 230 VAPOR PRESSURE, MM HG/20 DEG C: 30
AT 77 DEG F
MELTING POINT, DEG F: N/A VAPOR DENSITY (AIR=1): N/A
SPECIFIC GRAVITY (WATER=1): A=1.14; B=1.16; C=1.18 WATER SOLUBILITY, %: COMPLETE
APPEARANCE AND ODOR: CLEAR, EVAPORATION RATE (BUTYL ACETATE=1): N/A
COLORLESS TO PALE YELLOW WITH PUNGENT, IRRITATING ODOR.
(A=18 DEG BE HYDROCHLORIC ACID; B=20 DEG BE HYDROCHLORIC ACID; C=22 DEG BE HYDROCHLORIC ACID)

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING

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WATER FOR 30 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY FLUSH SKIN WITH LOTS OF RUNNING WATER FOR 30 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT, INHALATION.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS ARE EXTREMELY CORROSIVE TO THE NOSE, THROAT, AND MUCOUS MEMBRANES. BRONCHITIS, PULMONARY EDEMA, AND CHEMICAL PNEUMONITIS MAY OCCUR. IRRITATION, COUGHING, CHEST PAIN, AND DIFFICULTY IN BREATHING MAY OCCUR WITH BRIEF EXPOSURE WHILE PROLONGED EXPOSURE MAY RESULT IN MORE SEVERE IRRITATION AND TISSUE DAMAGE. BREATHING HIGH CONCENTRATIONS MAY RESULT IN DEATH.

EYE CONTACT: VAPORS, LIQUID, AND MISTS ARE EXTREMELY CORROSIVE TO THE EYES. BRIEF CONTACT OF THE VAPORS WILL BE SEVERELY IRRITATING. BRIEF CONTACT OF THE LIQUID OR MISTS WILL SEVERELY DAMAGE THE EYES AND PROLONGED CONTACT MAY CAUSE PERMANENT EYE INJURY WHICH MAY BE FOLLOWED BY BLINDNESS.

SKIN CONTACT: VAPORS, MISTS, AND LIQUID ARE EXTREMELY CORROSIVE TO THE SKIN. VAPORS WILL SEVERELY IRRITATE THE SKIN AND LIQUID AND MISTS WILL SEVERELY BURN THE SKIN. PROLONGED LIQUID CONTACT WILL BURN OR DESTROY SURROUNDING TISSUE AND DEATH MAY ACCOMPANY BURNS WHICH EXTEND OVER LARGE PORTIONS OF THE BODY.

SWALLOWED: VAPORS, MISTS, AND LIQUID ARE EXTREMELY CORROSIVE TO THE MOUTH AND THROAT. SWALLOWING THE LIQUID BURNS THE TISSUES, CAUSES SEVERE ABDOMINAL PAIN, NAUSEA, VOMITING, AND COLLAPSE. SWALLOWING LARGE QUANTITIES CAN CAUSE DEATH.

CHRONIC EFFECTS OF EXPOSURE: MAY RESULT IN AREAS OF DESTRUCTION OF SKIN TISSUE OR PRIMARY IRRITANT DERMATITIS. SIMILARLY, INHALATION OF VAPORS OR MISTS MAY CAUSE VARYING DEGREES OF DAMAGE TO THE AFFECTED TISSUES AND ALSO INCREASING SUSCEPTIBILITY TO RESPIRATORY ILLNESS.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

-----TOXICITY DATA-----

ORAL: RABBIT LD50 = 900 MG/KG

DERMAL: NO DATA FOUND

INHALATION: RAT LC50 = 3,124 PPM/1HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

-----PERSONAL PROTECTION-----

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THE VAPOR OR MIST CONCENTRATION AT THE POINT OF USE. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ACID GASES/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR

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RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACE SHIELD UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: ACID-RESISTANT SLICKER SUIT WITH RUBBER APRON, RUBBER BOOTS WITH PANTS OUTSIDE, AND RUBBER GLOVES WITH GAUNTLETS.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: NONE

FLAMMABLE LIMITS IN AIR, %

METHOD USED: N/A

LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION SINCE FLAMMABLE HYDROGEN GAS WILL BE LIBERATED FROM CONTACT WITH SOME METALS.

-----HAZARDOUS REACTIVITY-----

STABILITY: STABLE
CONDITIONS TO AVOID: NONE

POLYMERIZATION: WILL NOT OCCUR

MATERIALS TO AVOID: ALKALIS, OXIDIZING OR REDUCING MATERIALS, CYANIDES, SULFIDES, OR COMBUSTIBLE MATERIALS. KEEP AWAY FROM FORMALDEHYDE SINCE THERE ARE REPORTS THAT BIS-CHLOROMETHYL ETHER, A POTENTIAL CARCINOGEN, MAY BE FORMED. ALSO KEEP AWAY FROM AMINES, VINYL ACETATE, PROPYLENE OXIDE, BETA-PROPIOLACTONE, AND METAL OXIDES.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE HYDROGEN CHLORIDE.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR ACID-RESISTANT SLICKER SUIT AND COMPLETE PROTECTIVE EQUIPMENT INCLUDING RUBBER GLOVES, RUBBER BOOTS, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ACID GASES MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND CAREFULLY NEUTRALIZE WITH SODA ASH OR LIME. IF SODA ASH IS USED, PROVIDE ADEQUATE VENTILATION TO DISSIPATE THE CARBON DIOXIDE GAS. KEEP NON-NEUTRALIZED MATERIAL OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

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REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

-----OTHER REGULATORY INFORMATION-----

DO NOT DETACH THIS SECTION FROM THE MSDS AND BE SURE TO INCLUDE THIS SECTION WHEN COPYING THE MSDS.

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL(S) SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

NAME	CAS NO.	% WT.
HYDROCHLORIC ACID	7647-01-0	27-37

-----NOTICE-----

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ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

-----REVISION-----

12/89: REVISED PERCENTAGE RANGE.

**** END OF MSDS ****

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Material Safety Data Sheet



Emergency Medical Telephone (800) 441-3637

GS185

HD CALCIUM GREASE NO. 1 & 2

I. MATERIAL IDENTIFICATION

Name HD Calcium Grease No. 1 & 2	CAS Registry Number Mixture; See Section XI
Synonyms Petroleum Grease	Product Code 9759/9760
Chemical Family Petroleum Hydrocarbon	Transportation Emergency Phone 1-(800) 424-9300 (Chemtrec)

II. OSHA HAZARD DETERMINATION

The material is not hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for other federal and state regulatory information.

Hazardous Ingredients None	CAS Registry Number	Concentration
Hazardous Physical Properties None		

III. PHYSICAL DATA

Appearance and Odor Tan-brown solid; Mild petroleum hydrocarbon odor	Specific Gravity (H₂O = 1) 1.03
Boiling Point/Range 750° - 1200°F	% Volatiles (by volume) Nil
Vapor Pressure Nil	Solubility in Water Insoluble
Vapor Density (Air = 1.0) >1	Evaporation Rate Nil

IV. REACTIVITY DATA

Stable: X Unstable:

Hazardous Decomposition Materials: Hazardous gases/vapors produced are carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat and flame.

Hazardous Polymerization: Will not occur.

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V. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method used): 470°F (PMCC)

Autolgnition Temperature: 750°F

Handle and store in accordance with NFPA procedure for Class IIIB Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, CO₂, foam.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) Classification

Health 0 Fire 1 Reactivity 0

HAZARD RATING

Least-0 Slight-1 Moderate-2
High-3 Extreme-4

VI. TRANSPORTATION AND STORAGE

Storage Conditions:

Store in accordance with National Fire Protection Association regulations.

Shipping Information:

DOT: Not Regulated

IATA/IMO: Not Restricted

VII. HEALTH HAZARD INFORMATION

PEL: None Established

Ceiling Value: None Established

TLV: None Established

Primary Routes of Exposure/Entry: Skin.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

The product does not pose a significant health hazard, but as with many petroleum products, poor hygienic practices or inadequate engineering design that allow prolonged or repeated exposure may cause minor skin irritation.

Carcinogenicity:

This material is not known to contain any chemical listed as a carcinogen or suspected carcinogen by OSHA, IARC, or NTP at a concentration greater than 0.1%.

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: Contain spill immediately in smallest possible area. Recover as much of the product as possible by shovel, vacuuming or other mechanical means. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

X. PRECAUTIONARY MEASURES

Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: None required.

Eye Protection: None required.

Other Protective Equipment: Complete protective clothing if material is being handled hot.

Safety Precautions: Avoid prolonged skin contact by practicing good personal hygiene and laundering contaminated clothing.

XI. REGULATORY INFORMATION**FEDERAL REGULATIONS**

CERCLA, 40 CFR 302

Not Applicable

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III
SECTIONS 302, 311, 312, 313**

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories:

☐ Immediate (Acute) Health Hazard	☐ Sudden Release of Pressure
☐ Delayed (Chronic) Health Hazard	☐ Reactive
☐ Fire	☒ Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

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SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material contains the following chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

<u>Ingredient</u>	<u>CAS Registry Number</u>	<u>Approx. Concentration (Upper Bound)</u>
Zinc Naphthenate	12001-85-3	2%

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is a mixture as defined by TSCA. The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies on the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116,

SECTION 311

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

<u>Ingredient</u>	<u>Reportable Quantity</u>
Petroleum Hydrocarbon	Film or sheen upon or discoloration of the water surface or adjoining shorelines.

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

Not Applicable

FOREIGN REGULATIONS

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)

The material is not a WHMIS Controlled Product

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")

The material does not contain ingredient(s) subject to the Act.

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PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

The material contains the following hazardous substances:

Categories: S = Special Hazardous Substance ($\leq 0.01\%$)
H = Hazardous Substance ($\leq 1.0\%$)
E = Environmental Hazard ($\leq 1.0\%$)

<u>Ingredient</u>	<u>CAS Registry Number</u>	<u>Category</u>
Zinc Naphthenate	12001-85-3	E

Nonhazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of Pennsylvania Worker and Community Right to Know Act.

MSDS Code: GREC0170

REVISION TO SECTION XI

DATE OF LATEST REVISION/REVIEW:

10/89 - Replaces MSDS dated 3/89

DEPARTMENT RESPONSIBLE FOR MSDS:

Safety, Occupational Health & Environmental Affairs

PRODUCT INFORMATION CONTACT:

Hazard Communication Analyst

Conoco Inc.

(713) 293-5550

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

Material Safety Data Sheet

conoco

Emergency Medical Telephone (800) 441-3637

G S 0 4 5

BENZENE

I. MATERIAL IDENTIFICATION

Name Benzene	CAS Registry Number 71-43-2
Synonyms Benzol, Coal Naphtha, Cyclohexatriene, Phene, Phenyl Hydride, Pyrobenzol	Transportation Emergency Phone 1-(800) 424-9300 (Chemtrec)
Chemical Family Monocyclic Aromatic Hydrocarbon	

II. OSHA HAZARD DETERMINATION

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for other federal and state regulatory information.

Hazardous Ingredients Benzene	CAS Registry Number 71-43-2	Concentration >99%
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Hazardous Physical Properties
Class IB Flammable Liquid - NFPA Code 30-1987.

III. PHYSICAL DATA

Appearance and Odor Colorless liquid; Sweet odor (Threshold: 2 ppm)	Specific Gravity (H₂O = 1) 0.884
Boiling Point @ 760 mmHg 80.1°C (176.18°F)	% Volatiles (WT %) 100%
Vapor Pressure (mmHg) 77 @ 21°C (69°F) 100 @ 26.1°C (78°F)	Solubility in Water Negligible
Vapor Density (Air = 1.0) 2.8	Melting Point 5.5°C (41.9°F)

IV. REACTIVITY DATA

Stable: X Unstable: _____

Hazardous Decomposition Materials: Decomposes with heat.

Conditions to Avoid: Incompatible with strong oxidants, strong acids.

Hazardous Polymerization: Will not occur.

GS045

V. FIRE AND EXPLOSION HAZARD DATA

LEL: 1.3 UEL: 7.9

Flash Point (Method used): -11°C (12°F) (CC)

Autolignition Temperature: 560°C (1,040°F)

Handle and store in accordance with NFPA procedure for Class IB Flammable Liquid.

Extinguishing Media: Use foam, dry chemical, CO₂.

Special Fire Fighting Procedures: Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment. Cool tank/container with water spray.

If a leak or spill has not ignited, use water spray to disperse the vapors and to protect those attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Vapor forms explosive mixture with air. Vapors or gases may travel considerable distances to ignition source and flash back. Hazardous vapor produced in fire is carbon monoxide.

National Fire Protection Association (NFPA) Classification

Health 2 Fire 3 Reactivity 0

HAZARD RATING

Least-0 Slight-1 Moderate-2
High-3 Extreme-4

VI. TRANSPORTATION AND STORAGE

Storage Conditions: Store in well ventilated area. Store in cool place. Keep container tightly closed. Do not store with strong oxidants.

Shipping Information:

DOT:

Proper Shipping Name: Benzene (Benzol)
Hazard Class: Flammable Liquid
UN/NA No.: UN 1114
DOT Label(s): Flammable Liquid
DOT Placard: Flammable

IATA/IMO:

Proper Shipping Name: Benzene
Hazard Class: 3.2
UN No.: UN 1114
IMO/ICAO Label: Flammable Liquid
Packaging Group: II

Reportable Quantity: 1,000 lbs.

VII. HEALTH HAZARD INFORMATION

Exposure Limits for Benzene

PEL: 1 ppm - 8 Hr. TWA
5 ppm - (Short-Term Exposure Limit)
0.5 ppm - Action Level

TLV: 10 ppm, 32 mg/m³
Du Pont AEL: 1 ppm - 8 & 12 Hr. TWA
5 ppm - 15 Min. TWA

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues. High exposures may also cause heart irregularities with sudden death.

Benzene may cause irritation to the eyes, lungs, or skin after prolonged or repeated exposure.

Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness, and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness, or convulsions.

Carcinogenicity:

Benzene

NTP
Yes

IARC
Yes

OSHA
Yes

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Immediately give two glasses of water or activated charcoal slurry. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: To prepare activated charcoal slurry, suspend 50 g activated charcoal in 400 ml water in plastic bottle and shake well. Administer 5 ml/kg or 350 ml for an average adult.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

Aquatic Toxicity: 96 hour LC 50, fathead minnow: 35 mg/l

In Case of Spill or Leak: Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus. Remove source of heat, sparks, flame, impact, friction, or electricity. Dike spill. Prevent liquid from entering sewers, waterways, or low areas. Recover free liquid for reuse or reclamation. Soak up with sawdust, sand, oil dry, or other absorbent material.

Superfund Reportable Discharge: 1,000 lbs.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Cleaned-up material is an RCRA Hazardous Waste. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Recover nonusable free liquid and dispose of in an approved and permitted incinerator. Do not flush to surface water or sanitary sewer system.

X. PRECAUTIONARY MEASURES

Generally Applicable Control Measures and Procedures: Keep away from heat, sparks, and flames. Keep container in a cool place. Keep container tightly closed. Ground container when pouring. Use of nonsparking and explosion-proof equipment may be necessary depending on type of operation.

Use ventilation that is adequate to keep airborne concentrations below exposure limits.

Personal Protective Equipment: The OSHA benzene standard (29 CFR 1910.1028) has specific requirements for personal protective equipment including respiratory protection. Refer to OSHA Standard 29 CFR 1910.134 for further respirator requirements. Eye contact with liquid benzene must be prevented and skin exposure limited as much as possible. Eye and face protection must conform to OSHA Standard 1910.133.

Only personal protective clothing which provides a good barrier against benzene should be used. The best material against pure benzene is "VITON."

If liquid benzene contacts protective clothing, the clothing should be removed promptly and decontaminated.

Safety Precautions: Do not breathe vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Wash clothing after use.

XI. REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302

The material contains the following hazardous substance which, when released in quantities equal to or exceeding the Reportable Quantity, triggers National Response Center notification requirements.

Hazardous Substance
Benzene

Reportable Quantity
100 lbs.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories:

☒ Immediate (Acute) Health Hazard
☒ Delayed (Chronic) Health Hazard
☒ Fire

☐ Sudden Release of Pressure
☐ Reactive
☐ Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material contains the following chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

Toxic Chemical
Benzene

CAS Registry Number
71-43-2

Approx. Concentration
(Upper Bound)
100%

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is in the TSCA Inventory of Chemical Substances and/or is otherwise in compliance with TSCA.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is the listed hazardous waste U019.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A, SECTION 311

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient
Benzene

Reportable Quantity
1000 lbs.

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

The material contains the following ingredient(s) which is considered hazardous if spilled while being transported in commerce.

Ingredient
Benzene

Reportable Quantity
1000 lbs.

G S 0 4 5

STATE REGULATIONS

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986
(PROPOSITION 65)**

The material contains ingredient(s) known to the State of California to cause cancer, birth defects or other reproductive harm. Read and follow label directions and use care when handling or using all petroleum products.

Ingredient
Benzene

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

To the best of our knowledge the material is not sold or produced in Pennsylvania. Please notify Conoco at the telephone number noted below if the material results in Pennsylvania commerce.

ADDITIONAL INFORMATION AND REFERENCES

The OSHA Benzene Standard, 29 CFR 1910.1028, must be complied with. Specific requirements include permissible exposure limits, regulated areas, exposure monitoring, engineering controls and work practice, medical surveillance and removal, communications and training, and record keeping. The standard became effective December 10, 1987.

MSDS Code: MISC0016

DATE OF LATEST REVISION/REVIEW:

DEPARTMENT RESPONSIBLE FOR MSDS:

PRODUCT INFORMATION CONTACT:

11/89

Safety, Occupational Health & Environmental Affairs

Hazard Communication Analyst

Conoco Inc.

(713) 293-5550

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Material Safety Data Sheet



Emergency Medical Telephone (800) 441-3637

CP034

MOLTEN SULFUR

I. MATERIAL IDENTIFICATION

Name
Molten Sulfur

CAS Registry Number
7704-34-9

Synonyms
Sulphur, Liquid Sulfur

Transportation Emergency Phone
1-(800) 424-9300 (Chemtrec)

II. OSHA HAZARD DETERMINATION

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for other federal and state regulatory information.

Hazardous Ingredients
Hydrogen Sulfide
Sulfur Dioxide

CAS Registry Number
7783-06-4
7446-09-5

Concentration
<0.1%*
<0.1%*

*Values are approximate.

Hazardous Physical Properties
None

III. PHYSICAL DATA

Appearance and Odor
Hot yellow liquid;
Sulfur odor

Specific Gravity ($H_2O = 1$)
1.9 - 2.1 at 20°C

Boiling Point/Range
1 ATM 837°F

Melting Point
223° - 244°F

Vapor Pressure (mmHg) @ 20°C
<0.0001

Solubility in Water
Insoluble

IV. REACTIVITY DATA

Hazardous Decomposition Materials: Sulfur dioxide, hydrogen sulfide, and carbon disulfide.

Conditions to Avoid: Oxidizers, flames (burning of product causes emissions of sulfur dioxide).

Hazardous Polymerization: Will not occur.

CP034

V. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method used): 250° - 405°F (PM)

Autolgnition Temperature: 478° - 502°F

Handle and store in accordance with NFPA procedure for Class IIIB Combustible Liquid.

Extinguishing Media/Unusual Fire and Explosion Hazards: Water spray or fog is the most satisfactory extinguishing media. Steam and carbon dioxide may be useful in special cases. Streams of water from a nozzle can scatter molten sulfur and disperse sulfur dust into the air. If water is not available, burning sulfur can be covered with an inert material. A sulfur fire in a container can be smothered by closing vents or applying a steam or inert gas blanket.

Special Fire Fighting Procedures: Sulfur dust is a moderate explosion hazard when dispersed in air. It is a greater explosion hazard when it is in contact with oxidizing agents. Bulk sulfur is a slight fire hazard when exposed to heat or flame.

Fire fighters may need self-contained breathing apparatus for SO₂ protection. Eye protection and full protective clothing may also be indicated in large fires.

National Fire Protection Association (NFPA) Classification

Health 2 Fire 1 Reactivity 0

HAZARD RATING

Least-0 Slight-1 Moderate-2
High-3 Extreme-4

VI. TRANSPORTATION AND STORAGE

Storage Conditions:

Store in accordance with National Fire Protection Association regulations. Store in well-ventilated area. Do not store near strong oxidizing agents.

Shipping Information:

DOT:

Proper Shipping Name: Sulfur, Molten

Hazard Class: ORM-C

UN/NA No.: UN 2448

DOT Label(s): None

Special Information: Transportation and storage at high temperatures may cause evolution of toxic hydrogen sulfide gas and accumulation in head space.

DOT Placard: None

IATA/IMO:

Proper Shipping Name: Sulphur, Molten

Hazard Class: 4.1

UN No.: UN 2448

IMO/ICAO Label: Flammable Solid

Special Information: Forbidden for Air Transport

Packaging Group: III

VII. HEALTH HAZARD INFORMATION

Exposure Limits for Molten Sulfur

PEL: None Established

TLV: None Established

Exposure Limits for Hydrogen Sulfide

PEL: 10 ppm, 14 mg/m³

Du Pont AEL: 10 ppm - 8 & 12 Hr. TWA

STEL 15 ppm, 21 mg/m³

TLV: 10 ppm, 14 mg/m³

STEL 15 ppm, 21 mg/m³

Exposure Limits for Sulfur Dioxide

PEL: 2 ppm, 5 mg/m³
STEL 5 ppm, 10 mg/m³
 TLV: 2 ppm, 5 mg/m³
STEL 5 ppm, 10 mg/m³

Du Pont AEL: 2 ppm - 8 Hr. TWA
5 ppm - 15 Min. TWA

Primary Routes of Exposure/Entry: Skin, inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Hydrogen sulfide or sulfur dioxide can be irritating or corrosive to eyes, lungs, or skin. The possibility of skin burns from the hot product acts as a deterrent against skin, eye or inhalation contact. Hydrogen sulfide may be in the product or head-space of vessels used to store or transport the product. Hydrogen sulfide is irritating at low concentrations to the eyes, skin and respiratory tract. At higher concentrations, loss of ability to smell hydrogen sulfide, respiratory paralysis and death may occur.

Carcinogenicity:

This material is not known to contain any chemical listed as a carcinogen or suspected carcinogen by OSHA, IARC, or NTP at a concentration greater than 0.1%.

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: Wash exposed skin with cool water for thermal burns. Liquid sulfur burns over a small area should be covered with a clean, dry dressing. Seek medical attention. Do not remove the sulfur. Where greater areas are burned, do not remove clothing or sulfur. Cover affected area with clean material and seek medical attention.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. Because hydrogen sulfide can cause death, if it is present, rescuers must review Respiratory Protection in the Precautionary Measures Section.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: Dike spill. Let sulfur cool and harden. Handle as a solid. Avoid breathing dust or generating dust. Contain spill immediately in smallest possible area. Recover the product by mechanical means. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

X. PRECAUTIONARY MEASURES

Respiratory Protection: Not necessary unless SO₂ or H₂S concentrations exceed recommended TLV. Use NIOSH/MSHA-approved respiratory protection. Use positive-pressure, air-supplying respirator in confined space.

Ventilation: Use normal ventilation with mechanical ventilation in confined spaces. Ventilation of liquid sulfur tanks is necessary to prevent accumulation of toxic and explosive gases.

Protective Gloves: Use impervious gloves with thermal protection to avoid thermal burns.

Eye Protection: Use of face shield or goggles is recommended.

Other Protective Equipment: Protective clothing, as needed, to avoid thermal burns.

C P 0 3 4

XI. REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 261 and 302

The material contains the following hazardous substance which, when released in quantities equal to or exceeding the Reportable Quantity, triggers National Response Center notification requirements.

Hazardous Substance
Hydrogen Sulfide

Reportable Quantity
100 lbs

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III
SECTIONS 302, 304, 311, 312, 313**

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories:

☒ Immediate (Acute) Health Hazard	☐ Sudden Release of Pressure
☒ Delayed (Chronic) Health Hazard	☐ Reactive
☐ Fire	☐ Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material does not contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is in the TSCA Inventory of Chemical Substances and/or is otherwise in compliance with TSCA.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A,

SECTION 311

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient
Hydrogen Sulfide

Reportable Quantity
100 lbs of H₂S

CP034

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

The material contains the following ingredient(s) which is considered a hazardous substance as defined by 49 CFR 171.8 if spilled while being transported in commerce.

<u>Ingredient</u>	<u>Reportable Quantity</u>
Hydrogen Sulfide	100 lbs of H ₂ S
Sulfur Dioxide	1 lb of SO ₂

FOREIGN REGULATIONS

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)

The material is a WHMIS Controlled Product, and a Canadian MSDS is available.

STATE REGULATIONS

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986
("PROPOSITION 65")**

The material does not contain ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

To the best of our knowledge the material is not sold or produced in Pennsylvania. Please notify Conoco at the telephone number noted below if the material results in Pennsylvania commerce.

MSDS Code: MISC0015

SECTIONS IV, V, VI, VII, IX, AND XI REVISED

DATE OF LATEST REVISION/REVIEW:

DEPARTMENT RESPONSIBLE FOR MSDS:

PRODUCT INFORMATION CONTACT:

12/89 - Replaces MSDS dated 3/89

Safety, Occupational Health & Environmental Affairs

Hazard Communication Analyst

Conoco Inc.

(713) 293-5550

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Material Safety Data Sheet

conoco

Emergency Medical Telephone (800) 441-3637

CP 029

NAPHTHA

I. MATERIAL IDENTIFICATION

Name	CAS Registry Number
Naphtha	Mixture; See Section XI
Synonyms	Product Code
Petroleum Naphtha; Full Range Straight Run Naphtha	1509
Chemical Family	Transportation Emergency Phone
Petroleum Hydrocarbons	1-(800) 424-9300 (Chemtrec)

II. OSHA HAZARD DETERMINATION

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for federal and state regulatory information.

Hazardous Ingredients	CAS Registry Number	Concentration
Hydrocarbons (Aromatic & Paraffinic)	Mixture	>50%
Benzene	71-43-2	0.1-4.9 wt %
Cyclohexane	110-82-7	≤2%
Toluene	108-88-3	≤15%
Xylenes	1330-20-7	≤12%

Hazardous Physical Properties
Class 1A Flammable Liquid - NFPA 30-1987.

III. PHYSICAL DATA

Appearance and Odor	Specific Gravity (H ₂ O = 1)
Colorless to yellow liquid; Petroleum naphtha odor	0.7
Boiling Point/Range	% Volatiles (by volume)
-4° to 430°F	100%
Vapor Pressure (mmHg) @ 68°F	Solubility in Water
Approximately 400	Very slightly soluble
Vapor Density (Air = 1.0)	
> 1	

CP 029

IV. REACTIVITY DATA

Stable: X Unstable:

Hazardous Decomposition Materials: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

V. FIRE AND EXPLOSION HAZARD DATA

LEL: ≤1 UEL: 8

Flash Point (Method used): Below room temperature (TCC)

Autoignition Temperature: Approx. 405°F

Handle and store in accordance with NFPA procedure for Class 1A Flammable Liquid.

Extinguishing Media: Use dry chemical, CO₂ foam.

Special Fire Fighting Procedures: Water may be ineffective to extinguish, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from areas of potential ignition.

Unusual Fire and Explosion Hazards: Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) Classification

Health 1 Fire 3 Reactivity 0

HAZARD RATING

Least-0 Slight-1 Moderate-2
High-3 Extreme-4

VI. TRANSPORTATION AND STORAGE

Storage Conditions: Store in accordance with National Fire Protection Association regulations.

Shipping Information:

DOT:

Proper Shipping Name: Petroleum Naphtha
Hazard Class: Flammable Liquid
UN/NA No.: UN 1255
DOT Label(s): Flammable Liquid
DOT Placard: Flammable

IATA/IMO:

Proper Shipping Name: Naphtha, Petroleum
Hazard Class: 3 (IMO 3.2)
UN No.: UN 1255
IMO/ICAO Label: Flammable Liquid
Packaging Group: II

VII. HEALTH HAZARD INFORMATION

Exposure Limits for Naphtha

PEL: None Established

TLV: None Established

Exposure Limits for Petroleum Distillate

PEL: 400 ppm; 1600 mg/m³

Exposure Limits for Benzene

PEL: 1 ppm - 8 Hr. TWA
5 ppm - (Short-Term Exposure Limit)
0.5 ppm - Action Level

TLV: 10 ppm, 30 mg/m³
Du Pont AEL: 1 ppm - 8 & 12 Hr. TWA
5 ppm - 15 Min. TWA

Exposure Limits for Cyclohexane

PEL: 300 ppm, 1050 mg/m³
TLV: 300 ppm, 1050 mg/m³

Du Pont AEL: 150 ppm - 12 Hr. TWA

Exposure Limits for Toluene

PEL: 100 ppm, 375 mg/m³
STEL 150 ppm, 560 mg/m³

TLV: 100 ppm, 375 mg/m³
STEL 150 ppm, 560 mg/m³

Du Pont AEL: 100 ppm - 8 & 12 Hr. TWA

Exposure Limits for Xylenes

PEL: 100 ppm, 435 mg/m³
STEL 150 ppm, 655 mg/m³

TLV: 100 ppm, 435 mg/m³
STEL 150 ppm, 655 mg/m³

Du Pont AEL: 100 ppm - 8 Hr. TWA
150 ppm - 15 Min. TWA

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

A few studies have indicated that workers exposed many years to high concentrations of benzene have a slightly higher incidence of leukemia. Benzene can also be toxic to the blood and blood-forming tissues.

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100°-700°F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons which may cause irritation to the eyes, skin and lungs after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness or convulsions.

Carcinogenicity: The following components are listed by NTP, IARC, or OSHA as carcinogens:

	<u>NTP</u>	<u>IARC</u>	<u>OSHA</u>
Benzene	Yes	Category 1	Yes

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: All sparks, flames and ignition sources must be restricted from the area. Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming, followed by recovering residual fluids by using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

X. PRECAUTIONARY MEASURES

Respiratory Protection: Select appropriate NIOSH-approved respiratory protection where necessary to maintain exposure below acceptable limits in Section VII. Proper respirator selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure and published respiratory protection factors.

Ventilation: Use sufficient ventilation to maintain atmospheric concentrations below permissible exposure limits. Avoid sparking and explosive mixtures.

Protective Gloves: Should be worn when any potential exists for skin contact. NBR or neoprene recommended.

Eye Protection: Chemical goggles or face shield if splashing is probable.

Other Protective Equipment: Sufficient protective clothing to minimize skin exposure. Launder contaminated clothing before reuse.

Safety Precautions: Avoid contact with eyes, skin, or clothing.

XI. REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302

Not Applicable

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III
SECTIONS 302, 304, 311, 312, 313**

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

CP 029

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories:

☒ Immediate (Acute) Health Hazard	☐ Sudden Release of Pressure
☒ Delayed (Chronic) Health Hazard	☐ Reactive
☒ Fire	☐ Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material contains the following chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

<u>Toxic Chemical</u>	<u>CAS Registry Number</u>	<u>Approx. Concentration (Upper Bound)</u>
Benzene	71-43-2	4.9%
Cyclohexane	110-82-7	2%
Toluene	108-88-3	15%
Xylenes	1330-20-7	12%

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710

This material is a mixture as defined by TSCA. The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies on the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D

The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, Regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 116.4A, SECTION 311

The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

<u>Ingredient</u>	<u>Reportable Quantity</u>
Petroleum Hydrocarbon	Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

Not Applicable

FOREIGN REGULATIONS**CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)**

The material is a WHMIS Controlled Product and a Canadian MSDS is available.

STATE REGULATIONS**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")**

The material contains the following ingredient(s) known to the State of California to cause cancer, birth defects or other reproductive harm. Read and follow label directions and use care when handling or using all petroleum products.

Ingredient

Benzene

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

The material contains the following hazardous substances:

Categories: S = Special Hazardous Substance ($\geq 0.01\%$)

H = Hazardous Substance ($\geq 1.0\%$)

E = Environmental Hazard ($\geq 1.0\%$)

<u>Ingredient</u>	<u>CAS Registry Number</u>	<u>Category</u>
Petroleum Distillates	Mixture	H
Benzene	71-43-2	E,S
Cyclohexane	110-82-7	E
Toluene	108-88-3	E
Xylene	1330-20-7	E

Nonhazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of the Act.

MSDS Code: GASC0207

SECTION OF MSDS REVISED:

DATE OF LATEST REVISION/REVIEW:

DEPARTMENT RESPONSIBLE FOR MSDS:

PRODUCT INFORMATION CONTACT:

XI

12/89 - Replaces MSDS dated 8/89

Safety, Occupational Health, & Environmental Affairs

Hazard Communication Analyst

Conoco Inc.

(713) 293-5550

The above data are based on tests, experience, and other information which Conoco believes reliable and are supplied for informational purposes only. However, some ingredients may have been purchased or obtained from third-party manufacturers. In these instances, Conoco, in good faith relies on information provided by those third parties. Since conditions of use are outside our control, CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA. NOTHING CONTAINED HEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE MATERIAL DESCRIBED, OR ITS USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.



Material Safety Data Sheet

conoco

Emergency Medical Telephone (800) 441-3637

CP 026

FCC LIGHT CYCLE OIL

I. MATERIAL IDENTIFICATION

Name	CAS Registry Number	Transportation Emergency Phone
FCC Light Cycle Oil	Mixture; See Section XI	1-(800) 424-9300 (Chemtrec)
Chemical Family	Product Code	
Mixed Petroleum Hydrocarbons	4182/4194	

II. OSHA HAZARD DETERMINATION

The material is hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for federal and state regulatory information.

Hazardous Ingredients	CAS Registry Number	Concentration
Hydrocarbons (Aromatic & Paraffinic)	Mixture	> 90%

Hazardous Physical Properties
Class II Combustible Liquid - NFPA 30-1987.

III. PHYSICAL DATA

Appearance and Odor	Specific Gravity (H ₂ O = 1)
Pale yellow or amber liquid; Aromatic odor	0.92 - 0.94
Boiling Point/Range	% Volatiles (by volume)
Initial 350°F	Nil
Vapor Pressure (mmHg)	Solubility in Water
2 - 10	Insoluble
Vapor Density (Air = 1.0)	Evaporation Rate
6	Not Applicable

IV. REACTIVITY DATA

Stable: X Unstable: _____

Hazardous Decomposition Materials: Normal combustion forms carbon dioxide. Incomplete combustion produces carbon monoxide.

Conditions to Avoid: Oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

V. FIRE AND EXPLOSION HAZARD DATALEL: 0.4 UEL: 6Flash Point (Method used): Min. 125°F (PM)

Handle and store in accordance with NFPA procedure for Class II Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, CO₂ foam.

Special Fire Fighting Procedures: Use water to keep fire-exposed containers cool. If leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) ClassificationHealth 0 Fire 2 Reactivity 0**HAZARD RATING**Least-0 Slight-1 Moderate-2
High-3 Extreme-4**VI. TRANSPORTATION AND STORAGE**

Storage Conditions: Store in accordance with National Fire Protection Association regulations.

Shipping Information:**DOT:**

Proper Shipping Name: Petroleum Oil
Hazard Class: Combustible Liquid
UN/NA No.: NA 1170
DOT Label(s): None
DOT Placard: Combustible

IATA/IMO:

Proper Shipping Name: Flammable Liquids, N.O.S. (Petroleum Oil)
Hazard Class: 3 (IMO 3.3)
UN No.: UN 1993
IMO/ICAO Label: Flammable Liquid
Special Information: Not Restricted Over 140°F
Packaging Group: III

VII. HEALTH HAZARD INFORMATION**Exposure Limits for FCC Light Cycle Oil**PEL: None EstablishedTLV: None Established**Exposure Limits for Petroleum Distillates**PEL: 400 ppm; 1600 mg/m³

Primary Routes of Exposure/Entry: Skin, Inhalation.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:

Studies with mice or rats have shown that some petroleum distillates have caused either damage or tumors of the kidneys or tumors of the liver. However, kidney effects were not seen in similar studies involving guinea pigs, dogs or monkeys. Also, the significance of the liver tumors in rodents is highly speculative.

Mouse skin painting studies have shown that petroleum middle distillates (boiling range of 100°-700°F; naphtha, jet fuel, diesel fuel, kerosene, etc.) can cause skin cancer when repeatedly applied and never washed from the animal's skin. The relative significance of this to human health is uncertain since the petroleum distillates were not washed from the skin and resulting skin effects (irritation, cell damage, etc.) may play

a role in the tumorigenic response. A few studies have shown that washing the animal's skin with soap and water between treatments greatly reduces the carcinogenic effect of some petroleum oils.

The product contains petroleum hydrocarbons, and as with many petroleum products, it may cause irritation to the eyes, lungs or skin after prolonged or repeated exposure. Extreme exposure or aspiration into the lungs may cause pneumonia. Overexposure may cause weakness, headache, nausea, confusion, blurred vision, drowsiness and other nervous system effects; greater exposure may cause dizziness, slurred speech, flushed face, unconsciousness or convulsions.

Carcinogenicity:

This material is not known to contain any chemical listed as a carcinogen or suspected carcinogen by OSHA, IARC, or NTP at a concentration greater than 0.1%.

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: All sparks, flames and ignition sources must be restricted from the area. Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming, followed by recovering residual fluids by using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

X. PRECAUTIONARY MEASURES

Respiratory Protection: Select appropriate NIOSH-approved respiratory protective equipment when exposed to sprays or mists. Proper respirator selection should be determined by adequately trained personnel and based on the contaminant(s), the degree of potential exposure and published respiratory protection factors.

Ventilation: General mechanical ventilation normally adequate.

Protective Gloves: Should be worn when any potential exists for skin contact. NBR or neoprene recommended.

Eye Protection: Chemical goggles or face shield for sprays/mists or if splashing is probable.

Other Protective Equipment: Coveralls with long sleeves if splashing is probable. Launder contaminated clothing before reuse.

XI. REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302

Not Applicable

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)

The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)

The material should be reported under the following EPA hazard categories:

☒ Immediate (Acute) Health Hazard	☐ Sudden Release of Pressure
☒ Delayed (Chronic) Health Hazard	☐ Reactive
☒ Fire	☐ Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)

The material does not contain chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and subject to toxic chemical release reporting requirements.

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The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

<u>Ingredient</u>	<u>Reportable Quantity</u>
Petroleum Hydrocarbon	Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178

Not Applicable

STATE REGULATIONS**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986
(PROPOSITION 65)**

The material does not contain ingredient(s) subject to the Act.

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

The material contains the following hazardous substances:

Categories: S = Special Hazardous Substance ($\geq 0.01\%$)
 H = Hazardous Substance ($\geq 1.0\%$)
 E = Environmental Hazard ($\geq 1.0\%$)

V.	<u>Ingredient</u>	<u>CAS Registry Number</u>	<u>Category</u>
	Petroleum Distillates	Mixture	H

Nonhazardous ingredient(s) information is withheld as a trade secret in accordance with Section 11 of the Act.

MSDS Code: GASC0090

SECTION XI REVISED

DATE OF LATEST REVISION/REVIEW:

DEPARTMENT RESPONSIBLE FOR MSDS:

PRODUCT INFORMATION CONTACT:

11/89 - Replaces MSDS dated 1/89

Safety, Occupational Health & Environmental Affairs

Hazard Communication Analyst

Conoco Inc.

(713) 293-5550

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