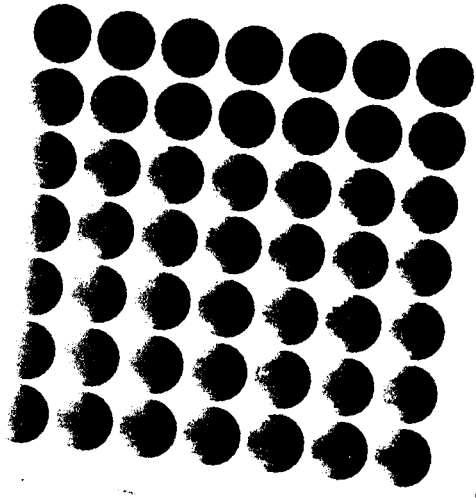


MONSANTO
PRODUCTS

0557164

TOWOLDMON0040898
WATER_PCB-00031944

M 5 2

MONSANTO CHEMICAL COMPANY

Monsanto products are sold through the following divisions:

Agricultural Division

The Chemstrand Company

Chemstrand® Acrilan® and Chemstrand Nylon fibers are manufactured and marketed by the Chemstrand Company, a division of Monsanto Chemical Company.

For Information:

CHEMSTRAND COMPANY
A DIVISION OF MONSANTO
350 Fifth Avenue
New York 1, New York
Tele: Oxford 5-5100

Hydrocarbons Division

Inorganic Chemicals Division

Organic Chemicals Division

Overseas Division

Plastics Division

Products are identified by division. For additional information, consult the nearest sales office or Monsanto in St. Louis. A complete list of Monsanto [illegible]

0557165

TOWOLDMON0040899
WATER_PCB-00031945

TRADEMARKS . . . The word Monsanto and the Monsanto block M are Monsanto's most important trademarks and are registered in the U. S. Patent Office. The following index contains other trademarks owned by Monsanto and its subsidiaries. Trademarks which are registered in the U. S. Patent Office are followed by the ® and unregistered trademarks and trademarks for which registration is pending are followed by an asterisk.

ALPHABETICAL PRODUCT INDEX

A

A-1 Thiol (Sodium Salt of 2-Mercaptobenzothiazole)
A-77 and A-78 Rubber Chemicals
Accelerator B (Rubber Chemical)
Acetate, polyvinyl
Acetophenetidin U.S.P.

Acids and Anhydrides (Carboxylic) 15 and 16

ACL®
Acrilan® (Chemstrand Co.)
Acrylonitrile
Actamer®

Adhesives 14 and 15

Adipic Acid

Agricultural Chemicals

Aircraft Hydraulic Fluids

Alcohol Resins, polyvinyl
Alkalate 122 (Dodecyl Benzene)
Alkalate 130 (Alkyl Benzene)
Alkophos® (Aluminum Acid Phosphates)
Alkyl Acid Phosphates
Alkyl Aryl Phosphate (Santicizer® 140)
Alkyl Aryl Sulfonates (Santomerse®)
Alkyl Benzene (Dodecylbenzene)
Alkyl Benzene (Tridecylbenzene)
Alkyl Phenol (Dodecylphenol)
Alkyl Phenol (Nonylphenol)
Alkylamine C-12 (Dodecylamine)
Alpha and Beta Sources
(Monsanto Research Corp.)
Aluminum Acid Phosphates (Alkophos®)
Aluminum Chloride Solution 32° Be'
Aluminum Sulfate

Amines 10-12

Ammonia, Anhydrous
Ammonia, Aqua
Ammonium Nitrate Fertilizer Pellets
Ammonium Nitrate Fertilizer Pellets E-2®
Ammonium Nitrate 83% Solution
Ammonium Phosphate, di
Ammonium Phosphate, ethyl
Ammonium Phosphate, mono
Ammonium Phosphate, triethyl
Anhydrous Monocalcium Phosphate Py-Ran®

Anionic Surface Active Agents 51 and 52

Anisidine, ortho
Anisidine, para

Anti-Caking Flow Conditioners

Anti-Foaming Agents

Antioxidants

Anti-Slip and Anti-Soil Agents 45 and 46

Aroclor® Polychlorinated Polyphenyls
Aspirin
Avadex®
Avadex® BW

B

Bacteriostats

Battery Acid, Electrolyte 16 and 17

Bonthal® Alkyd Resin Intermediate
Benzene
Benzoic Acid
Benzyl Benzoate N.F.
Benzyl Chloride
Benzyl Chloride, inhibited with 0.25% triethylamine
Benzyl Chloride, Stabilized
Biphenyl
Bisphenol A
Bisphenol A—Hydrogenated

Bleaching Compound

Bone Ash
Bremsstrahlung Sources (Monsanto Research Corp.)
Brush-Blitz*

Brush Killers

Brush-Killer®
Butoxone® Concentrate
Butoxone® Dispersible BR and FP (polymeric butoxyl
Butyl Benzyl Phthalate (Santicizer® 160)
Butyl Decyl Phthalate (Santicizer® 261)
Butyl Phthalyl Butyl Glycollate (Santicizer® B-16)
Butylene Mixed Isomers
Butyral, polyvinyl (Resins, Butvar®)

C

C Stream, Mixed Hydrocarbons
C Aromatic Concentrate, Mixed Isomers
Caffeine U.S.P.

Calcium Phosphates

Calcium Peroxide
Calcium Silicate, Flux
Calibrated Sources (Monsanto Research Corp.)
Carbon Dioxide
Casein and Soybean Adhesives
Catalysts
Caustic Potash
Cellulose Acetate, Viscose®

Cellulosic Resins/Plastics

Chemical Fibers

Chemical Specialty Catalysts

Chemstrand®, Acrilan® and Nylon
Chloramine-T
Chloroaniline, ortho
Chloroaniline, para
Chlorophenol, ortho
Chlorophenol, para
Chlorosulfonic Acid

Coal Tar Resins

Colloidal Silicas, Syton®
Compressed Lubricant Pellets
Coolmol® 45
Coolanol® 45
Cottamin
Cresyl Diphenyl Phosphate (Technical Grade)
Cresyl Diphenyl Phosphate (Plasticizer Grade)
Crop-Guard*

Curing Agents

Cyclohexanol
Cyclohexylamine

D

2,4-D Amine
2,4-D Butyl Ester
2,4-D Butyl Ester Concentrate
2,4-D Ester Aerial Emulsifiable
2,4-D Granular
2,4-D Isopropyl Ester
2,4-D Low Volatile Ester
2,4-D 2,4,5-T Butyl Ester
2,4-D 2,4,5-T Low Volatile Ester
DDBSA (Dodecylbenzene Sulfonic Acid
DDBSA-94
Decomer PC-1103

Detergent Intermediates

Diammonium Phosphate
Dibutyl Fumarate
Dibutyl Maleate
Dibutyl Phthalate
Dichlorvamine Pyrophosphate D.P. Solution
Dicalcium Phosphate Anhydrous
Dicalcium Phosphate Dihydrate
Dicalcium Phosphate, Feed Grade
3,4-Dichloroaniline 3,4-DCA
Dichlorobenzene, ortho
Dichlorobenzene, para Santochlor®
2,4-Dichlorophenol
Dicyclohexyl Phthalate DCHP
Dicyclohexylamine
Dielectric Coolant for Electronic Equipment
Coolanol® 45
Diethyl Phthalate
Di-2-Ethylhexyl Adipate DOA
Di-2-Ethylhexyl Phthalate DOP
Dihydroxy Diphenyl Sulfone
Diisodecyl Adipate DIDA
Diisodecyl Phthalate DIDP
Diisooctyl Phthalate DIOP
Dimethyl Phthalate
Di-N-Octyl, N-Decyl Adipate DNODA
Diphenyl (Biphenyl or Phenylbenzene)
Diphenyl Phthalate
Diphenylguanidine Phthalate (Guanal®)

*Monsanto trademark

MONSANTO CHEMICAL COMPANY
Marketing Services Dept.
800 No. Lindbergh Blvd., St. Louis 66, Mo.

0557166

TOWOLDMON0040900
WATER_PCB-00031946

Disinfectants 16 and 47
Disodium Phosphate, Anhydrous 24
Disodium Phosphate, Dihydrate 24
Dodecylaniline 16
Dodecylbenzene, Alkyl Benzene 32
Dodecylbenzene Sulfonic Acid 51
Dodecylphenol, Alkyl Phenol 53
Domes (Geospace® Utility Shelter) 7
DPG, Diphenylguanidine 13
D.P. Solution ® Diborylamine Pyrophosphate 19
DX-840 Resins 35
Dytrol® Paint Brush Preserver 37

E

E-2® Pellets, Ammonium Nitrate Fertilizer 8
El-Sixty® Rubber Chemical 11
Elastopar® Rubber Chemical 11
Electronic Materials 11
Ethavan® Ethyl Vanillin 17
Ethyl Ammonium Phosphate 23
Ethyl FCT 21
Ethyl Phthalyl Ethyl Glycollate, Santicizer® E-15 30
Ethyl Vanillin, Ethavan® 17
Ethylene 27
Ethylene and Ethylene Co-Products 27 and 28
Extruding and Calendering Material, Lustrex® 30

F

Farm Chemicals 7-10
Feed Supplements 7 and 8
Ferrophosphorus, Iron Phosphide 26
Fertilizers 8 and 9
Fibers, Chemstrand Acrilan® and Nylon 13
Field-Clean® 9
Fission Products, Monsanto Research Corp. 15
Flatting Agents 48
Flavorings 17
Flextol® H, Rubber Chemical 14
Formal, polyvinyl resins, Formvar® 32
Formaldehyde 23
Formaldehyde Resins 35
Formvar® Resins, polyvinyl formal 32
Fruit Spray, Stop Scald® 10
Fuel Oil Additives, Santolene® 28
Fumaric Acid 15
Functional Fluids 12 and 13
Fungicides 9, 46 and 47
Fungistats 46 and 47

G

Gallium Antimonide, Electronic Grade 11
Gallium Arsenide, Electronic Grade 11
Gamma Sources, Monsanto Research Corp. 15
Gear Oil Additives, Santopoid® 29
Gelva® Copolymer Resins, polyvinyl acetate 31
Gelva® Copolymer Solutions, polyvinyl acetate 30
Gelva® Emulsions, polyvinyl acetate 31
Gelva® Powders 700 and 702, polyvinyl acetate 31
Gelva® Resins, polyvinyl acetate 31
Gelva® Resin Solutions, polyvinyl acetate 31
Gelvatol® Resins, polyvinyl alcohol 34
Geospace® Utility Shelter (Domes) 7
Germicides 46 and 47
Glassy Sodium Phosphate, Oilfos® 25
Guantal® Diphenylguanidine Phthalate 13
Guaiacol 18

H

H Acid 15
Halogen-Containing Compounds 17 and 18
HB-40® Partially Hydrogenated Terphenyl 37
Heat Sources, Monsanto Research Corp. 15
Heavy Chemicals 13, 14 and 15
Herbicidal Oil No. 1 9
Herbicidal Oil Nos. 6 and 7 9
Herbicides 9 and 10
H-P-M® Aerosol Powder Mixture 9

Manufactured by

MONSANTO CHEMICAL COMPANY
Mail Address: Box
St. Louis, Missouri

Hydraulic Fluids 11, 12 and 13
Hydrochloric Acid, Muriatic Acid 14
Hydrogenated Bisphenol A 23

I

Indium Antimonide, Electronic Grade 11
Indium Arsenide, Electronic Grade 11
Indium Phosphide 11
Insecticides 10
Insecide Sulfur 60 14
Iron Phosphide, Ferrophosphorus 26
Isocyl Isodecyl Phthalate, Santicizer® 402 32
Isotopes, Monsanto Research Corp. 15

L

Lambast® 7
Lampblack 17
Lectro-Lite® Sodium Aluminum Phosphate 25
Lextran® Molding and Extruding Compound 30
Lustrex® Extruding and Calendering Material 30
Lustrex® Styrene Molding Compound 30
Lustron® 30
Lutron® Latex 30
Lutron® Synthetic 30
Lutron® Textile Resin 30

M

Maleic Anhydride 23
MCP Amine 9
Melamine-Urea Resins 34 and 35
Mersize® Paper Sizing Agent 37
Mertax® MBT 2-mercaptobenzothiazole 37
Merton® WB-4 Precoat for Reproduction Papers 37
Metal Processing Compounds 37
Methanol 23
Methapyrilene Fumarate, Thenylpyramine Fumarate 14
Methapyrilene Hydrochloride, Thenylpyramine Hydrochloride 14
Methionine Hydroxy Analogue, MHA® 7
Methyl Diphenyl Phosphate, Phosflex® MDP 26
Methyl Parathion 10
Methyl PCT 21
Methyl Phthalyl Ethyl Glycollate, Santicizer® M-17 30
Methyl Salicylate U.S.P. Synthetic 17
Mixed Acid, Nitrating Acid 15
Molidow® 37
Mod-Epox® 37
Monoammonium Phosphate 23
Mono Thurad® Rubber Chemical 12
Monomers 18 and 19
Monomers for Synthetic Rubber 14
Monopotassium Phosphate 24
Monosodium Phosphate 25
Monsanto® Penta, Pentachlorophenol Technical 47
Monsanto® Polyethylene Coating Materials 33
Monsanto® Polyethylene Extruding and Calendering Material 33
Monsanto® Polystyrene Molding Compounds 32
Montar® Synthetic Resins 37
Muriatic Acid, Hydrochloric Acid 14

N

Napthalene 27
Neutron Sources, Monsanto Research Corp. 14
NFB® 80 and 85, Non-Fuming Aluminum Bright Dip Bath 48
Niran® Parathion 10
Nitric Acid 14
Nitroaniline, ortho 17
Nitroaniline, para 17
Nitrochlorobenzene, ortho 18
Nitrochlorobenzene, para 18
Nitrogen Fertilizer Solutions 8
Nitrophenol, para 20
Nonionic Surface Active Agents 52 and 53
Nonylphenol—Alkyl Phenol 53
Nuclear Sources (Monsanto Research Corp. 15
Naturon® 8
Neutron Sources (Monsanto Research Corp. 15
Chemstrand Co.) 11

0557167

TOWOLDMON0040901
WATER_PCB-00031947

O

Odorants 18
[illegible] 28 and 29
[illegible] 25
[illegible] 14
[illegible] 32
[illegible] Compound [illegible]
[illegible] 17
[illegible] 26
[illegible] 29
[illegible] 18
[illegible] 17
[illegible] 18
[illegible] 17
[illegible] 16
[illegible] 17
[illegible] 7
[illegible] 12
[illegible] 12

P

[illegible] 48 and 49
[illegible] 25
Paper Chemicals 19 and 20
[illegible] 19
[illegible] 16
[illegible] 16
[illegible] 19
para-Dichlorobenzene (Santochlor®) 19
para-Nitroaniline 17
para-Nitrochlorobenzene 18
para-Nitrophenol 20
para-Phenetidine 17
para-Toluenesulfonamide 21
para-Toluenesulfonyl Chloride 21
Parathion (Nicon) 20
PC-1214® Defoamer 15
Pentachlorophenol (Pentachlorophenol, Technical (Monsanto), Penta) 17
Petro Chemicals 27
Petrofos® (Sodium Tripolyphosphate) 25
Petroleum Additives 28 and 29
Pharmaceuticals 19 and 20
Phenacetin (Acetophenetidin U.S.P.) 19
Phenetidine, ortho 17
Phenetidine, para 17
Phenol 20
Phenolic and Resorcinol Resins 15
Phenolic Resins (Resinox®) 23
Phenolic Varnishes (Resinox®) 23
Phenolphthalein U.S.P. 19
Phenolphthalein, Yellow 19
Phenolsulfonic Acid 20
Phenylbenzene (Biphenyl) 22
Phosphate Feed Solution 7
Phosphates (Sodium) 50
Phosphatic Fertilizer Solution 8
Phosphatidin* 24
Phosphoric Acid (75, 80 and 85%) 24
Phosphoric Acid (Orthophosphoric Acid) 7
Phosphoric Anhydride (Phosphorus Pentoxide) 26
Phosphorus, Elemental 26
Phosphorus Oxychloride 26
Phosphorus Pentasulfide 26
Phosphorus Pentoxide (Phosphoric Anhydride) 26
Phosphorus Trichloride 26
Phostane® MDP (Methyl Diphenyl Phosphate) 28
Phthalic Anhydride 35
Phthalyl Chloride 18
Plastic Bottles and Containers (Plax Co.) 41
Plastic Closures (Plax Co.) 41
Plastic Fitments (Plax Co.) 41
Plastic Sheet and Film (Plax Co.) 41
Plasticizers 35-41
Plastics-Resins-Plasticizers 30-41
Plax® Products 41
Plaxacrin® Sheet (Plax Co.) 41
Polyethylenes 33
Polyflex® Film (Plax Co.) 41
Polyflex® Sheet (Plax Co.) 41
Polyvinyl Acetate Copolymer Resins (Gelva®) 31
Polyvinyl Acetate Copolymer Solutions (Gelva®) 9
Polyvinyl Acetate Emulsions (Gelva®) 9
Polyvinyl Acetate Powders (Gelva®) 9
Polyvinyl Acetate Resins (Gelva®) 9
Polyvinyl Acetate Resin Solutions (Gelva®) 9
Polyvinyl Alcohol Resin (Gelvatol®) 9
Polyvinyl Butyral Resins (Butvar®) 9
Polyvinyl Butyral Resin Dispersions 9
Polyvinyl Formal Resins (Formvar®) 9
Potassium Phosphates 25
Preservatives — Feed, Grain and Fruit 10
[illegible] 27
[illegible] AC Compressor Lubricant 12
[illegible] 12 and 13
[illegible] Anhydrous Monosodium Phosphate 24

R

[illegible] Rubber Chemical 32
[illegible] Monsanto Research Corp. 15
[illegible] Monsanto Research Corp. 15
[illegible] 3
[illegible] 3
[illegible] Melamine and Resinene® U-Urea 4
Resinene® Melamine 4
Resin Intermediates 4
Resin Oil 27
Resin PR 3
Resinox® 4
Resinox® Liquid Phenolic Resins 4
Resinox® Phenolic Lump and Resins Co[illegible] 4
Resinox® Phenolic Varnishes 23
Resinox® E-50 4
Resinox® Essentially Monomeric Melamine 4
Resorcinol and Phenolic Resins 15
Rigid Vinyl Compounds (Vyram®) 5
Rosine* 9
Rubber Chemicals
Accelerators for Natural and Synthetic [illegible]
Aldehyde Amine Type 42
Antioxidants and Antiozonants 41
Guanidine Type 43
Special Materials 44
Thiocarbamide Type 44
Thiazole Type 41 and 42
Thiuram Type 42 and 43
Maximizers for Synthetic Rubber 44
RZ-50® A (Rubber Chemical) 42
RZ-50® B (Rubber Chemical) 42

S

Saccharin, U.S.P. 50
Salex® Vinyl Butyral 32
Salicylic Acid, U.S.P. 16
Salt Cake (Sodium Sulfate Anhydrous Technical) 50
Santicizer® 1-H Plasticizer 38
Santicizer® 3 Plasticizer 39
Santicizer® 8 Plasticizer 39
Santicizer® 9 Plasticizer 38
Santicizer® 15 Plasticizer 39
Santicizer® B-16 Plasticizer 39
Santicizer® M-17 Plasticizer 39
Santicizer® 140 Plasticizer 40
Santicizer® 141 Plasticizer 40
Santicizer® 150 Plasticizer 38
Santicizer® 165 Plasticizer 40
Santicizer® 273 Plasticizer 38
Santicizer® 314 Plasticizer 40
Santicizer® 315 Plasticizer 38
Santicizer® 409 Polymeric Plasticizer 40
Santicizer® 411 Plasticizer 40
Santicizer® 602 Plasticizer 38
Santicizer® 603 Plasticizer 38
Santicizer® 630 Plasticizer 40
Santicizer® 631 Plasticizer 40
Santicizer® 636 Plasticizer 41
Santicizer® 644 Plasticizer 41
Santicizer® 683 Plasticizer 41
Santobrite® (Sodium Pentachlorophenate, Technical) 47
Santocel® (Silica Aerogel for Industrial Applications) 45
Santocel® (Silica Aerogel for Thermal Insulation) 45
Santocel® 62 48
Santocel® Z 51
Santochlor® (para-Dichlorobenzene) 19
Santocure® (Rubber Chemical) 42
Santocure® 26 (Rubber Chemical) 42
Santocure® MOR and MOR-90 (Rubber Chemicals) 42
Santocure® NS (Rubber Chemical) 42
Santoflex® AW (Rubber Chemical) 43
Santoflex® DD (Rubber Chemical) 43
Santoflex® 17 (Rubber Chemical) 43

*Monsanto trademark

MONSANTO CHEMICAL COMPANY
Marketing Services Dept.
800 No. Lindbergh Blvd., St. Louis 66, Mo.

0557168

TOWOLDMON0040902
WATER_PCB-00031948

Santoflex® 36 (Rubber Chemical) 13
Santoflex® 75 (Rubber Chemical) 13
Santoflex® 217 (Rubber Chemical) 13
Santofome® 32
Santolene® C (Fuel Oil Additive) 28
Santolene® FC (Fuel Oil Additive) 28
Santolene® H-LV (Fuel Oil Additive) 28
Santolene® J (Fuel Oil Additive) 28
Santoint® MHP 34
Santolite® MS (Sulfur Industrial Resin) 45
Santolube® 70 (Oil Additive) 28
Santolube® 203-C (Oil Additive) 28
Santolube® 333 (Oil Additive) 28
Santolube® 392 (Oil Additive) 29
Santolube® 393 (Oil Additive) Zinc Dialkyl Dithiophosphate 29
Santolube® 394-C (Oil Additive) 29
Santolube® 395-X (Oil Additive) 29
Santolube® 401 (Oil Additive) 29
Santolube® 410 (Oil Additive) 29
Santomask® II Odor-Masking Agent 48
Santomers® Alkyl Aryl Sulfonates 51
Santonox® 37
Santonox® R 37
Santophen® 1 Germicide 47
Santophen® 1 Solution 47
Santopoid® 22-RI—Gear Oil Additive 29
Santopoid® 23-RI—Gear Oil Additive 29
Santopoid® 33 - Gear Oil Additive 29
Santopoid® 35 - Gear Oil Additive 29
Santopoid® S - Gear Oil Additive 29
Santopour® C - Oil Additive 29
Santoquin® and Santoquim® Mixture No. 6 7 and 46
Santosite®—Sodium Sulfite Anhydrous Technical 53
Santotan® KR Basic Chrome Sulfate 50
Santovar® A (Rubber Chemical) 43
Santowax® OMP (Organic Nuclear Reactor Coolant) 43
Santowhite® 54 (Rubber Chemical) 44
Santowhite® 54-S (Rubber Chemical) 44
Santowhite® Crystals (Rubber Chemical) 44
Santowhite® L (Rubber Chemical) 44
Santowhite® MK (Rubber Chemical) 44
Santowhite® Powder (Rubber Chemical) 44
Scripset* 50
Scripture® Series Wet-Strength Resins 50
Service Centers 55
Silica Aerogel for Industrial Applications (Santocel®) 15
Silica Aerogel for Thermal Insulation (Santocel®) 15
Silicon—Electronic Grade 52
Skydrol® 500-A (Fire Resistant Jet Aircraft Hydraulic Fluid) 12
Skydrol® 7000 (Fire Resistant Jet Aircraft Hydraulic Fluid) 12
Slag, Calcium Silicate 14
Shawinigan Resins Products 30 and 31
Sodium Acid Pyrophosphate 35
Sodium Aluminum Phosphate (Levn-Lite*) 23
Sodium Benzoate U.S.P. 13
Sodium Bisulfate Nitre Cake 13
Sodium Bisulfite Anhydrous 14
Sodium Hexametaphosphate 35
Sodium meta-Nitrobenzene Sulfonate 31
Sodium Pentachlorophenate, Technical (Santobrite®) 47
Sodium Phosphates 24 and 25
Sodium Salicylate, U.S.P. 20
Sodium Sulfite Anhydrous Technical 53
Sodium Sulfite Anhydrous (Santosite®) 50
Sodium Tripolyphosphate 25
Sopanox® (ortho-Tolyl Biguanide) 46
Soybean and Casein Adhesives 44
SQ Phosphate 25
Stabil 9* 25
Stabilized Methyl Parathion 10
Sterox® AJ—AJ-100 52
Sterox® AP—AP-100 52
Sterox® CD 52
Sterox® DF 52
Sterox® DJ 52
Sterox® NJ 52
Sterox® NL 52
Sterox® SK 52
Sterox® No. 6 53
Stop-Scald* Fruit Spray 10
Stymer® Vinyl Styrene 32
Styrene Molding Compound (Lustrex®) 30
Styrene Monomer 19
Sulfonates 21
Sulfonic Acids 21
Sulfasan® R (Rubber Chemical) 44
Sulfonamide Resins 34 and 35
5-Sulfosalicylic Acid, Technical 16
Sulfur-Containing Compounds 21 and 22
Sulfur Dioxide, Liquid 15
Sulfuric Acid 14
Sweeteners 50
Syton® AS-200 (Colloidal Silica) 15
Syton® C-30 and 200 (Colloidal Silica) 15
Syton® C-40 and 210 (Colloidal Silica) 16
Syton® DS and DS-200 (Colloidal Silica) 16
Syton® P and P-200 (Colloidal Silica 16
Syton® W-200 (Colloidal Silica 16

T

2,4,5-T Ester 10
2,4,5-T Low Volatile Ester 10
Tanning Agents 50 and 51
TCC 3,4,4' Trichlorocarbanilide 47
Tertiary-Butylamine 16
Tetrapotassium Pyrophosphate 24
Tetrapropenylsuccinic Anhydride 16
Tetrasodium Pyrophosphate 25
Textile Chemicals 51
Textile Resin (Latron®) 41
Thenylpyramine Fumarate—Methapyrilene Fumarate 19
Thenylpyramine Hydrochloride—Methapyrilene Hydrochloride 19
Therminol® FR (Heat Transfer Liquid) 13
Thickening Agents 51
Thiodide® MBTS—Rubber Chemical 42
Thiotax® MBT—Rubber Chemical 42
Thiurad® (Rubber Chemical) 43
Threshold Detector Sources—Monsanto Research Corp. 15
Toluene 28
Toluenesulfonamide—para 31
Toluenesulfonic Acid 31
Toluenesulfonyl Chloride—para 31
TPSA®—Tetrapropenylsuccenic Anhydride 16
Tracer Sources—Monsanto Research Corp. 15
Tricalcium Phosphate 7
Tricresyl Phosphate 37
Tridecylbenzene (Alkyl Benzene) 33
Triethylammonium Phosphate 34
Triphenyl Phosphate 37
Triphenyl Phosphite 37
Tripotassium Phosphate 24
Trisodium Phosphate, Anhydrous 25
Trisodium Phosphate, Crystalline 25
Tri-Una-Sol* 8

U

Ultron® Vinyl Chloride (Flexible Film & Sheeting) 32
Urea, Feed Grade Coated Microprills 8
Urea, Fertilizer Grade Coated Pellets 9
Urea, Fertilizer Grade Uncoated Pellets 9
Urea-Formaldehyde (Scripture® 400) 50
Urea, Industrial Grade Uncoated Pellets 35
Urea and Melamine Resins 45

V

Vanadium Sulfuric Acid Catalyst 47
Vanillin U.S.P. 17
Vegadex® 9
Vinyl Acetate Monomer 19
Vinyl Butyral (Sadex®) 32
Vinyl Chloride Extruding & Calendering Material (Opalon®) 32
Vinyl Chloride (Flexible Film & Sheeting) Ultron® 32
Vinyl Chloride Molding Compound (Opalon®) 32
Vinyl Chloride Monomer 19
Vinyl Resins, Plastics 32 and 33
Vinyl Styrene (Stymer®) 31
Vuepak® Cellulose Acetate 34
Vyram® Rigid Vinyl Compounds 33

W

Wood Preservative (Monsanto® Penta) 51
Weed Killers 9

X

Xylenes, Mixed 28

Z

Zinc Dialkyl Dithiophosphate 29
Zinc Oxide, Technical 51

0557169

TOWOLDMON0040903
WATER_PCB-00031949

AGRICULTURAL and FARM CHEMICALS

DOMES (GEOSPACE®)

THE GEOSPACE® UTILITY SHELTER

LITERATURE AVAILABLE

A quick-to-erect, sturdy, low-cost shelter of geodesic design, featuring high-strength, lightweight materials of construction.

GEOSPACE SHELTERS ARE SIMPLE, COMPLETE UNITS

No require no additional material.

GEOSPACE shelters are assembled from triangular sections of light, sturdy FOMECOR® Fomecor Corp. board — heavy-duty 60-lb. kraft stock laminated to both sides of 3/4-inch sheets of rigid plastic foam. Each section is chemically "tipped" in a weather resistant plastic-based coating for long service life, excellent protection against the weather of any climate.

FOR FURTHER INFORMATION: contact L. D. Shand, Building Products Dept., Monsanto Chemical Co., 800 N. Lindbergh Blvd., St. Louis 66, Mo.

FEED SUPPLEMENTS

AMMONIUM PHOSPHATE, DI

See Page M-5/23

DICALCIUM PHOSPHATE, FEED GRADE

INORGANIC DIVISION

FORMULA: $CaHPO_4$

STANDARD FORM: Granules.

TYPICAL ANALYSIS:

	Regular (18%)	Hi-Strength 21%
P	18.7%	21.8%
Ca	23.7%	27.8%
As_2O_3	0.2ppm	0.2ppm
Pb	1.0ppm	1.0ppm
F	0.01%	0.01%
Moisture	2.5%	3.0%

SHIPPING INFORMATION: Phosphate of Calcium. 100-lb. bags; bulk box and hopper cars.

METHIONINE HYDROXY ANALOGUE (MHA®)

Calcium salt of DL-alpha-hydroxy-gamma-methylmercaptobutyric acid.

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder.

SPECIFICATIONS: Assay, 90% as calcium salt of Methionine Hydroxy Analogue; 1% moisture max., screen analysis, 1% max. on 20 mesh; density 30 lb. cu. ft. (tapped).

PROPERTIES: Nutritionally equivalent to DL-methionine on a gravimetric basis 1.09 lbs. Methionine Hydroxy Analog; 90% eq. to 1.0 lbs. DL-methionine, 98%). Free methionine hydroxy analogue is a metabolite in the animal's utilization of methionine.

USES: As a feed supplement in poultry feed to supply requirement of methionine.

SHIPPING INFORMATION: Rail: Condition powders, regulators or tonics, animal or poultry, NOIBN. Truck: Feed Supplements, not frozen, 50-lb. bags.

MONOSODIUM PHOSPHATE

INORGANIC DIVISION

FORMULA: NaH_2PO_4

MOLECULAR WEIGHT: 119.99

STANDARD FORM: Powder.

PROPERTIES: Contains not less than 58% P_2O_5; pH value of 1% solution 4.6.

GRADES: Food; commercial.

USES: A source of phosphorus for potential poultry foods; for conditioning boiler water and in electroplating.

SHIPPING INFORMATION: Sodium Phosphate. 100-lb. bags; 350 and 700-lb. drums.

PHOSPHATE FEED SOLUTION

INORGANIC DIVISION

STANDARD FORM: Liquid

PROPERTIES: A special grade of 75% Ortho Acid processed for a phosphate supplement in animal feeds, poultry and mineral mixes. Phosphorus content 13% — Not recommended for other uses.

SHIPPING INFORMATION: Tank cars and tank trucks.

PHOSPHORIC ACID *Orthophosphoric Acid*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: H_3PO_4

MOLECULAR WEIGHT: 98.00

GRADES: U.S.P.; food, meets all U. S. Pure Food Law requirements; commercial, clear, water-white liquid.

SPECIFICATIONS: Clear, water-white liquid miscible with water in all proportions; 75%, 80% and 85% H_3PO_4.

PHOSPHORIC ACID PLANTS. Complete, wet phosphoric acid manufacturing plants using the Pravon process offered by Engineering Sales Department.

USES: To increase translucency and improve flow of paper coatings and as a stiffening agent in paper; manufacture of sodium phosphates, ammonium phosphates, potassium phosphates and other phosphates; for preparation of aluminum derivatives; drying agent in the synthesis of certain organic chemicals and dyes; process oxidized starches; as a detergent penetrant to aid in the absorption of certain medicines; in the manufacture of gelatin; substitute for tartaric and citric acids in jelly, preserves and soft drinks; opacifier in glass manufacture; manufacture of certain pharmaceutical chemicals and dental cements; glycerophosphate manufacture and purification of hydrogen peroxide; for brightening the finish on rope and twine; coagulant of rubber latex; manufacture of mistproofing compounds; silage preservation; fabricating and clarifying agent in sugar; for brightening the color of silk; dyeing of cotton; calico printing; water softening and correction of alkalinity; bright polishing of aluminum; electro polishing of stainless and carbon steels; steel pickling; manufacture of special bricks; petroleum catalyst; aluminum bright dip bath component.

SHIPPING INFORMATION: Phosphoric Acid, 200 and 700-lb. stainless steel drums; 700-lb. lacquer lined drums; tank cars and tank trucks.

SACCHARIN U.S.P.

See Page M-5/50

SANTOQUIN® AND SANTOQUIN® *Mixture #6*

See Page M-5/46

TRICALCIUM PHOSPHATE

INORGANIC CHEMICALS DIVISION

FORMULA: $3Ca_3(PO_4)_2 \cdot Ca(OH)_2$

STANDARD FORM: Powder.

PROPERTIES: White amorphous powder odorless and tasteless; practically insoluble in water. Complies with all federal and state food laws. Conforms with specifications listed in National Formulary and accepted by the Council on Dental Therapeutics of the American Dental Association.

GRADES: Dentifrice; flow conditioner, salt, sugar, etc.; and medicinal. All material conforms to requirements of the U. S. Pure Food Laws.

USES: A mineral supplement in foods to supply calcium and phosphorus; base or polishing agent in tooth powder; ingredient in making milk glasses; antacid; conditioner to prevent caking in salt, sugar, talc and other powdered material. As suspension agent in polystyrene manufacture.

SHIPPING INFORMATION: Calcium Phosphate, 60-lb. bags; 150-lb. fiber drums.

0557170

TOWOLDMON0040904
WATER_PCB-00031950

UREA, FEED GRADE COATED MICROPRILLS

AGRICULTURAL DIVISION

STANDARD FORM: Urea microprills with an inorganic material as a coating agent.

ANALYSIS:

Nitrogen (Min.)	42.0%
Moisture (Max.)	0.6%
Biuret (Max.)	1.0%

USES: As a protein source for use in Ruminant feeds.

SHIPPING INFORMATION: Urea Feed Grade (not for human consumption or pharmaceutical use). 80-lb. multiwall paper bags with polyethylene lining. Also in bulk.

FERTILIZERS

NITROGEN FERTILIZER SOLUTIONS

AGRICULTURAL DIVISION

STANDARD FORM: Clear water solution.

ANALYSIS: Varying analysis containing ammonia, ammonium nitrate and water or ammonia, ammonium nitrate, urea and water to suit varying weather and manufacturing conditions.

USES: Formulation of mixed fertilizers and for direct application to the soil.

SHIPPING INFORMATION: Nitrogen Fertilizer Solution. Insulated and uninsulated tank cars of 8,000 and 10,000 gal. capacity, and tank trucks of approximately 4,000 gal. capacity.

TRI-UNA-SOL*

AGRICULTURAL DIVISION

STANDARD FORM: Clear water solution.

ANALYSIS: Varying analysis of 28, 30 and 32% nitrogen containing urea, ammonium nitrate and water.

USES: Direct application to the soil and formulation of mixed liquid fertilizers.

SHIPPING INFORMATION: Nitrogen Fertilizer Solution. Insulated and uninsulated tank cars of 8,000 and 10,000 gal. capacity, and tank trucks of approximately 4,000 gal. capacity.

AMMONIUM NITRATE FERTILIZER PELLETS

AGRICULTURAL DIVISION

STANDARD FORM: Ammonium Nitrate in pelleted form coated with a conditioning agent.

ANALYSIS:

Nitrogen (Min.)	33.5%
Moisture	.35%
Water insoluble	3.0%

SHIPPING INFORMATION: Ammonium Nitrate Fertilizer containing more than 90% ammonium nitrate. Fertilizer compounds (Mfg. Fert.) NOIBN dry in paper, polyethylene bags and in bulk. (Dangerous Placards Applied). Multiwall paper bags with polyethylene lining, packaged in 100-lb. bags, 80-lb. bags and 50-lb. bags. Also shipped in 50-lb. polyethylene bags and in bulk.

E-2® AMMONIUM NITRATE FERTILIZER PELLETS

AGRICULTURAL DIVISION

STANDARD FORM: Ammonium Nitrate in pelleted form uncoated.

ANALYSIS:

Nitrogen (Min.)	33.5%
Moisture	.3%

SHIPPING INFORMATION: Ammonium Nitrate Fertilizer containing more than 90% ammonium nitrate with no organic coating. Fertilizer Compounds (Mfg. Fert.) NOIBN dry in paper, polyethylene bags and in bulk. (Dangerous Placards Applied). Multiwall paper bags with polyethylene lining, packaged in 100-lb. bags, 80-lb. bags, and 50-lb. bags. Also shipped in 50-lb. polyethylene bags and in bulk.

AMMONIUM NITRATE 83% SOLUTION

AGRICULTURAL DIVISION

ANALYSIS: Typical

Ammonium Nitrate	83.8%
Water	16.2%
Chlorides	2ppm
Iron	2ppm

USES: Manufacture of military explosives. Pyrotechnic compositions, insecticides and absorbent for nitrogen oxide as well as fertilizer uses.

SHIPPING INFORMATION: Nitrogen Fertilizer Solution. 8,000 and/or 10,000 gal. aluminum steam coiled tank cars.

AMMONIA, AQUA

AGRICULTURAL DIVISION

MOLECULAR WEIGHT: 35.05

STANDARD FORM: Liquid

PROPERTIES: Pungent, water-white liquid; wt. per gal. 7.48 lbs. (26°B6.).

USES: A source of nitrogen for plants, either applied directly to the soil or to irrigation water for the formulation of mixed fertilizers, for oxidation in lead chamber sulphuric acid plants and to supply nitrogen requirements and pH control in yeast culture.

SHIPPING INFORMATION: Ammoniacal Liquor (containing not more than 35% Ammonia (NH_3) by weight). Tank cars or tank trucks.

AMMONIA, ANHYDROUS

AGRICULTURAL DIVISION

MOLECULAR WEIGHT: 17.03

PROPERTIES: Colorless gas, at normal temperatures and pressure, .0597 times as heavy as air; below critical temperature, 271.2°F., readily condenses by application of pressure to a colorless liquid, wt. per gal. 5.33 lbs.; B.P.-28°F.

USES: A source of nitrogen for plant food, either applied direct or for formulation of mixed fertilizers, liquid or dry. Used as nitrogen source by textile, rubber, paper, petroleum industries, among others.

SHIPPING INFORMATION: Anhydrous Ammonia (Dangerous Placards Applied). Tank cars (approx. 26 tons). Tank trucks (approx. 13 tons).

NUTRIUM®

AGRICULTURAL DIVISION

SPECIFICATIONS: Nitrogen—29% min. guarantee Ammonia N 16.2% Nitrate N 12.8%. A. P. A. 14% min. guarantee.

PHYSICAL PROPERTIES: 62 lbs./cu. ft. bulk density.

SHIPMENTS: 30, 40 and 50 ton box cars, bag or bulk. 60-70 ton hopper cars—bulk. Truck pickups 5 ton min., Luling, La., plant. (No contract or common carrier truck deliveries).

SPECIAL NOTE: We will ship mixed cars of *Nutrium* and *E-2* Ammonium Nitrate Fertilizer from Luling, La., only. The delivered price on each product will be determined by the total tonnage in the car for the distination concerned. For example, if 40 tons of *Nutrium* and 10 tons of Ammonium Nitrate Fertilizer are shipped for a total of 50 tons, each product would be priced on the 50 ton car basis.

PHOSPHATIC FERTILIZER SOLUTION

AGRICULTURAL DIVISION

STANDARD FORM: Liquid

PROPERTIES: Recommended only for use in manufacture of fertilizers. Because this is a crude product no guarantee of analysis is made except for P_2O_5 content which will vary from 54.5% to 58% P_2O_5 (75-80% acid).

SHIPPING INFORMATION: Tank cars and tank trucks. Phosphatic fertilizer solution.

PHOSPHOLEUM*

Pyro-Phosphoric Acid or also known as Super Phosphoric Acid.

AGRICULTURAL DIVISION

GENERAL INFORMATION: A clear liquid containing approximately 76% P_2O_5 and equivalent to 105% H_3PO_4. It is an azeotiopic mixture of orthophosphoric and polyphosphoric acids which on dilution with water hydrolyze to orthophosphoric acid. Sp. Gr., 1.90 approx. at 75°F.; viscosity, 900 centipoises at 75°F.; temperature rise, 60°F. on dilution to 75% H_3PO_4; freezing point, less than minus 50°C.

GRADE: Food

USES: High analysis liquid fertilizer formulation, metal phosphatizing and aluminum Bright Dip Bath Component.

SHIPPING INFORMATION: Phosphoric Acid. Tank cars and tank trucks.

*Monsanto trademark

TOWOLDMON0040905
WATER_PCB-00031951

UREA FERTILIZER GRADE COATED PELLETS

AGRICULTURAL DIVISION

STANDARD FORM: Urea in pelleted form coated with an inorganic material as a conditioning agent.

ANALYSIS:

Nitrogen (Min.)	45.0%
Moisture (Max.)	.5%
Biuret (Max.)	1.0%

SHIPPING INFORMATION: Urea having value only for fertilizer purposes (Fertilizer Compound NOIBN), 80-lb. multiwall bags with polyethylene lining. Also in bulk.

UREA FERTILIZER GRADE UNCOATED PELLETS

AGRICULTURAL DIVISION

STANDARD FORM: Urea in pelleted form without coating agent.

ANALYSIS:

Nitrogen (Min.)	46.0%
Moisture (Max.)	.5%
Biuret (Max.)	1.0%

SHIPPING INFORMATION: Urea having value only for fertilizer purposes (Fertilizer Compound NOIBN). Multiwall paper bags with polyethylene lining in 80-lb. bags. Also in bulk.

FUNGICIDES

PCNB *(Pentachloronitrobenzene)*

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Technical—94% pure crystal. Dust concentrate—80% pure-finely ground.

GENERAL INFORMATION: An effective, economical soil fungicide for controlling many of the more active soil fungi which attack cotton, peanuts and many other crops.

USES: PCNB may be applied as a seed protectant in dust or slurry formulations; as a dust in the planter box; as a dust, wettable powder or emulsifiable concentrate applied in the furrow, and other applications. PCNB generally is used in combination with other fungicides in wide-spectrum combinations.

SHIPPING INFORMATION: Chemicals (NOIBN)

HERBICIDES

CONTACT-TYPE WEED KILLERS

HERBICIDAL OIL NO. 1

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

GENERAL INFORMATION: A post-emergence contact herbicide produced by carefully controlled petroleum refining. It is completely volatile and leaves no residue. It is non-corrosive, and its fumes are non-toxic.

USES: A safe and economical herbicide for weed control in cotton and soybeans. Applied as a spray.

SHIPPING INFORMATION: Petroleum Naphtha. Tank cars.

HERBICIDAL OIL NOS. 6 AND 7

HYDROCARBONS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

GENERAL INFORMATION: A non-selective, general contact herbicide produced by carefully controlled refining from a crude oil naturally high in aromatic compounds. It is slowly volatile and leaves no permanently toxic or oily residue when used at recommended rates. Kills only those plants on which it is actually sprayed.

USES: For control of weeds and grasses on railroad rights-of-way, and wherever a general contact herbicide is required. Applied as a spray.

SHIPPING INFORMATION: Petroleum distillate fuel oil not suitable for illuminating purposes. Tank cars.

LAMBAST*

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A post-emergence contact-type herbicide for the control of lambsquarter and certain other weeds in safflower, containing 2 pounds of 2,4-Bis(3-methoxypropylamino)-6-methylthio-s-triazine per gallon.

USES: *Lambast* is used as a herbicide for safflower only. Mixed with water, it is applied as a ground or aerial spray.

SHIPPING INFORMATION: Weed Killer (NOIBN).

ROGUE*

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: A post-emergence contact-type herbicide for the control of barnyard grass and other weeds in rice, containing 4 pounds of DPA (3, 4-Dichloropropionanilide) in each gallon.

USES: *Rogue* is used as a herbicide for rice only. Mixed with water, it is applied as a ground or aerial spray.

SHIPPING INFORMATION: Weed Killer (NOIBN).

HORMONE-TYPE HERBICIDES

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Hormone-type herbicides selectively destroy certain species of unwanted weed and brush pests depending upon the formulation used. These organic herbicides enter the circulatory system of susceptible plants to completely upset the growth pattern, resulting in death from alteration of enzyme activity.

WEED KILLERS

2,4-D AMINE: Contains 49.5% dimethylamine salt of 2,4-dichlorophenoxyacetic acid, equivalent to 41.1% or 4 pounds 2,4-D acid per gallon.

2,4-D BUTYL ESTER: A low concentrate formulation containing 41.4% butyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 33% or 2.67 pounds 2,4-D acid per gallon.

2,4-D ISOPROPYL ESTER: Contains 45.2% isopropyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 38% or 3.34 pounds 2,4-D acid per gallon.

2,4-D BUTYL ESTER CONCENTRATE: A high concentrate formulation containing 57.6% butyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 46% or 4 pounds 2,4-D acid per gallon.

2,4-D LOW VOLATILE ESTER: Contains 69.7% isooctyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 46.2% or 4.0 pounds 2,4-D acid per gallon.

2,4-D ESTER AERIAL (EMULSIFIABLE): Contains 36.9% isopropyl ester and 38.9% butyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 62.0% or 6.0 pounds 2,4-D acid per gallon.

2,4-D GRANULAR: A formulation of 2,4-dichlorophenoxyacetic acid low volatile ester on 20-40 mesh attapulgite clay granules. Contains 30.2% isooctyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 20% or 10 pounds 2,4-D acid per 50 pound bag.

MCP AMINE: Similar in action to 2,4-D, but certain crops, such as flax, rice, oats and some clovers, are more tolerant of MCP than 2,4-D. Formulation contains 52.0% dimethylamine salt of 2-methyl-4-chlorophenoxyacetic acid, equivalent to 42.5% or 4.0 pounds of the acid per gallon.

CROP-GUARD* A highly concentrated formulation of 36.9% isopropyl ester and 38.9% butyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 62.0% or 6.0 pounds of 2,4-D acid per gallon.

FIELD-CLEAN* A highly concentrated formulation of 94.5% isooctyl ester of 2,4-dichlorophenoxyacetic acid, equivalent to 62.7% or 6 pounds of 2,4-D acid per gallon.

RANDOX®: Available in both liquid and granular form. *Randox* liquid contains 47.1% chloro-N,N-diallylacetamide as the active ingredient. Used to control annual grassy weeds in corn, soybeans, onions and sorghum.

RANDOX® T: Available in both liquid and granular form. *Randox T* liquid contains 28.1% chloro-N-N-diallylacetamide and 57.6% trichlorobenzyl chloride as active ingredients. The 20% granular *Randox T* material contains 11.7% chloro-N-N-diallylacetamide and 23.3% trichlorobenzyl chloride. *Randox T* is used on corn only for controlling both annual grasses and broadleaf weeds.

VEGADEX®: Available in both liquid and granular form. *Vegadex* liquid contains 46.4% 2-chloroallyl diethyldithiocarbamate as the active ingredient, or 4 pounds per gallon. The granular form contains 20% 2-chloroallyl diethyldithiocarbamate. *Vegadex* can be used on most vegetable crops for controlling certain annual grassy and broadleaf weeds.

AVADEX®: An emulsifiable concentrate containing 47.6% 2,3-dichloroallyl diisopropylthiolcarbamate, or 4 pounds of active ingredient per gallon. *Avadex* is a pre-emergence herbicide for control of wild oats in certain agronomic crops.

AVADEX® BW: An emulsifiable concentrate containing 46.27% —2,3,3-Trichloroallyl diisopropylthiocarbamate, or 4 pounds of active ingredient per gallon. *Avadex BW* is a control for wild oats in barley and wheat.

*Monsanto trademark

TOWOLDMON0040906
WATER_PCB-00031952

BRUSH KILLERS:

2,4,5-T ESTER: Contains 23.1% butyl ester and 28.2% isopropyl ester of 2,4,5-trichlorophenoxyacetic acid, equivalent to 43.2% or 4 pounds 2,4,5-T acid per gallon.

2,4,5-T LOW VOLATILE ESTER: Contains 65.3% isooctyl ester of 2,4,5-trichlorophenoxyacetic acid, equivalent to 45.4% or 4 pounds of 2,4,5-T acid per gallon.

2,4,-D/2,4,5-T BUTYL ESTER: Contains 27.5% butyl ester of 2,4-dichlorophenoxyacetic acid and 26.7% butyl ester of 2,4,5-trichlorophenoxyacetic acid, equivalent to 21.9% or 2 pounds of 2,4,-D acid and 21.9% or 2 pounds of 2,4,5-T acid per gallon.

2,4,-D/2,4,5-T LOW VOLATILE ESTER: Contains 34.5% isooctyl ester of 2,4-dichlorophenoxyacetic acid and 33.0% isooctyl ester of 2,4,5-trichlorophenoxyacetic acid. Equivalent to 22.9% or 2 pounds of 2,4-D acid and 22.9% or 2 pounds of 2,4,5-T acid per gallon.

BRUSH-BLITZ*: A highly concentrated formulation of 88.0% isooctyl ester of 2,4,5-trichlorophenoxyacetic acid, equivalent to 61.1% or 6 pounds of 2,4,5-T acid per gallon.

BRUSH-O-CIDE* A highly concentrated formulation of 46.6% isooctyl ester of 2,4-dichlorophenoxyacetic acid and 44.5% isooctyl ester of 2,4,5-trichlorophenoxyacetic acid. Equivalent to 30.9% or 3 pounds of 2,4-D acid and 30.9% or 3 pounds of 2,4,5-T acid per gallon.

SHIPPING INFORMATION: Weed Killing Compound (NOIBN); Brush Killing Compound (NOIBN).

INSECTICIDES

METHYL PARATHION

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 263.3

STANDARD FORM: Liquid.

PROPERTIES: Technical methyl parathion, a semi-solid, is sold as an 80% solution in xylene. This very concentrated solution, a liquid above 65°F. (18.3°C.), begins to crystalize as the temperature drops. For this reason, methyl parathion should be stored at temperatures above 65°F. (18.3°C.). Must not be heated above 131°F. (55°C.). 10.2-10.3 lbs./gal at 77°F. (25°C.).

GENERAL INFORMATION: Methyl Parathion, O,O-dimethyl o-p-nitrophenyl phosphorothioate, is approved for use on cotton, fruits, vegetables, forage and other crops. At dosages of 0.25 to 0.5 lbs. of technical material per acre, it will effectively control a wide spectrum of insects. It is particularly effective for the control of boll weevil but is not effective against the bollworm, the pink bollworm, or two-spotted mite.

Monsanto sells Methyl Parathion only to agricultural insecticide formulators who are skilled in the handling, formulation and distribution of poisonous insecticides.

HANDLING PRECAUTIONS: DANGER statement. POISON emblem and antidote required on label.

Methyl Parathion is an extremely poisonous material and the customer should clearly understand that it must be handled and formulated with great care. Methyl Parathion is highly toxic by any route, whether it be by swallowing, inhaling or absorption through the skin. In addition, the customer must be told that formulations containing this material are also extremely toxic and the same care should be exercised with all formulations to insure safe use.

SHIPPING INFORMATION: Methyl Parathion, Insecticides Agricultural, Liquid NOIBN; Class B poison and product label required; not mailable, 55-gal. ICC 17C, 16-gauge, black iron drums, lined with one coat A & W 4A lacquer, 2-inch and ¾-inch Trisure fittings in head, 550-lb. net.

NIRAN®—PARATHION

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 291.3

STANDARD FORM: Liquid.

PROPERTIES: Dark brown liquid; crystallizing point 0°C. minimum; 10.5-10.7 lbs./gal. at 77°F. (25°C.).

GENERAL INFORMATION: Parathion is the designated common name of the German developed insecticide, O-O-diethyl O-p-nitrophenyl phosphorothioate, having the synonyms of E-605; O,O-diethyl O-p-nitrophenyl thiophosphate; diethyl p-nitrophenyl thionophosphate. It controls a broad range in insects, as well as mites, and has residual effect. It therefore possesses certain advantages over standard insecticides and miticides and has established its place among the ranks of modern and effective organic insecticides.

HANDLING PRECAUTIONS: DANGER statement. POISON emblem and antidote required by law.

Parathion is an extremely poisonous material and the customer should clearly understand that it must be handled and formulated with great care. Parathion is highly toxic by any route, whether it be by swallowing, inhaling or absorption through the skin. In addition, the customer must be told that formulations containing this material are also extremely toxic and the same care should be exercised with all formulations to insure safe use.

Complete precautionary information is available upon request.

SHIPPING INFORMATION: Parathion, Insecticides Agricultural, Liquid NOIBN; Class B poison and product label required; not mailable, 55-gal. ICC 17C, 16 gauge, black iron drums lined with one coat A & W 4A lacquer, 2-inch and ¾-inch Trisure fittings in head, 550-lbs. net.

Monsanto sells *Niran* only to agricultural insecticide formulators who are skilled in the handling, formulation and distribution of poisonous insecticides.

SANTOCHLOR® para-DICHLOROBENZENE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 147.01

STANDARD FORM: Crystals

PROPERTIES: White crystals; crystallizing point 52.8°C. min.

GRADES: Standard crystal sizes: No. 0 approx. ¼ inch pellets)—For peachtree borers and for insecticide and miscellaneous uses. No. 1 (approx. ½ inch nuggets)—For shaker top cans. No. 34 (approx. rice-size granules)—A combination of two uniformly sized crystals. For shaker top cans and for compressing into cakes. No. 814—80% min. between 8 and 16 mesh. Blocking mix—Mixture of sizes under 7 mesh. Fines—Mixture of sizes less than 16 mesh.

USES: As a mothicide, for masking odors, for the control of peachtree borers. When vapors are confined, *Santochlor* is very effective for mildew control.

SHIPPING INFORMATION: Paradichlorobenzol, 200-lb. and 100-lb. fiber drums.

STABILIZED METHYL PARATHION

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 263.3

STANDARD FORM: Liquid.

PROPERTIES: Stabilized Methyl Parathion is a light brown mobile liquid sold as a 70% solution in xylene plus stabilizer. Crystallizing point 61°F. (16°C.). Must not be heated above 131°F. (55°C.) 9.8 lbs./gal. at 77°F. (25°C.).

GENERAL INFORMATION: Stabilized Methyl Parathion O,O-dimethyl O-p-nitrophenyl phosphorothioate, is recommended for use in the manufacture of dust formulations only. Approved for use on cotton. At dosages of 0.25 to 0.5 lbs. of technical material per acre, Methyl Parathion will effectively control a wide spectrum of insects including aphids, some mite species, cotton leafworm, and boll weevil. It is not effective against the bollworm, the pink bollworm or two-spotted spider mite.

Monsanto sells Stabilized Methyl Parathion only to agricultural insecticide formulators who are skilled in the handling, formulation and distribution of poisonous insecticides.

HANDLING PRECAUTIONS: DANGER statement. POISON emblem and antidote required by law.

Methyl Parathion is an extremely poisonous material and the customer should clearly understand that it must be handled and formulated with great care. Methyl Parathion is highly toxic by any route, whether it be by swallowing, inhaling or absorption through the skin. In addition, the customer must be told that formulations containing this material are also extremely toxic and the same care should be exercised with all formulations to insure safe use.

SHIPPING INFORMATION: Methyl Parathion, Insecticides Agricultural, Liquid (NOIBN); Class B poison and produce label required; not mailable. 55-gal. ICC 17C, 16 gauge black iron drums, lined with one coat of A & W 4A lacquer, 2-inch and ¾-inch Trisure fittings in head. 540-lbs. net.

PRESERVATIVES — FEED, GRAIN AND FRUIT

STOP SCALD* FRUIT SPRAY

AGRICULTURAL DIVISION

ANALYSIS:

*Active Ingredient: 1,2-dihydro-6-ethoxy-2,2,4-trimethylquinoline	70%
Inert Ingredients:	30%

**Equal to 6 pounds of ethoxyquin per gallon*

STANDARD FORM: Liquid.

USE: Mixed with water and used as either a spray or a dip. *Stop Scald* prevents common scald of apples in storage.

SHIPPING INFORMATION: Chemicals N.O.I.B.N. 1 gallon and 5 gallon containers.

*Monsanto trademark

TOWOLDMON0040907
WATER_PCB-00031953

CHEMICAL FIBERS

ACRILAN®

CHEMSTRAND COMPANY

STANDARD FORM: Staple or Tow

Category	Denier/Staple Length	Range of End Uses
1. Regular Staple	2.5/2"—15.0/4"	Knitting Yarns Sweaters Half Hose Jersey Knits Wool System Blends Woven Goods Carpets
	Denier/Total Denier	
2. Regular Tow	3.0/432 M—15.0/675 M	Sweaters Half Hose Upholstery Carpets
	Denier/Staple Length	
3. A-16 Staple	2.0/1 9/16"—15.0/4"	Jersey Weaving Knitting Sweater Woven Goods Blankets Deep Pile Fabrics Carpets Throw Rugs Pile Liners
	Denier/Total Denier	
4. A-16 Tow	2.0/400 M—15.0/400 M	Jersey Sweater Half Hose Worsted Blends
	Denier/Staple Length	
5. Variable Cuts	3.0/1-1.2"—2-1.2"—5.0/1-1.2"—3"	Deep Pile Liners Blankets Wool System Blends
	Denier/Staple Length	Range of End Uses
6. Solution Dyed	2.5/2"—3.02"	Half Hose Flannel Type Fabrics Pile Fabrics Awning Fabrics
7. Fiberfill	6.5/2 1/8"	Pillows Comforters Furniture Wrap

Nylon 66

CHEMSTRAND COMPANY

STANDARD FORM: Filament Yarns

Category	Denier/Filament	Range of End Uses
1. Monofilament	10/1—15/1	Hosiery Tricot
2. Textile Multifilament	20/7—200/68	Weaving Tricot Hosiery Texturizing Thread Surgical Hosiery Upholstery
3. Modified Cross Section	15/1—2080/136	Tricot Hosiery Weaving
4. Industrial	210/34—15120/2520	Thread Industrial Webbing Coated Fabrics Raschel Knitting Weaving & Braiding Cordage Twine
5. Tire Cord	720/140—1680/280	Tire Cord
6. Textured Yarn	1230/68—3690/204	Carpets Upholstery

ELECTRONIC MATERIALS

COOLANOL® 35

ORGANIC DIVISION

Coolanol 35 is a coolant-dielectric fluid for cooling electronic equipment in ground, shipboard and airborne applications. Chemically and operationally similar to *Coolanol* 45, *Coolanol* 35 is especially suited for low-temperature applications, with an operating range of −80° to 400°F.

COOLANOL® 45 DIELECTRIC COOLANT FOR ELECTRONIC EQUIPMENT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A clear, amber liquid with dielectric, heat transfer and hydraulic properties—over a −65°F. to 400°F. temperature range.

USES: Dielectric coolant for both airborne and ground environmental electronic equipment. Also utilized in hydraulic applications in electronic equipment.

SHIPPING INFORMATION: Chemicals NOIBN. 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

GALLIUM ANTIMONIDE *Electronic Grade*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Single crystal Czochralski nominal diameter 2.5 centimeters weighing up to several hundred grams.

PURITY: Undoped and doped in various ranges of carrier concentrations, resistivities, mobilities and Hall coefficients.

USES: Ultra high purity Gallium Antimonide for use in the manufacture of electronic semiconductor devices such as rectifiers, transistors, standard diodes and tunnel diodes.

SHIPPING INFORMATION: Special containers according to form and quantity. Individual ingots packaged in polyethylene sleeves with data sheet.

GALLIUM ARSENIDE *Electronic Grade*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Single and polycrystal ingots boat grown and Czochralski weighing up to several hundred grams. Also epitaxial wafers 1.5 centimeters in diameter.

PURITY: Undoped and doped in various ranges of carrier concentrations, resistivities, mobilities and Hall coefficients.

USES: Ultra-high purity Gallium Arsenide for use in the manufacture of electronic semiconductor devices such as Hall generators, standard diodes, tunnel diodes and light-emitting diodes.

SHIPPING INFORMATION: Special containers according to form and quantity. Individual ingots packaged in polyethylene sleeves with data sheet.

INDIUM ARSENIDE *Electronic Grade*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Single crystal Czochralski nominal diameter 1.5 centimeter and polycrystal ingots with rectangular cross section 1.5×2.0 centimeters and weighing up to several hundred grams.

PURITY: Available in various ranges of carrier concentrations, resistivities, mobilities and Hall coefficients.

USES: Ultra-high purity Indium Arsenide for use in the manufacture of electronic semiconductor devices such as Hall generators and infrared detectors.

SHIPPING INFORMATION: Special containers according to form and quantity. Individual ingots packaged in polyethylene sleeves with data sheet.

INDIUM ANTIMONIDE *Electronic Grade*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Single crystal Czochralski nominal diameter 2.5 centimeters weighing up to several hundred grams.

PURITY: Undoped and doped in various ranges of carrier concentrations, resistivities, mobilities and Hall coefficients.

USES: Ultra-high purity Indium Antimonide for use in manufacture of electronic semiconductor devices such as Hall generators and infrared detectors.

SHIPPING INFORMATION: Special containers according to form and quantity. Individual ingots packaged in polyethylene sleeves with data sheet.

INDIUM PHOSPHIDE *Electronic Grade*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Polycrystal ingots with semi-circular cross section approximately 2.0 centimeters wide and weighing approximately 50 grams.

PURITY: Available in various ranges of carrier concentrations, resistivities, mobilities and Hall coefficients.

USES: Ultra-high purity indium phosphide for use in the manufacture of electronic semi-conductor devices such as rectifiers, transistors, standard diodes and tunnel diodes.

SHIPPING INFORMATION: Special containers according to form and quantity. Individual ingots packaged in polyethylene sleeves with data sheet.

0557174

TOWOLDMON0040908
WATER_PCB-00031954

OS-45® TYPE III HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A clear, amber liquid with outstanding hydraulic properties over a −65°F. to 400°F. temperature range.

USES: High temperature hydraulics for both airborne and ground environmental application.

SHIPPING INFORMATION: Chemicals NOIBN, 1-qt. cans; 1-gal. cans; 5-gal. cans; 59-gal. drums.

OS-45® TYPE IV HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

PROPERTIES: A clear amber liquid with outstanding hydraulic properties over a −65°F. to 550°F. temperature range.

USES: High temperature hydraulic for both airborne and ground environmental applications.

SHIPPING INFORMATION: Chemicals NOIBN, 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

SILICON—ELECTRONIC GRADE

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Single-crystal float zone rods, Czochralski ingots and epitaxial wafers. Polycrystal rods or chunks, slices or lapped wafers.

PURITY: Less than 0.2 parts per billion base boron content.

GENERAL INFORMATION: Ultra-high purity silicon for use in the manufacture of electronic semi-conductor devices such as diodes, rectifiers and transistors. Available in various electrical resistivity ranges, conductivity types, diameters and lengths according to individual customer requirements.

USES: Single-crystal rods used directly in the manufacture of semi-conductor devices, polycrystal rods used for zone-refining to produce single-crystal form and polycrystalline chunks used for single-crystal growing techniques.

SHIPPING INFORMATION: Silicon Metal, Electronic Grade. Special containers according to form and quantity. Individual rods packaged in polyethylene sleeves with data sheet.

FUNCTIONAL FLUIDS: AIRBORNE, INDUSTRIAL, SPECIALTY

AIRBORNE AND SPECIALTY

COOLANOL 45® DIELECTRIC COOLANT FOR ELECTRONIC EQUIPMENT

See Page M-5/11

OS-45® TYPE III HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

PROPERTIES: A clear, amber liquid with outstanding hydraulic properties over a −65°F. to 400°F. temperature range.

USES: High temperature hydraulics for both airborne and ground environmental applications.

SHIPPING INFORMATION: Chemicals NOIBN, 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

OS-45® TYPE IV HIGH TEMPERATURE AIRCRAFT HYDRAULIC FLUID.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid

PROPERTIES: A clear, amber liquid with outstanding hydraulic properties over a −65°F. to 550°F. temperature range.

USES: High temperature hydraulic for both airborne and ground environmental applications.

SHIPPING INFORMATION: Chemicals NOIBN, 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

SKYDROL® 500-A FIRE RESISTANT JET AIRCRAFT HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Moisture .20% max.; neutralization number 0.10 max.; Sp. Gr. 25° 25°C. 1.060-1.066; viscosity at 100 F. 11.7±0.4 cs.

PROPERTIES: A clear, purple, fire-resistant hydraulic fluid with excellent lubricity. Operational at −65°F.

USES: Hydraulic fluid for hydraulic systems in turbo jet and turbo prop aircraft, which must be operational at −65°F.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

SKYDROL® 7000 FIRE RESISTANT AIRCRAFT HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

TYPICAL ANALYSIS: Cloud point below 0°F.; moisture 0.25% max.; neutralization number 0.2 max.; Sp. Gr. 1.080 to 1.086 at 25°/25°C.; pour point −70°F. or lower.

PROPERTIES: A clear, green fire-resistant hydraulic fluid with outstanding lubricity, stability, non-corrosiveness, excellent viscosity-temperature characteristics, and resistance to oxidation.

USES: Hydraulic fluid in aircraft cabin superchargers, expansion turbines for air-conditioning systems and the aircraft hydraulic system itself.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 1-qt. cans; 1-gal. cans; 5-gal. cans; 54-gal. drums.

INDUSTRIAL

PYDRAUL® AC COMPRESSOR LUBRICANT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—405 SSU, 210°F.—42 SSU; moisture—0.15% max.; neutralization number (acid)—0.15 max.; sp. gr. at 25°/25°C.—1.340-1.360.

PROPERTIES: A clear blue, mobile straight synthetic fire resistant air compressor lubricant with excellent lubricity; non-corrosive, extremely stable to heat and air; designed as a shear stable fluid with a two-fold purpose—to eliminate carbon deposits on valves and cylinder walls, thereby reducing maintenance costs; and to provide safety from air compressor fires and explosions.

USES: A fire and explosion resistant lubricant for air compressors, such as those used in air separation plants, plant air systems, ammonia synthesis plants, gas transmission booster stations and other type processing plants.

SHIPPING INFORMATION: Chemicals NOIBN, 54-gal. steel drums; 5-gal. cans.

PYDRAUL® F-9 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—245 SSU, 210°F.—45 SSU; moisture—0.20% max.; neutralization number (acid)—0.30 max.; sp. gr. at 25°/25°C.—1.270-1.300.

PROPERTIES: A cloudy blue liquid; straight synthetic fire resistant fluid with excellent lubricity and pumping characteristics; non-corrosive, extremely stable to both heat and air; recoverable by filtration; designed for long service life.

USES: Fire resistant hydraulic fluid in die-casting machines, hydraulic presses, automatic welding machines and similar applications requiring a medium viscosity fluid.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 55-gal. steel drums and 5-gal. cans.

0557175

TOWOLDMON0040909
WATER_PCB-00031955

PYDRAUL® 60 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—60 SSU, 210°F.—34 SSU; moisture—0.10% max.; neutralization number (acid)—0.25 max.; sp. gr. at 25° 25°C.—1.088-1.091.

PROPERTIES: A cloudy blue liquid, straight synthetic fire resistant hydraulic fluid with excellent lubricating and pumping characteristics; highly resistant to mechanical shear and breakdown; inert to common metals of construction; an excellent fluid for low temperature operations.

USES: A fire resistant hydraulic fluid in systems requiring extremely low viscosity. Low viscosity is excellent for high speed, precision equipment such as machine tools. Low temperature properties suited for many outdoor operations.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 54-gal. steel drums and 5-gal. cans.

PYDRAUL® 150 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—150 SSU, 210°F.—50 SSU; moisture—0.15% max.; neutralization number (acid)—0.17 max.; sp. gr. at 25° 25°C.—1.119-1.135.

PROPERTIES: A cloudy blue liquid, straight synthetic fire resistant hydraulic fluid of low viscosity with excellent lubricity and low temperature pumping characteristics; non-corrosive, stable to heat and air.

USES: Fire resistant hydraulic fluid in equipment which operates out of doors at low temperatures part or all of the time, such as Askania Regulator Equipment, fork-lift trucks and similar equipment with cold weather fluid requirements.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 54-gal. steel drums; 5-gal. cans.

PYDRAUL® 625 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—625 SSU, 210°F.—45 SSU; moisture—0.15% max.; neutralization number (acid)—0.30 max.; sp. gr. at 25°, 25°C.—1.340-1.370.

PROPERTIES: A cloudy blue liquid, straight synthetic fire resistant hydraulic fluid of high viscosity with excellent lubricity and pumping characteristics; non-corrosive, extremely stable to heat and air; a shear, stable fluid designed for long service life.

USES: A fire resistant hydraulic fluid in equipment requiring a high viscosity medium, such as large forging presses, extrusion presses and some die-casting machines.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 54-gal. steel drums; 5-gal. cans.

PYDRAUL® A-200 HYDRAULIC FLUID

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Viscosity at 100°F.—230 SSU, 210°F.—41.9 SSU; moisture—0.05% max.; neutralization number (acid)—0.80-1.10 max.; sp. gr. at 25°/25°C.—1.415-1.430.

PROPERTIES: A cloudy blue liquid, straight synthetic, fire-resistant hydraulic fluid with excellent lubricity; non-corrosive, extremely stable to both heat and air; is designed to be permanent; fluid spilled and leaked can be easily reclaimed by filtration; does not thicken with use; resists "breakdown" even under extreme conditions; passes ASTM-D-665-A rust test with perfect score; A-200 is shear stable and undergoes no loss of viscosity after years of severe use.

USES: Fire resistant hydraulic fluid in die-casting machines, hydraulic presses, automatic welding machines and similar applications requiring a medium viscosity fluid.

SHIPPING INFORMATION: Hydraulic system fluids other than petroleum. 54-gal. steel drums; 5-gal. cans.

THERMINOL® FR — HEAT TRANSFER LIQUIDS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Clear, colorless liquids with high boiling points (above 600°F.), thermally and oxidatively stable to 600°F. and extremely fire resistant.

USES: *Therminol* FR liquids are fire resistant heat transfer media produced to rigid specifications important to heat transfer.

Thereare three *Therminol* FR products: *Therminol* FR-1 with low temperature fluidity, excellent for processes requiring both heating and cooling; *Therminol* FR-2 with the optimum balance of properties for use in most common industrial heat transfer systems; *Therminol* FR-3 with highest boiling point for special processing equipment applications.

SANTOWAX® OMP — ORGANIC NUCLEAR REACTOR COOLANT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid

PROPERTIES: A high boiling thermal and radiation resistant heat transfer medium.

USES: Organic nuclear reactor coolant and high temperature industrial heat transfer medium.

HEAVY CHEMICALS

ALUMINUM SULFATE

See Page M-5/49

SODIUM SULFATES

SODIUM BISULFATE NITRE CAKE

INORGANIC DIVISION

FORMULA: $NaHSO_4$

MOLECULAR WEIGHT: 120.07

STANDARD FORM: Globular.

TYPICAL ANALYSIS: 36.7% available H_2SO_4.

USES: Used in viscose rayon spinning baths, dyeing woolen goods; refining nickel ores; manufacture of sulfate pulp; in tanneries for pickling, delimaing and making one-bath tan solutions; as an acid scour for household use; as a bowl cleaner in sanitary trade.

SHIPPING INFORMATION: Nitre Cake. 100-lb. bags and 400-lb. drums.

SODIUM SULFITES

SODIUM SULFITE ANHYDROUS TECHNICAL *Santosite.®*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: Na_2SO_3

MOLECULAR WEIGHT: 126.06

STANDARD FORM: Powder.

TYPICAL ANALYSIS: Tan to slightly pink crystalline powder; assay (Na_2SO_3) 97.7% min.; color of filtrate from 10% solution in water not darker than APHA 70.

PROPERTIES: Will oxidize to sodium sulfate if not kept dry. Normally contains less than 1% sodium chloride; less than 0.1% iron; less than 0.2% insoluble; less than 0.2% organic matter. The balance of impurity is sodium sulfate. The unfiltered water solution has a brown color due to suspended $Fe(OH)_3$. Normally all of the product will pass through a No. 20 U. S. Standard sieve.

USES: As a reducing agent in oxygen removal from boiler feed water; depressant in ore flotation; manufacture of rubber and cordage.

SHIPPING INFORMATION: Sodium Sulfite. 100-lb. paper bags and hopper cars.

0557176

TOWOLDMON0040910
WATER_PCB-00031956

SODIUM BISULFITE ANHYDROUS

Also known as Sodium Metabisulfite.

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $Na_2S_2O_5$

MOLECULAR WEIGHT: 190.11

STANDARD FORM: Faint yellow, free-flowing crystals.

TYPICAL ANALYSIS: SO_2-66.6%; $NaSO_4$-0.7%; Na_2SO_3-1.25%.

GRADES: Meets purity limits for Sodium Bisulfite USP.

USES: In dye manufacture; as source of SO_2 for reducing sodium bichromate to basic chrome sulfate in tanning; bleaching of vegetable tan extracts; production of hydrosulfite for vat dyeing; antichlor in bleaching ground wood; bleaching dyes out of wooden coloring drums used for dyeing leather; antichlor in pulp bleaching; antichlor in laundries; bleaching of straw, rabbit fur, sugar syrups, blue and glucose. (Also these specialties: Flame retardants; solvents; slimicides; plasticisers; antioxidants; odorants; corrosion inhibitors; acids; rewetting agents.)

SHIPPING INFORMATION: Sodium Bisulfite—dry.

SULFURIC ACIDS

BATTERY ACID *Electrolyte.*

INORGANIC DIVISION

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Practically colorless liquid; H_2SO_4 93.2% min.; iron 0.005% max.; nitrogen compounds (as HNO_3) 0.001% max.; Sp. Gr., −1.835.

USES: Electrolyte is sulfuric acid, especially adapted to the needs of the storage battery trade.

SHIPPING INFORMATION: Sulfuric Acid. "Corrosive" label required. Tank trucks and tank cars.

SULFURIC ACID AND OLEUM

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: H_2SO_4

MOLECULAR WEIGHT: 98.08

STANDARD FORM: 60° Be.; 66° Be.; 98% H_2SO_4; all strengths oleum.

SULFURIC ACID PLANTS. Complete manufacturing plants using the contact process and Monsanto Vanadium Catalyst offered by Engineering Sales Department.

USES: Used extensively in steel mills, enameling works, oil refineries, pigment works, by-product gas plants, fertilizer plants, tanneries and many other industries.

SHIPPING INFORMATION: Sulfuric Acid. Tank trucks; tank cars.

OTHER HEAVY CHEMICALS

ALUMINUM CHLORIDE SOLUTION 32° Be.

INORGANIC DIVISION

MOLECULAR WEIGHT: 266.7

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Neutral salt, low in iron content; solutions have an acid reaction but contain no free acid. $AlCl_3 \cdot 6H_2O$, 50.5%; Al_2O_3, 10.6%; Fe, 0.005%.

USES: Carbonising fine wool such as piece goods, raw stock or shoddy, resulting in an exceptionally white, lofty wool; carbonising colored goods where it has very little stripping action; soap manufacture for treatment of glycerine lyes where chloride of alumina is more desirable than sulfate.

SHIPPING INFORMATION: Aluminum Chloride Liquid. Tank cars; tank trucks.

CARBON DIOXIDE

INORGANIC DIVISION

FORMULA: CO_2

MOLECULAR WEIGHT: 44.0

PROPERTIES: Marketed in liquid form which is colorless and odorless.

USES: As inert gas atmosphere, for fire extinguishers, in carbonated beverages, and for carbon dioxide blasting.

SHIPPING INFORMATION: Carbon Dioxide. Steel cylinders and tank cars.

CAUSTIC POTASH

INORGANIC DIVISION

FORMULA: KOH

MOLECULAR WEIGHT: 56.1

STANDARD FORM: 45% Solution.

GRADES: Available as both technical grade and low chloride grade.

USES: Due to the greater solubility of the salts of Caustic Potash permitting higher solids content in liquid formulations, Caustic Potash has use in formulating liquid soaps and detergents. In the manufacture of many Organic and Inorganic Potassium salts, petroleum refining, and in detersents.

SHIPPING INFORMATION: Caustic Potash, 8,000 gal. and 4,000 gal. coiled tank cars.

MIXED ACID *Nitrating Acid*

INORGANIC DIVISION

STANDARD FORM: Liquid.

TYPICAL ANALYSIS:

	90-15	45-53
Nitric Acid (HNO_3)	90.0 %	45.0 %
Sulfuric Acid (H_2SO_4)	15.0 %	53.0 %
Oxides of Nitrogen (N_2O_4)	0.25%	0.25%

USES: Nitrating in the chemical industry, particularly in the manufacture of explosives and dyestuffs. Special mixtures can be furnished to meet individual requirements.

SHIPPING INFORMATION: Nitrating Acid. Corrosive liquid (white label required). 110-gal. drums; 75 and 50-ton tank cars.

MURIATIC ACID *Hydrochloric Acid†*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: HCl

MOLECULAR WEIGHT: 36.47

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: 18° Be., 27.9% HCL; 20° Be., 31.5% HCl; 22° Be., 35.2% HCl.

USES: Used extensively in the starch, glucose, gelatin, steel galvanizing, paper, leather and glass industries.

†HYDROCHLORIC ACID PLANTS. Complete plants offered by Engineering Sales Department to electrolyze by-product HCl and produce pure chlorine and hydrogen.

NITRIC ACID

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: HNO_3

MOLECULAR WEIGHT: 63.01

STANDARD FORM: 36° Be., 38° Be., 40° Be., and 42° Be.

TYPICAL ANALYSIS: % HNO_3: 36° Be., 59.3%; 38° Be., 56.5%; 40° Be., 61.4%; 42° Be., 67.2%; Strong acid 95-98%. Sp. Gr. will not vary more than .05° terms of Be.; H_2SO_4, 0.05% max.

USES: Manufacture of insecticides, dyestuffs, drugs, pharmaceuticals, explosives, photoengraving, nitrates and nitro products.

SHIPPING INFORMATION: Nitric Acid. Corrosive liquid (white label required). Tank trucks; 50-ton tank cars.

PHOSPHORIC ACID *Orthophosphoric Acid*

See Page M-5/7

PHOSPHORUS PENTOXIDE *Phosphoric Anhydride*

See Page M-5/26

SLAG, CALCIUM SILICATE

INORGANIC DIVISION

STANDARD FORM: Granular solid.

PROPERTIES: CaO, 47.18%; SiO_2, 40.44%; Al_2O_3, 7.68%; Fe_2O_3, 0.20%; F, 2.62%; P, 0.65%; K_2O, 0.97%; Na_2O, 0.44%; MgO, 0.08%; Mn, 0.12%; SO_3, 0.59%; O, 0.10%.

USES: Constituent of glass mix.

SHIPPING INFORMATION: Slag. Bulk.

0557177

TOWOLDMON0040911
WATER_PCB-00031957

SULFUR DIOXIDE, LIQUID

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: SO_2

MOLECULAR WEIGHT: 64.07

STANDARD FORM: Liquid.

SPECIFICATIONS: Colorless; non-volatile residue 0.0025% max.; moisture 0.005% max.

USES: In leather tanning, oil refining, refrigeration, air conditioning, sugar refineries; antichlor in textiles; hydrosulfite in textiles; diluent in manufacture of sulfuric acids; manufacture of sulfuryl chloride; fruit preservation; wine making; manufacture of gelatin and corn products.

SHIPPING INFORMATION: Sulfur Dioxide. Tank cars and 1-ton containers.

NUCLEAR SOURCES

Alpha and Beta Sources
Bremsstrahlung Sources
Calibration Sources
Fission Products
Gamma Sources
Heat Sources
Isotopes
Neutron Sources
Radiation Sources
Radioactive Sources
Threshold Detector Sources
Tracer Sources

For information please write or call:
Mr. David L. Prosser
MONSANTO RESEARCH CORPORATION
1515 Nicholas Road
Dayton 7, Ohio
Tele: 513-268-5481

ORGANIC CHEMICALS

ACIDS AND ANHYDRIDES (CARBOXYLIC)

ADIPIC ACID

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 146.14

STANDARD FORM: White powder.

SPECIFICATIONS: Assay 99.7% min.; M.P. 152.0°C. min.; ash 12 ppm max.; color (50 grams in 100 ml methanol) APHA 10 max.; water 0.2% max.; iron 2 pp max.

USES: A resin intermediate in the surface-coating and polyester industries where it is used for viscosity control and to impart softness and flexibility to the cured resins. Other fields for which adipic acid serves as an intermediate include: low-temperature flexibilizing plasticizers for vinyls, cellulosics and rubber; hot-melt and thermosetting adhesives; yarn sizings and textile finishes; and synthetic lubricating oils and greases. Saturated polyesters made by processing adipic acid with diols or triols are the basic resins for making isocyanate materials such as polyurethane foams, coatings, adhesives and elastomers.

SHIPPING INFORMATION: Acid, NOIBN, dry (Adipic Acid). 50-lb. bags.

BENZOIC ACID

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 122.12

STANDARD FORM: Fine powder, flakes or crystalline needles.

SPECIFICATIONS: U.S.P. Grade: White crystalline needles or fine powder; assay 99.5% min.; solution in alcohol (1:2.5) and in 10% sodium carbonate (1:6) clear and colorless; meets U.S.P. test for carbonizable impurities; 2% max. powder retained on 60 mesh. Technical Grade: White to yellow-white flakes or powder; assay 99.0% min.; solution in 10% Na_2CO_3 (1:6) complete. Crystallizing point: 121.5°C. min.

GRADES: U.S.P. and Technical.

USES: U.S.P. grade used in medicinal preparations: preservative in foodstuffs.

Technical grade used in the manufacture of benzoates and benzoyl compounds; intermediate in the manufacture of dyes; mordant in calico printing; modifying agent in alkyd resins; color stabilizer in baking varnishes; dispersing agent in pigment grinding.

SHIPPING INFORMATION: U.S.P.—100-lb. fiber drums. Technical Grade—200-lb. fiber drums and 50-lb. bags. U.S.P. Grade: Food Preserving Compound NOIBN. Technical Grade: Dye Intermediate NOIBN.

FUMARIC ACID

ORGANIC DIVISION

MOLECULAR WEIGHT: 116.07

STANDARD FORM: Fine, white, granular crystals.

SPECIFICATIONS: Assay 99.6% min.; ash 0.01% max.; color (5% in alcohol) APHA 10 max.; iron 3 ppm. max.; moisture 0.25% max.

USES: A resin intermediate in surface coatings, printing ink and polyester resins. Its high melting point results in higher-softening-point resins of these types: modified phthalic alkyds, fumaric alkyds, upgraded drying oils and adducts with rosin and terpenes. A gelatin-dessert acidulant. Used in paper size and in gasoline additives.

SHIPPING INFORMATION: Acid NOIBN Dry. 250-lb. fiber drums and 50-lb. bags.

H ACID *8-Amino-1-naphthol-3, 6-Sodium Acid Disulfonate.*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 341.29

STANDARD FORM: Powder.

SPECIFICATIONS: Gray powder; 94-98% monosodium salt.

USES: As a principal intermediate in the manufacture of dyestuffs such as fast reds, violet azos and blue azo dyes; in the preparation of diazo photograph paper and prints; as an intermediate for general diazo and coupling process in dyestuff manufacture.

SHIPPING INFORMATION: Dye Intermediate NOIBN. 250-lb. fiber drums.

MALEIC ANHYDRIDE

ORGANIC DIVISION

MOLECULAR WEIGHT: 98.06

STANDARD FORM: Briquettes, fused mass.

SPECIFICATIONS: White briquettes or fused mass, crystallizing point (as produced) 52.5°C. min.; water solution (4 gms. in 10 ml); clear and colorless; assay 99.5% min.; color of melt 20 APHA max. Heat test color (2 hrs. @ 140°C.) 40 APHA max.

USES: Used alone or in combination with other acids in the manufacture of alkyd and polyester resins; a versatile intermediate for chemical synthesis. Also used for production of paper and textile sizes, agricultural chemicals and ester comonomers for internal plasticization.

SHIPPING INFORMATION: Maleic Anhydrides 50-lb. bags; 250-lb. fiber drums; tank cars, tank trucks.

MODAFLOW®

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Very viscous clear liquid free of solids.

GENERAL INFORMATION: Soluble in toluene, kerosene, petroleum ether, carbon tetrachloride, ethyl acetate, higher alcohols. Insoluble in water, ethanol and methanol.

USES: An additive for improving flow, leveling and adhesion properties of surface coating formulations — especially enamels, vinyls, epoxies and polyesters. Uses at 0.1—2.0% based on resin solids.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. non-returnable drums, 20-gal. drums and 5-gal. cans.

PHTHALIC ANHYDRIDE

See Page M-5/35

TOWOLDMON0040912
WATER_PCB-00031958

SALICYLIC ACID U.S.P.

ORGANIC DIVISION

MOLECULAR WEIGHT: 138.12

STANDARD FORM: Needles or powder.

SPECIFICATIONS: U.S.P. Grade: White needles or powder; assay 99.5% min.; M.P. 158.0°C. min.; conforms to U.S.P. test for carbonizable substances; ash 0.05% max.; powder 0.4% max. retained on 100 mesh. "N" Grade: Light tan powder; assay 99.5% min.; M.P. 158.0°C. at start.

GRADES: U.S.P. and technical.

USES: Manufacture of medicinals and dyestuffs; industrial preservative; intermediate in many organic syntheses.

SHIPPING INFORMATION: Salicylic Acid. 200-lb. and 100-lb. fiber drums.

5-SULFOSALICYLIC ACID *(technical)*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 218

STANDARD FORM: Tan crystalline solid.

ASSAY: 93% 5-sulfosalicylic acid (min.).

USES: Metal ion chelator, dye intermediate, preparation of surfactants, catalysts and grease additives.

CONTAINERS: 200-lb. net polyethylene lined fiber drums.

SHIPPING CLASSIFICATION: Acid NOIBN Dry.

TPSA® Monsanto's Brand of TETRAPROPENYLSUCCINIC ANHYDRIDE

(Dodecenylsuccinic Anhydride)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 266

STANDARD FORM: Liquid.

GENERAL INFORMATION: The dodecenyl substituent is present in a number of isomeric forms.

SPECIFICATIONS: Appearance: clear light yellow, free-flowing liquid; Liquid color: 400 APHA (max.); Neutral Number: 404-432 mg. KOH/g. refractive index @ 25°C. 1.4740-1.4780.

USES: Corrosion inhibitor, epoxy curing agent, intermediate.

CONTAINERS: 450-lb. net 55-gal. drums; bulk.

SHIPPING CLASSIFICATION: Chemicals, NOIBN.

AMINES

ortho-ANISIDINE

ORGANIC DIVISION

MOLECULAR WEIGHT: 123.15

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, reddish brown to amber liquid; Crystallizing Point 5.3°C. min. (with low seeds); Distilling Range: first drop 223.0°C. minimum, 95% (1-96) within 1.5°C. and to include 224.5°C. (Decomposes at 226.0°C.)

USES: A component of azo dyes.

CONTAINERS: 55-gallon, 18-gauge drums.

SHIPPING CLASSIFICATION: Poisonous Liquid NOS (Dye Intermediate NOIBN).

para-ANISIDINE

Also known as para-methoxy-aniline and para-aminoanisole.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 123.15

STANDARD FORM: Cast solid.

SPECIFICATIONS: Brownish crystalline mass when produced but darkens on aging; crystallizing point 57.2°C. min.; distillation range: first drop 240.0°C. min.; 95% 2.0°C. max.; decomposition point 243.0°C. max. Solution in HCl complete.

USES: A component of various azo dyestuffs; intermediate in chemical synthesis. CAUTION: This product is toxic. Avoid breathing its vapors. Avoid contact with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 450-lb. galv. steel drums.

tertiary-BUTYLAMINE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 73.14

STANDARD FORM: Volatile liquid.

ASSAY: 98% minimum.

USES: Intermediate.

CONTAINER: 300-lbs. net 55-gal. drums; bulk.

SHIPPING CLASSIFICATION: Flammable liquid NOS (t-butylamine-Chemicals NOIBN).

ortho-CHLOROANILINE

Also known as ortho-amino-chlorobenzene and 2-chloroamino-benzene

ORGANIC DIVISION

MOLECULAR WEIGHT: 127.57

STANDARD FORM: Liquid.

SPECIFICATIONS: Amber liquid that discolors readily in air; crystallizing point −2.3°C. min. Distillation range: first drop 208.0°C. min.; 95% (1-96 ml) 1.0°C. max.; dry point 210.0°C. max. Solution in HCl very slight opalescence max.

USES: An intermediate in the production of dyestuffs and insecticides. CAUTION: This product is toxic. Avoid breathing its vapor and skin contact.

SHIPPING INFORMATION: Dye intermediate NOIBN "Poison" label required. 550-lb. steel drums.

para-CHLOROANILINE

Also known as para-amino-chlorobenzene and 4-chloro-aminobenzene

ORGANIC DIVISION

MOLECULAR WEIGHT: 127.57

STANDARD FORM: Cast solid.

SPECIFICATIONS: Yellow-white solid; crystallizing point 69.5°C. min. Distillation range: first drop 229.0°C. min.; 95% (1-96 ml) 1.5°C. max.; dry point 223.0°C. max. Solution in HCl very slight opalescence max.

USES: Dyestuffs intermediate. CAUTION: This product is toxic. Avoid breathing its vapor and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 500-lb. steel drums.

CYCLOHEXYLAMINE *Also known as hexahydroaniline*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 99.17

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, practically colorless liquid; Sp. Gr. 0.869-0.873 at 15.5°/15.5°C. Distillation range: first drop 132.0°C. min.; 95% (1-96 ml) 4.0°C. max.; dry point 137.0°C. max.

USES: Dyestuff intermediate; petroleum additive; corrosion inhibitor in boiler systems, petroleum oils, greases, glycol and methanol antifreezes; organic synthesis; synthetic sweeteners.

SHIPPING INFORMATION: Chemical NOIBN. 375-gal. galv. drums.

3,4-DICHLOROANILINE (3,4-DCA)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 162

STANDARD FORM: Cast solid.

SPECIFICATIONS: Appearance, cast solid of tan to dark brown color, darkens with age; Crystallizing Point, 70.5° min.

USES: Intermediate in synthesis of biologically active compounds; dye intermediate.

CONTAINERS: 600-lbs. net—55 gal. drums.

SHIPPING CLASSIFICATION: Poisonous solid (NOS—Dye Intermediate, NOIBN).

DICYCLOHEXYLAMINE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 181.31

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, practically colorless liquid; Sp. Gr. 0.913-0.919 at 15.5°/15.5°C. Distillation range: first drop 252.0°C. min.; 95% (1.96 ml) 4.0°C. max.; dry point 258.0°C. max.

USES: As a corrosion inhibitor (see Cyclohexylamine) and in production of dicyclohexyl ammonium nitrate (used as a vapor-phase rust inhibitor, Shell Oil Company patent), rust-preventative oil additives, dyes and dry-cleaning soaps.

SHIPPING INFORMATION: Chemical NOIBN. 410-lb. steel drums.

DODECYLANILINE *(Formerly Alkyloniline C-12)*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

GENERAL INFORMATION: Light reddish brown to brown colored liquid, darkens on age; infra red analysis shows 90-95% of the alkyl substitution is in the para position; the dodecyl substituent is present in a number of isomeric forms.

USES: Corrosion inhibitor, intermediate for synthesis of hydrocarbon soluble chemicals.

CONTAINERS: 375-lbs. net—55-gal. drums—bulk.

SHIPPING CLASSIFICATION: Chemicals NOIBN.

0557179

TOWOLDMON0040913
WATER_PCB-00031959

ortho-NITROANILINE *Also known as ortho-aminonitro-benzene.*

ORGANIC DIVISION

MOLECULAR WEIGHT: 138.12

STANDARD FORM: Flakes.

SPECIFICATIONS: Yellow-to-orange flakes; crystallizing point 69.7°C. min.

PROPERTIES: Tends to form lumps on standing. Milling to desired fineness just before use is recommended. Addition of 0.5% tricalcium phosphate reduces the caking tendency.

USES: Manufacture of lakes and toners (dyes) such as ONA Black, ONA Orange and Hansa Yellow 5G; synthesis of coccidiostats, photographic anti-fogging agents and benzotriazoles (a rust inhibitor patented by Proctor and Gamble). CAUTION: This product is toxic. Avoid breathing its dust and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 175-lb. fiber drums; steel tank cars.

para-NITROANILINE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 138.12

SPECIFICATIONS: Appearance, yellow to amber crystals; Ash 0.2% max.; Color of HCl solution, NPA, No. 4 max.; Inorganic Chlorides, as Cl, 0.020% max.; Melting Point 148.0°C. min.

USES: Manufacture of anti-oxidants, anti-ozonants, gasoline gum inhibitors; medical compounds for poultry, dyestuffs, color and pigments.

CONTAINERS: Code 30 ICC21B Lever pak with flowed in rubber gasket. Gross weight: 369-lbs. approx.

SHIPPING CLASSIFICATION: para-Nitroaniline (Dye Intermediate NOIBN).

ortho-PHENETIDINE

Also known as ortho-amino-phenylethyl ether, ortho-aminophenetole and 2-amino-ethoxybenzene.

ORGANIC DIVISION

MOLECULAR WEIGHT: 137.18

STANDARD FORM: Liquid.

SPECIFICATIONS: Dark red liquid; crystallizing point −4.0°C. min. Distillation range: first drop 231.0°C. min.; 95% (1-96 ml) 2.0°C. max.; dry point 234.0°C. max.; solubility in HCl complete.

USES: An intermediate in the production of dyestuffs. CAUTION: This product is toxic. Avoid breathing its vapors and contact with skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN. "Poison" label required. 475-lb. steel drums.

para-PHENETIDINE

Also known as para-aminophenyl-ethyl ether, para-aminophenetole and 4-amino-ethoxybenzene.

ORGANIC DIVISION

MOLECULAR WEIGHT: 137.18

STANDARD FORM: Liquid.

SPECIFICATIONS: Light yellow liquid; crystallizing point 4.0°C. min.; distillation range: first drop 248.0°C. min.; 95% (1-96 ml) 2.0°C. max.; dry point 251.0°C. max.; solution in HCl opalescent max.

USES: An intermediate in the production of dyestuffs and pharmaceuticals. CAUTION: This product is toxic. Avoid breathing its vapors and avoid contact with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN. "Poison" label required. 480-lb. steel drums.

FLAVORINGS

ETHAVAN® *Ethylvanillin.*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 166.17

STANDARD FORM: Fine crystalline needles.

SPECIFICATIONS: Fine white crystalline needles; completely soluble in ethyl alcohol 95% (1:2); ash 0.03% max.; M.P. 76.5°C. min.

USES: A flavoring and aromatic. Has a flavor similar to that of vanillin but not identical with it. The relative flavoring strength of Ethavan approximates three times that of vanillin.

SHIPPING INFORMATION: Chemicals NOIBN. 100-lb. fiber drums; 25-lb. fiber drums.

METHYL SALICYLATE U.S.P. *Synthetic.*

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: Colorless liquid; assay essentially 100%; color APHA 10 max.; odor, characteristic; refractive index at 20°C. 1.535; specific gravity at 25°/25°C., 1.180 to 1.185; solubility in 70% alcohol (1:7), complete; solubility in Normal Potassium Hydroxide (1:10). Turbidity, none; color, faint yellow, max.; heavy metals, meets USP; weight per gallon, 9.9 pounds; meets all requirements of USP.

USES: Methyl Salicylate U.S.P. (Synthetic) is widely used in sprays, as well as various kinds of insecticides, disinfectants, mouth washes, perfumes, pharmaceuticals, in masking gummed tape and paper, as an odor principle in polishes, printing and copying inks, and in covering disagreeable odors of such products as pastes and glues. Used for food flavoring, candy lozenges, chewing gum and root beer.

SHIPPING INFORMATION: 500-lb. drums—returnable; 500 and 50-lb. drums—non-returnable. Methyl Salicylate (Essential Oil NOIBN).

SACCHARIN U.S.P.

See Page M-5/50

VANILLIN U.S.P.

Vanillin U. S. P.; also known as methylprotocatechuic aldehyde and 3-methoxy-4-hydroxybenzaldehyde.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 152.14

STANDARD FORM: Fine crystals.

SPECIFICATIONS: Fine, white crystalline needles; M.P. 81.6°C. min.; no foreign flavor (in sugar solution); moisture 0.06% max.; solubility in alcohol (1:2) complete.

USES: As a flavoring agent in foodstuffs and beverages and as an odorant in rubber.

SHIPPING INFORMATION: Chemicals NOIBN. 100-lb. fiber drums; 25-lb. fiber drums.

HALOGEN-CONTAINING COMPOUNDS (MISC.)

ACL®

See Page M-5/53

AROCLOR® POLYCHLORINATED POLYPHENYLS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquids, resins or solids.

PROPERTIES: Chlorinated aromatic hydrocarbons varying from water-white mobile liquids and pale yellow viscous oils to light amber resins and opaque crystalline solids.

GENERAL INFORMATION: *Aroclor* liquids have excellent electrical characteristics, high dielectric strength and resistivity, low power factor; certain of the liquids have a high dielectric constant as compared with mineral oils.

USES: *Aroclor* liquids are used as dielectrics for condensers or capacitors and transformers. They are used to impregnate carbon resistors, and when combined with other plastic materials, they are excellent sealers or impregnating agents for a variety of electrical apparatus. *Aroclor* compounds also find use as liquid thermostat fluids; vacuum diffusion pump fluids; swelling agents for automotive transmission seals; and, as additives and base stocks for specialty lubricants, oil and greases.

SHIPPING INFORMATION: Resin Synthetic NOIBN without filler. 600-lb. steel drums; 500-lb. net fiber drums; 100-lb. net bags.

BENZYL CHLORIDE *Also known as alpha-chlorotoluene.*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 126.58

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear to slightly turbid, colorless to yellow liquid; Sp. Gr. 1.105-1.110 at 15.5°/15.5°C. Boiling range at 760 mm 2°C. max. including 179.4°C.

USES: A highly reactive aralkyl halide used in the production of the following: dyestuffs; perfume bases such as benzyl alcohol, acetate and other esters; plasticizers; resins; wetting agents; germicides; rubber accelerators; gasoline gum inhibitors; benzyl benzoate; and pharmaceuticals. CAUTION: This product irritates the skin and eyes; avoid skin contact and breathing its vapors. Benzyl Chloride is highly reactive with metals and their derivatives, especially iron, and due care must be exercised in handling, storage and processing of Benzyl Chloride.

SHIPPING INFORMATION: Chemicals NOIBN. Corrosive liquid (white label required). 475-lb. nickel drums; 2000-gal. 2-compartment nickel tank trucks.

BENZYL CHLORIDE, *Inhibited with 0.25% triethylamine*

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: Same as for preceding product.

TOWOLDMON0040914
WATER_PCB-00031960

BENZYL CHLORIDE, STABILIZED

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 126.58

STANDARD FORM: Liquid.

SPECIFICATIONS (for material recovered from stabilized solution): Colorless to yellow liquid; Sp. Gr. 1.105-1.110 at 15.5°/15.5°C.

PROPERTIES: This form of benzyl chloride is stabilized by the addition of 23 lbs. of 10% sodium carbonate solution to 450 lbs. of the chloride. The wet material is a milky-white emulsion from which a layer of water may separate at either the bottom or top, depending upon the temperature and the concentration of $NaCO_3$. The concentration of $NaCO_3$ slowly decreases on standing.

USES: A highly reactive aralkyl halide used in the production of the following: dyestuffs; perfume bases such as benzyl alcohol, acetate and other esters; plasticizers; resins; wetting agents; germicides; rubber accelerators; gasoline gum inhibitors; benzyl benzoate; and pharmaceuticals. CAUTION: This product irritates the skin and eyes; avoid skin contact and breathing its vapors. Benzyl Chloride is highly reactive with metals and their derivatives, especially iron, and care must be exercised in handling, storage and processing.

SHIPPING INFORMATION: Chemicals NOIBN. Corrosive liquid (white label required). 473-lb. steel drums.

CHLORAMINE-T

See Page M-5/46

ortho-DICHLOROBENZENE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 147.01

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, practically clear; Color, 30 APHA max.; Crystallizing Point, minus 7.0°C. max.; Distilling Range—first drop 177.7°C. min.—90% (1-91 ml.) 4.1°C. max.—dry point 188.5°C. max.

USES: Degreasing formulations; tar, grease, paint and carbon removers; spotting agents in dry cleaning; metal polishes; wool and felt scouring; insecticide formulations; and treating of sewage and garbage for odor control.

SHIPPING CLASSIFICATION: ortho-Dichlorobenzol. 55-gal., 18-gauge black iron drums. Gross Weight: 600-lb. approx.

GUAIACOL

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 124.13.

STANDARD FORM: Light yellow liquid.

SPECIFICATIONS: Crystallizing Point 27.5°C. min.

USES: Chemical intermediate in the manufacture of flavors, perfumes and pharmaceuticals. Also used as an "anti-skinning" agent for paints and as an inhibitor in certain petroleum specialties.

SHIPPING INFORMATION: Chemicals NOIBN, 500-lb. drums.

ortho-NITROCHLOROBENZENE

Also known as ortho-chloronitrobenzene.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 157.56

STANDARD FORM: Cast solid.

SPECIFICATIONS: Green-yellow crystalline mass; crystallizing point 31.C.

USES: An intermediate in the synthesis of o-aminophenol (dyestuffs intermediate and photographic developer), dichlorobenzidine (chrome-dyestuffs intermediate), and many other organic intermediate chemicals; and a solvent in synthetic-petroleum processes. CAUTION: This material is toxic. Avoid breathing its vapors. Avoid contact with the skin. Toxicity reference: U. S. Public Health Bulletin No. 271 (1941).

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 600-lb. steel drums; tank cars.

para-NITROCHLOROBENZENE

Also known as para-chloronitrobenzene.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 157.56

STANDARD FORM: Flakes.

SPECIFICATIONS: Light yellow flakes or crystalline mass; crystallizing point 82.5°C. min.

USES: In the manufacture of disodium-benzene-meta-disulfonate; para-aminophenol; 2-chloro-5-nitrobenzene sulfonic acid; 2,6-dichloro-4-nitroaniline; and 5-amino-2-aniline benzene sulfonic acid; pharmaceutical acetophenetidin; "Diasone" an agent for treatment of Hansen's disease (Abbott patent); and a variety of anti-oxidants and gum inhibitors. CAUTION: This product is toxic. Avoid breathing its vapors and avoid contact with the skin. Toxicity reference: U. S. Public Health Bulletin No. 271 (1941).

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 325-lb. fiber drums.

MONSANTO® PENTA *Pentachlorophenol, Technical.*

See Page M-5/47

PHTHALYL CHLORIDE *Phthaloyl Chloride.*

ORGANIC DIVISION

MOLECULAR WEIGHT: 203.03

STANDARD FORM: Liquid.

SPECIFICATIONS: Yellowish liquid; assay 95.0% min.; crystallizing point 9.0°C. min.

USES: Manufacture of plasticizers and resins, general organic synthesis.

SHIPPING INFORMATION: Chemicals NOIBN. Corrosive liquid (white label required). 605-lb. nickel drums.

SANTOCHLOR® para-DICHLOROBENZENE

See Page M-5/10

SANTOPHEN® 1 GERMICIDE *ortho-benzyl-parachlorophenol.*

See Page M-5/47

SANTOPHEN® 1 SOLUTION

See Page M-5/47

TCC *3, 4, 4' Trichlorocarbanilide.*

See Page M-5/47

MONOMERS

ACRYLONITRILE

HYDROCARBONS DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 53.03

STANDARD FORM: Liquid.

SPECIFICATIONS: Form, clear liquid; color, water white, not over 15 APHA platinum-cobalt scale; distillation range, 74.5-78.5°C. (at 760 mm); refractive index 25°C., 1.3882-1.3891; water, 0.25-0.45%; inhibitor 35-45 ppm (Monsanto MQ); acidity not greater than 20 ppm (calculated as acetic acid); aldehydes not greater than 100 ppm (calculated as acetaldehyde); divinylacetylene not greater than 5 ppm; hydrogen cyanide not greater than 5 ppm; iron (soluble) not greater than 0.2 ppm; methyl vinyl ketone not greater than 0.01%; peroxides not greater than 1 ppm (calculated as hydrogen peroxide); non-volatile matter not greater than 0.01%; stability not less than 4 hours (exposed to oxygen at 100 pounds per square inch and 100°C.).

PROPERTIES: A bi-functional hydrocarbon. It is stable under ordinary conditions, yet can be made to react with a wide variety of other materials. Will copolymerize with most commercial vinyl monomers, will join chemically with a variety of natural or synthetic resin-formers.

USES: Production of synthetic textile fibers, nitrile synthetic rubber, copolymers, and chemical intermediates.

INDUSTRIAL USERS: Chemical, Rubber, Textile.

SHIPPING INFORMATION: Tank cars, drums (350 lbs.), tank trucks. Rail & Truck: Chemicals NOIBN.

METHANOL

HYDROCARBONS DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 32.04

STANDARD FORM: Liquid.

USES: Methanol is used for the manufacture of formaldehyde, as an antifreeze; as a solvent; a denaturant; and as a chemical intermediate.

INDUSTRIAL USERS: Chemicals, Petroleum.

SHIPPING INFORMATION: Tank cars, tank trucks; drums (350-lbs.) Rail & Truck: Methanol, Liquid.

0557181

TOWOLDMON0040915
WATER_PCB-00031961

STYRENE MONOMER

HYDROCARBONS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid inhibited with TBC.

SPECIFICATIONS: (Styrene Monomer 100) Color (APHA Platinum—Cobalt Scale) not over 10 units; free from suspended matter and sediment; assay 99.6% min.; viscosity 0.80 cps. at 25°C.; tertiary butyl catechol 10-15 ppm; aldehydes (benzaldehyde) 0.02% max.; peroxide (hydrogen peroxide) 0.01% max.; chlorides 0.01% max.; sulfur 0.003% max.; polymer content 15 ppm max.

SPECIFICATIONS: (Styrene Monomer 120) Color (APHA Platinum—Cobalt Scale) not over 20 units; free from suspended matter and sediment; assay 99.2% min.; viscosity 0.80 cps. at 25°C.; tertiary butyl catechol 10-15 ppm; aldehydes (benzaldehyde) 0.03% max.; peroxide (hydrogen peroxide) 0.01% max.; chlorides 0.015% max.; sulfur 0.005% max.; polymer content 0.005% max.

PROPERTIES: An aromatic hydrocarbon with an aliphatic side chain containing a double bond which permits polymerization, copolymerization and other reactions. A colorless material that polymerizes and copolymerizes with other light-colored materials to yield clear or light-colored products.

USES: Production of styrene molding compounds, synthetic rubber, copolymers, ion exchange resins, polyesters, styrene modified oils and alkyds for surface coatings.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Chemicals, Rubber.

SHIPPING INFORMATION: Tank trucks, drums (410 lbs.). Rail: Styrene Liquid.

VINYL ACETATE MONOMER

HYDROCARBONS DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 86.1

STANDARD FORM: Liquid at ordinary temperature and pressure.

SPECIFICATIONS: HQ Grade—Vinyl Acetate Monomer—DPA is also available containing Diphenylamine Inhibitor.

PROPERTIES: A reactive monomer having a double bond which permits polymerization, copolymerization and other reactions.

USES: Production of latices for the paint and surface coatings industry and copolymers for extrusion and molding compounds.

INDUSTRY USERS: Paint manufacturers; chemical manufacturers.

SHIPPING INFORMATION: Tank cars; tank trucks. VAM dangerous placards apply.

VINYL CHLORIDE MONOMER

HYDROCARBONS DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 62.50

STANDARD FORM: Liquefied gas shipped either inhibitor free or inhibited with phenol.

PROPERTIES: A reactive monomer having a double bond which permits polymerization, copolymerization and other reactions.

USES: Production of polyvinyl chloride resins, compounds, copolymers and chemical intermediates.

INDUSTRIAL USERS: Chemical manufacturers.

SHIPPING INFORMATION: Tank cars, cylinders (200 lbs.). Rail & Truck: Vinyl Chloride Monomer "Dangerous" Placards Apply.

PHARMACEUTICALS

ACETOPHENETIDIN U.S.P. *Also known as phenacetin.*

ORGANIC DIVISION

MOLECULAR WEIGHT: 179.21

STANDARD FORM: Crystalline powder.

SPECIFICATIONS: White crystalline powder; solubility in ethyl alcohol 95% (1:15) complete; M.P. 135.0°C. min.; ash 0.05% max.; 5% max. powder retained on 100 mesh.

USES: Commonly used pharmaceutical product, primarily as an anti-pyretic. Prescribed alone or in combination with aspirin and caffeine.

SHIPPING INFORMATION: Chemical NOIBN. 200-lb. and 100-lb. fiber drums.

ASPIRIN

ORGANIC DIVISION

MOLECULAR WEIGHT: 180.15

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: White crystals; assay 99.5% min.; solubility in ethyl alcohol 95% (1:5) complete; solubility in 10% $NaCO_3$ (1:20) complete; ash 0.05% max.; conforms to U.S.P. test for heavy metals, carbonizable impurities, chloride, sulfate and free salicylic acid.

GRADES: 20 mesh; 40 mesh; 80 mesh.

MESH: (All tests made on U. S. standard screens.)

Retained on—	20-Mesh	40-Mesh	80-Mesh
20-mesh screen	Trace max.		
30-mesh screen	10.0% max.		
40-mesh screen		Trace max.	
45-mesh screen	60.0% max.		
50-mesh screen		20.0% max.	
60-mesh screen			Trace max.
80-mesh screen			2.0% max.
100-mesh screen	80.0% min.		
140-mesh screen		85% min.	

USES: Acetylsalicylic Acid is analgesic and antipyretic. It is used for the treatment of acute and chronic rheumatic states, and for headache, neuralgia and influenza.

SHIPPING INFORMATION: Acetylsalicylic Acid. 250-lb. and 100-lb. fiber drums.

CAFFEINE U.S.P.

ORGANIC DIVISION

MOLECULAR WEIGHT: 212.21 (anhydrous, 194.19)

STANDARD FORM: Crystalline powder.

SPECIFICATIONS: White powder. Loss on drying at 80°C.: anhydrous powder 0.25% max.; hydrated powder 5.75-6.50%; M.P. 236°C. min.; meets U.S.P. test for carbonizable impurities.

GRADES: Anhydrous powder or hydrated powder.

USES: Used in pharmaceutical preparations for increased wakefulness, to stimulate mental activity and for diuretic activity. Prevalent alone or in combination with aspirin and acetophenetidin.

SHIPPING INFORMATION: Chemical NOIBN. 100-lb. fiber drums.

METHAPYRILENE FUMARATE

Thenylpyramine Fumarate

ORGANIC DIVISION

MOLECULAR WEIGHT: 870.98

STANDARD FORM: Powder.

SPECIFICATIONS: White crystalline powder; ash 0.05% max.; assay 99.0% min.; moisture 0.5% max.; M.P. 133°C. min.

USES: In pharmaceutical and antihistaminic preparations.

SHIPPING INFORMATION: Chemicals NOIBN, 100-lb. and 25-lb. fiber drums; 5-lb. fiberpaks.

METHAPYRILENE HYDROCHLORIDE

Thenylpyramine Hydrochloride

N,N-dimethyl-N'-2-pyridyl-N'-2-thenylethylene-diamine hydrochloride.

ORGANIC DIVISION

MOLECULAR WEIGHT: 297.85

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: White or yellow-white crystals; assay 99.2% min.; ash 0.05% max.; moisture 0.1% max.; M.P. 161.5°C. min. to start; 1.0% max. retained on 40 mesh.

GRADES: Thenylpyramine can also be supplied in the form of the fumarate salt, which is preferred in certain applications.

USES: In pharmaceutical preparations for antihistaminic activity or for sleep inducing (non-prescription).

SHIPPING INFORMATION: Chemicals NOIBN. 100-lb. and 25-lb. fiber drums; 5-lb. fiberpaks.

PHENOLPHTHALEIN U.S.P.

ORGANIC DIVISION

MOLECULAR WEIGHT: 318.31

STANDARD FORM: Crystals.

SPECIFICATIONS: White crystals; M.P. 259.0°C. min.; solubility in alcohol (1:15) complete; acidity (ml N/1000 NaOH/2 gm. sample) 3.0 ml max.; ash 0.1% max.; arsenic 0.001% max.; conforms to U.S.P. test for fluorine and heavy metals; trace max. retained on 100 mesh.

USES: Pharmaceutical preparations as a gentle irritant purgative.

SHIPPING INFORMATION: Chemicals NOIBN. 250-lb. and 100-lb. fiber drums.

PHENOLPHTHALEIN, YELLOW

ORGANIC DIVISION

SPECIFICATIONS: Fine yellow powder; loss on drying (3 hrs. 110°C.) 0.50% max.; ash 0.10% max.

USES: Pharmaceutical preparations as gentle irritant purgative.

0557182

TOWOLDMON0040916
WATER_PCB-00031962

SODIUM SALICYLATE, U.S.P.

ORGANIC DIVISION

MOLECULAR WEIGHT: 160.11

STANDARD FORM: Powder or crystals.

SPECIFICATIONS: White powder or crystals; assay 99.5% min.; conforms to U.S.P. tests for heavy metals and carbonizable impurities; loss on drying at 105°C. 0.5%; powder trace max. retained on 60 mesh, 1.0% on 80 mesh, 4.0% on 100 mesh; crystals 20% max. on 40 mesh, 80% max. on 80 mesh.

USES: Pharmaceutical product as an antipyretic and analgesic. Its principal use is in the treatment of acute rheumatic fever.

SHIPPING INFORMATION: Chemical NOIBN, 200-lb and 100-lb. fiber drums.

PHENOLS

BISPHENOL A

ORGANIC DIVISION

MOLECULAR WEIGHT: 228.28

STANDARD FORM: White flakes.

SPECIFICATIONS: Off-white flakes; crystallizing point 154.2°C. min.; iron 0.7 ppm max.; free phenol 0.15 max.; moisture 0.15% max.; color in acetone (25:30 ml): 150 APHA max.

USES: An intermediate in the production of epoxy resins (used in surface coatings, adhesives, die-making, laminating, potting, encapsulating and as rigid foams); polycarbonate resins (used in heat-resistant, dimensionally stable, electrically-insulating films, moldings and fibers); oil-soluble phenolic resins; and as an oxidant for oils, greases and vinyl compositions.

SHIPPING INFORMATION: Chemicals NOIBN, 50-lb. bags.

ortha-CHLOROPHENOL

Also known as ortho-hydroxy-chlorobenzene and 2-chloro-hydroxybenzene

ORGANIC DIVISION

MOLECULAR WEIGHT: *128.56*

STANDARD FORM: Liquid.

SPECIFICATIONS: Yellow-to-brown liquid; monochlorophenol (from Cl content) 98.0% min. Distillation range: first drop 173.0°C. min.: 95% (1-96 ml) 2.0°C. max.; dry point 178.0°C. max.

USES: An intermediate for the production of alizarin dyes, pyrocatechol, tertiary-butylcatechol, etc. CAUTION: This product is toxic. Avoid breathing its vapors and skin contact.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 500-lb. steel drums.

para-CHLOROPHENOL

Also known as para-hydroxy-chlorobenzene and 4-chloro-hydroxybenzene

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: *128.56*

STANDARD FORM: Cast solid.

SPECIFICATIONS: White to light yellow crystalline mass; crystallizing point 43°C. min.; Sp. Gr. 1.255-1.261 at 45.0°/15.5°C.

USES: An intermediate in the manufacture of Quinizarin Violet, Celliton Fast Red, Violet RN, Indanthrene Brown BRH and Alizarin Cyanine Green dyes; poultry-feed supplement to prevent coccidiosis (Givaudan Patent); and germicides, miticides and pharmaceuticals. CAUTION: Care should be exercised in *handling this product. Avoid contact* with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 550-lb. galv. drums.

2, 4-DICHLOROPHENOL

Also known as 2,4-dichloro-hydroxybenzene.

ORGANIC DIVISION

MOLECULAR WEIGHT: 163.01

STANDARD FORM: Cast Solid.

SPECIFICATIONS: Yellow-to-brown crystalline mass; crystallizing point 41.5°C. min.; distillation range: first drop 214.2°C. min.: 95% (1-96 ml) 3.0°C. max.

USES: An intermediate in the production of dyestuffs, herbicides, germicides and fungicides. CAUTION: Care should be exercised in handling this material. Avoid skin contact and breathing its vapor.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 600-lb. (approx.) steel drums.

DIHYDROXY DIPHENYL SULFONE

Also known as sulfonyl bis phenol.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Fine powder.

TYPICAL ANALYSIS: Dihydroxy Diphenyl Sulfone

PURITY

69-79% of 4,4' ISOMER
31-21% of 2,4' ISOMER

SPECIFICATIONS: Crystallizing point 220-234°C., min.; moisture 0.5% max.

PROPERTIES: Readily nitrated and sulfonated and converted to esters, ethers, etc. Can be chlorinated but less readily than phenol.

USES: Electroplating bath addition agent (U. S. Steel "Ferrostan" patent); base for phenolic resins; intermediate in organic synthesis, and antioxidant in polyvinyl chloride resin manufacture.

SHIPPING INFORMATION: Chemical NOIBN, 200-lb. fiber drums.

DODECYLPHENOL *Alkyl Phenol*

See Page M-5/53

para-NITROPHENOL *Also known as para-hydroxy-nitrobenzene.*

ORGANIC DIVISION

MOLECULAR WEIGHT: 139.11

STANDARD FORM: Granules.

SPECIFICATIONS: Brown granular mass M.P. (dry basis) 112.0°C. min.; assay 99.0% min.; water-*insoluble material* 0.20% max.; methanol-insoluble material 0.20% max.

USES: An intermediate in the production of dyestuffs from para-aminophenol, photographic chemicals such as para-aminophenol and methyl para-aminophenol and parathion insecticides; fungicide to prevent mold growth on chrome-tanned leather. CAUTION: This product is toxic. Avoid breathing its dust or vapors and avoid contact with the skin.

SHIPPING INFORMATION: Dye Intermediate NOIBN "Poison" label required. 200-lb. fiber drums.

NONYLPHENOL *Alkyl Phenol*

See Page M-5/53

PHENOL

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 94.11

STANDARD FORM: Solid or liquid.

SPECIFICATIONS: Crystalline solid, U.S.P.: White crystalline solid; melt, colorless mobile liquid; solution in water (1:15) clear and colorless; crystallizing point 40.6°C. min. Distillation range: first drop 180.0°C. min.; 100% (first drop to dry point) 2.0°C. max.; 50% to dry point 0.2°C. max. Liquids: Colorless mobile liquids; assay: liquid 85%, 85.0-86.0%; liquid 90%, 90.0-91.0%; liquid 92%, 92.0-93.0%.

GRADES: Crystalline solid, U.S.P.; liquid 85%; liquid 90%; liquid 92%.

USES: An intermediate in the production of molding resins, varnishes, enamels, lacquers, paints, plywood adhesives, explosives, tanning materials, pharmaceuticals, medicinals, antiseptics, germicides, preservatives, deodorants, soaps, embalming fluids, vermin exterminators, insecticides, oil additives, rubber compounds, photographic chemicals, and dyestuffs; a disinfectant; a selective solvent in lubricant production; and in *textile printing. CAUTION: This product* is toxic. Avoid breathing its vapors and contact with the skin

SHIPPING INFORMATION: Phenol. "Poison" label required. Tank cars; tank trucks; 475-lb. steel drums; 200-lb. tins.

PHENOLSULFONIC ACID

98 +% para isomer; remainder ortho isomer.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 174.17

STANDARD FORM: Liquid or crystalline mass. (65% aqueous solution).

PROPERTIES: Light brown-to-black liquid or crystalline mass depending on temperature; assay 65% min.

SPECIFICATIONS: Assay 65.0-67.5%; free phenol 2.0% max.; free sulfuric acid 3.0% max.; Sp. Gr. at 15.5°/15.5°C. 1.345-1.365.

USES: Ferrostan process for tin plating (U. S. Steel Co. *patent); manufacture of pharmaceuticals, dyestuffs, tanning* agents, and other chemical intermediates.

SHIPPING INFORMATION: Acid NOIBN liquid. 600-lb. steel drums.

0557183

TOWOLDMON0040917
WATER_PCB-00031963

SULFONATES

SANTOMERSE® ALKYL ARYL SULFONATES

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: The salts of a homologous series of substituted aromatic sulfonic acids. The *Santomerse* series consists of five products, each distinctive in character and developed to meet a certain industrial need.

GENERAL INFORMATION: *Santomerse* No. 1—neutral flakes, granular and powdered form, 40% active. *Santomerse* 85—85% active powder or flake. *Santomerse* SX—30% active solution. *Santomerse* 3 Paste—65% active paste. *Santomerse* E—70% active powder of high solubility.

USES: Highly efficient surface-active, wetting, spreading, penetrating, emulsifying agents and detergents used in the following industries: textile, paper, leather, adhesive, rubber, insecticide, dust collection, soap, cosmetic, ceramic, detergent, metal cleaning, plating, emulsions, dyes, pharmaceutical, laundry, steel, paint, cement, glue, felt, color, etc.

SHIPPING INFORMATION: Washing compound, dry; or washing compound, liquid, NOIBN. *Santomerse* No. 1—75-lb. bags and 175-lb., 200-lb. and 225-lb. drums depending on type of flake: *Santomerse* 3 Paste—150-lb. drums; *Santomerse* 85—200-lb. drums; *Santomerse* E—175-lb. drums; *Santomerse* SX—250 and 450-lb. drums; tank cars and tank trucks.

SULFONIC ACIDS

CHLOROSULFONIC ACID

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $ClSO_3OH$

MOLECULAR WEIGHT: 116.53

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Heavy mobile liquid; assay 99.3% $ClSO_3H$; Fe—3 ppm.

USES: In chlorosulfonation reactions. CAUTION: Chlorosulfonic acid reacts violently with water forming hydrochloric and sulfuric acids.

SHIPPING INFORMATION: Chlorosulfonic Acid, Corrosive liquid (white label required), 700-lb., 55-gal. steel and stainless steel drums; 8-lb. bottles single; 80-lb cases of ten; tank cars and tank trucks.

DDBSA *Dodecylbenzene Sulfonic Acid.*

See Page M-5/51

DDBSA-94

See Page M-5/51

SULFUR-CONTAINING COMPOUNDS (MISC.)

TOLUENESULFONIC ACID

Mixture of about 80% para and 20% ortho isomers.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 172.20

STANDARD FORM: Liquid or semi-crystalline solid.

SPECIFICATIONS: Semi-crystalline solid having a yellow to brownish color. Toluenesulfonic acid 95.0% min.; H_2SO_4 1.5% max.; toluene 0.2% max.; sulfone 2%.

USES: Acid catalyst in production of alkyd resins, phenol-formaldehydes resins and phthalate esters; and in other organic syntheses; production of dyes, acid-resistant cements, cresols, herbicides, epoxy-resin varnishes and tung-oil coatings; and refining of toluene.

SHIPPING INFORMATION: Chemical NOIBN. 100-lb. steel drums.

SODIUM meta-NITROBENZENE SULFONATE

ORGANIC DIVISION

MOLECULAR WEIGHT: 225.15

STANDARD FORM: Wet powder.

SPECIFICATIONS: Acidity 7% max. as H_2SO_4; water 21% max.; assay 70% min.; sulfates 2% max. as Na_2SO_4.

USES: An electroplating-bath additive; an intermediate in the manufacture of dyestuffs; a mild oxidant in synthetic-fiber dye baths.

SHIPPING INFORMATION: Chemical NOIBN. 250-lb. polyethylene-lined fiber drums.

para-TOLUENESULFONAMIDE

Also known as para-toluene-sulfonic acid amide and para-sulfonamidotoluene.

ORGANIC DIVISION

MOLECULAR WEIGHT: 171.22

STANDARD FORM: Crystalline powder. (A refined powder also available.)

SPECIFICATIONS: White, crystalline powder; crystallizing point (dried material) 136.9°C. min.; moisture 0.5% max.

USES: In the preparation of antiseptics and pharmaceuticals, plasticizers and resins (as a base), and in the preparation of dyestuffs; and as a fungicide for protective coatings.

SHIPPING INFORMATION: Chemicals NOIBN. 225-lb. and 275-lb. fiber drums (refined).

para-TOLUENESULFONYL CHLORIDE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 190.65

STANDARD FORM: Crystals.

SPECIFICATIONS: White to light yellow crystals; assay 98% min.; crystallizing point 65.5°C. min. (dry basis).

USES: As an intermediate in preparation of dyestuffs such as Brilliant Sulfon Red, Polar Red, Polar Yellow, azo and triphenylmethane dyes; tanning materials; pharmaceuticals; acid resistant cements; anti-oxidants; disinfectants; and photographic chemicals.

SHIPPING INFORMATION: Chemicals NOIBN. 300-lb. fiber drums.

METHYL PCT *(O, O-dimethyl phosphorochloridothioate)*

AGRICULTURAL DIVISION

MOLECULAR WEIGHT: 160.51

STANDARD FORM: Liquid.

SPECIFICATIONS: Light yellow liquid; assay, 96% min.; specific gravity 25°/25 C., 1.314 ± 0.005; toxicity, LD_{50} (oral), 0.95g./kg.

USES: Widespread use in the manufacture of biological toxicants. This chemical intermediate will allow the incorporation of the dialkyl thiophosphoryl group into any system with a suitable reactive center. The well-known contribution to the group to flame resistance polymer stabilization, and biological activity will suggest many uses. It is effective as ore flotation agents in the mining industry.

CONTAINERS: 55-gallon, 16 gauge, 1CC-17C, B.I. 2" and ¾" Tri-Sure fittings in head, lined with 2 coats Heresite lacquer, sand blasted before lining.

SHIPPING CLASSIFICATIONS: Corrosive Liquid NOS, Chemicals NOIBN.

ETHYL PCT *(O, O-diethyl phosphorochloridothioate)*

AGRICULTURAL DIVISION

MOLECULAR WEIGHT: 188.53

STANDARD FORM: Liquid.

SPECIFICATIONS: Colorless to yellow liquid; assay, 97% min.; specific gravity 25°/25°C., 1.196 ± 0.005; toxicity, LD_{50} (oral), 1.0g./kg.

USES: Widespread use in the manufacture of biological toxicants. This chemical intermediate will allow the incorporation of the dialkyl thiophosphoryl group into any system with a suitable reactive center. The well-known contribution to the group to flame resistance polymer stabilization and biological activity will suggest many uses. It is effective as ore flotation agents in the mining industry.

CONTAINERS: 55-gallon, 16 gauge, 1CC-17C, B.I. 2" and ¾" Tri-Sure fittings in head, lined with 2 coats Heresite lacquer, sand blasted before lining.

SHIPPING CLASSIFICATIONS: Chemicals NOIBN.

SANTICIZER® 1-H PLASTICIZER

See Page M-5/39

SANTICIZER® 3 PLASTICIZER

See Page M-5/39

SANTICIZER® 8 PLASTICIZER

Mixture of N-Ethyl-ortho- and para-Toluenesulfonamides.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 199.27

STANDARD FORM: Liquid.

SPECIFICATIONS: Light yellow, viscous liquid; odor slight, characteristic; unsubstituted amide 9-13%; acidity (as acetic acid) 0.80 meq/100 gms. max.; color of melt 200 APHA max.

(Continued on next page)

0557184

TOWOLDMON0040918
WATER_PCB-00031964

PROPERTIES: Readily miscible with all common organic solvents except the petroleum hydrocarbons in which it is only very slightly soluble. In water, soluble to approx. 0.13% at 23°C., 0.21% at 48°C.; solubility in water decreased by presence of ammonia but increased by other alkalies; soluble in castor oil, slightly soluble in chinawood oil; insoluble in linseed oil; retentivity in cellulose acetate approx. 90 parts by weight to 100 of acetate; imparts a high degree of plasticity. A solvent for both nitrocellulose and cellulose acetate.

USES: An excellent plasticizer for cellulose acetate, giving a brilliance and polish not obtainable with other plasticizers. Being practically insoluble in petroleum hydrocarbons, is a valuable plasticizer for coatings designed to withstand gasoline and related products. Has some plasticizing action on such protein compounds as casein, glue, soybean protein and corn protein. May be used alone or in conjunction with other materials such as glycerin or similar compounds; greatly increases the flexibility of shellac with considerable softening effect; also very useful with polyvinyl acetate adhesives. *Sanitizer 8* is one of the best plasticizers known for synthetic polyamides such as nylon and related resins.

SHIPPING INFORMATION: Resin Plasticizer. 530-lb. and 50-lb. drums.

SANTOLITE® MHP

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Hard resin.

SPECIFICATIONS: Hard, practically colorless resin; refractive index (25 gm. in 75 gms. normal butyl acetate) 1.4280—1.4310; penetration (200 gm. load for 5 seconds at 25°C.) 2.0 mm. max.

GENERAL INFORMATION—PROPERTIES: An aryl sulfonamide-formaldehyde resin similar to *Santolite* MS in characteristics, except that it is much harder, softening at about 62°C., brittle at normal temperatures. Nearly colorless, well adapted to specialty and heat-sealing lacquers, fabric coatings, molding compositions and the like. Being incompatible with drying oils it cannot be used as a varnish material.

Exceptional features of this resin are the ease with which it may be worked into practically any formula using a cellulose ester and the wide variation of properties obtained by its use. Its high degree of solubility makes very concentrated solutions possible; its extreme compatibility with plasticizers and cellulose esters removes much of the danger of blushing, sweating and separation.

USES: Can be used in spraying, dipping or brushing lacquers to make clear, colorless, odorless coatings of good gloss and adhesion. It does not materially increase the viscosity of the solution and permits the building up of a high-solids content in the lacquer. Compatible with all the common plasticizers.

CONTAINERS: 60-lb. cased cans.

SHIPPING CLASSIFICATION: Resin Synthetic NOIBN Without Filler.

SANTOLITE® MS 80% *Industrial Resin.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Light-colored, viscous liquid; free-flowing at temperatures above 20°C.; composition 78.8—81.2% *Santolite* MS, 18.8 to 21.2%.

PROPERTIES: Soft, practically colorless resin made by the condensation of formaldehyde with aromatic sulfonamides.

USES: *Santolite* MS, like *Santolite* MHP, is compatible with both nitrocellulose and cellulose acetate; as a solvent for both, it can be used in any proportion. Forms brittle compositions with both resins but the addition of a plasticizer makes such combinations permanently flexible. Readily miscible with all the common organic solvents and thinners except petroleum hydrocarbons; not miscible with varnish and paint oils. Excellent for water-white lacquers which will not be exposed to extreme weather conditions; possesses exceptional clarity and high gloss.

SHIPPING INFORMATION: Resin Synthetic NOIBN Without Filler. 450-lbs. approx., 55-gal. drums; 45-lbs. approx., 5-gal. drums.

SANTONOX®

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid.

SPECIFICATIONS: Appearance, light gray to light tan powder; Ash, 0.1% max.; melting point, 150°C. min.; moisture, 1.0% max.; fineness, 50 mesh (trace, max.).

PROPERTIES: *Santonox* is probably the best antioxidant available for both low and high density polyethylene. It maintains the melt index and recovery of the polyethylene in extrusion operations better than competitive products. It has little or no effect on electrical properties. *Santonox* has a low vapor pressure, which means no loss from the resin into which it is compounded. It is readily soluble in methanol, ethanol or acetone. It is comparatively insoluble in benzene, ether, carbon tetrachloride and water.

USES: *Santonox* is used as an antioxidant for polyethylene. It offers the best price performance characteristics of all the available antioxidants. *Santonox* is approved by the FDA as an antioxidant for high pressure (low density) polyethylene at 0.05% level for all applications except fatty foods. (Antioxidant for synthetic resins.)

SHIPPING INFORMATION: Chemicals NOIBN. 150-lb. fiber containers.

SANTONOX® R

See Page M-5/37

SANTOWHITE® CRYSTALS

See Page M-5/44

OTHER ORGANIC CHEMICALS

BENZYL BENZOATE N.F.

ORGANIC DIVISION

MOLECULAR WEIGHT: 212.24

STANDARD FORM: Liquid.

SPECIFICATIONS: Essentially colorless liquid; crystallizing point 18.3°C. min.; refractive index 1.568-1.570 at 20°C.; total chlorine 0.03% max.; assay 99.0% min.; Sp. Gr. 25°/25°C. 1.117-1.120.

PROPERTIES: High-boiling ester having a pleasant odor.

USES: A miticide (acaracide); fixative in perfumes; preparation of delousing and insect-repellent formulations; medicinally in the treatment of scabies.

SHIPPING INFORMATION: Insect Repellent NOIBN. 500-lb. drums.

BIPHENYL *Also known as diphenyl and phenylbenzene*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 154.20

STANDARD FORM: Crystalline solid.

PROPERTIES: Faint yellow crystals; freezing point 68.7-69.0°C.

USES: Biphenyl is used as a wrapping-paper impregnate to reduce citrus-fruit spoilage; a dye carrier and accelerator for synthetic fibers; in the manufacture of ceramics; a low-pressure, high-temperature, non-corrosive heat-transfer medium; and a raw material in the manufacture of a great variety of products, since it is easily chlorinated, sulfonated, nitrated and hydrogenerated.

SHIPPING INFORMATION: Biphenyl, 100-lb. bags; 225-lb. bbls.; 100-lb. kegs.

CYCLOHEXANOL

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 100.16

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, colorless, viscous liquid; Color 10 APHA max.; Unsaturates (as Phenol), 0.02% max.; Ketones (as Cyclohexanone), 0.20% max.; Sp. Gr. 25/15.5°C. 0.944 to 0.948.

USES: Intermediate for plasticizers; in dry cleaning and textile industries; solvent in dyestuff operations; manufacture of cyclohexanone and adipic acid.

CONTAINERS: 55-gal. steel drums.

SHIPPING CLASSIFICATIONS: Lacquer Solvent NOIBN.

DODECYLBENZENE *Alkyl Benzene*

INORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 246

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Clear liquid; residue less than 0.005 per cent of volume; color 11 APHA; Sp. Gr. 60°F./60°F. 0.872; refractive index 1.4886; bromine number 0.06; unsulfonatable 0.5%.

USES: A refined alkyl benzene designed primarily for use in manufacture of synthetic organic detergents.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 390-lb. net wt. black iron nonreturnable drums; 8,000 and 4,000-gal. tank cars.

DODECYLPHENOL *Alkyl Phenol*

See Page M-5/53

0557185

TOWOLDMON0040919
WATER_PCB-00031965

FORMALDEHYDE

PLASTICS DIVISION

STANDARD FORMS: A 37% aqueous solution inhibited with methanol, 44% methanol free, 37% methanol free.

SPECIFICATIONS: Clear and free of foreign sediment; color not greater than 5 APHA; Sp. Gr. 1.0925-1.1136 (depending on methanol content); assay 37.0% by weight, minimum; acidity no greater than 0.02% as formic acid; iron no greater than 1 part per million; methanol 0 to 1% (methanol-free) and 7 to 8% (inhibited).

USES: A preservative, disinfectant and chemical intermediate used in the preparation of melamine and phenolic resins.

INDUSTRIAL USERS: Chemical manufacturers.

SHIPPING INFORMATION: Tank trucks. Rail & Truck: Formaldehyde, Liquid.

HYDROGENATED BISPHENOL A

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 240.35

STANDARD FORM: Cast solid.

SPECIFICATIONS (TENTATIVE): Color 30% in Methanol 50 APHA max.; Hydroxyl number 430 min.; Ash 0.03% max.; Iron 3 ppm max.; Moisture 0.3% max.

USES: Unsaturated polyester raw material to give chemical resistant properties.

CONTAINERS: Light-gauge metal cans.

SHIPPING CLASSIFICATION: Chemicals NOIBN.

NONYLPHENOL *Alkyl Phenol*

See Page M-5/53

SODIUM BENZOATE U.S.P.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 144.11

STANDARD FORM: Powder.

SPECIFICATIONS: U.S.P. Grade: Thin white flakes or white powder; solubility in water (10:100 at 25°C.) complete; solubility in 90% ethyl alcohol (1:50 at 25°C.) complete; 0.30 ml N/10 NaOH to 0.20 ml N/10 HCl per 2.0 grams; moisture 0.50% max.; assay 99.0% min.; chlorides (as NaCl) 0.10% max.

Technical Grade: White or slightly tinted powder; assay 99.0% min. (dry basis); solution in water (10:18) essentially complete but slightly inferior to U.S.P. quality; heavy metals 20 ppm; moisture 0.5%.

GRADES: U.S.P. and Technical.

USES: U.S.P. Grade: For preserving foods, tobacco and medicinal preparations.

Technical Grades: As an industrial preservative and rust inhibitor.

SHIPPING INFORMATION: Sodium Benzoate, 100-lb., 50-lb. and 25-lb. fiber drums.

TRIDECYLBENZENE *Alkyl Benzene*

See Page M-5/53

PHOSPHORUS and PHOSPHORUS DERIVATIVES

AMMONIUM PHOSPHATES

AMMONIUM PHOSPHATE, MONO

INORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 115.07

STANDARD FORM: Crystalline or powdered material.

PROPERTIES: A brilliant white crystalline or powdered material; stable in air; soluble in hot and cold water; pH of 1% solution 4.7.

GRADES: Food (meets all U. S. Pure Food Law requirements).

USES: Flameproofing paper, wood, textiles; prevents afterglow in matches; for special medicinal purposes; nutrient solutions; manufacture of yeast, vinegar, yeast foods, bread improvers; acidulent in dye bath.

SHIPPING INFORMATION: Phosphate of Ammonia. 100-lb. bags; 300 and 100-lb. fiber drums.

AMMONIUM PHOSPHATE, DI

INORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 132.068

STANDARD FORM: Crystalline or powdered material.

PROPERTIES: Brilliant white crystalline or powdered material; stable in air; very soluble in water; pH value of 1% solution 7.75; above 70°C. aqueous solutions lose ammonia readily.

DISSOCIATION PRESSURE: According to Britzke and Dumajew (Gmelin's Handbuch der anorganische Chemie, Ammoniak, p.423) and Warren (JACS 49, 1904, 1927):

Temp. °C.	98	111	125	135	147
NH_3 in mm. Hg.	3.2	10.7	26.0	55.2	123.4

GRADES: Food (meets all U. S. Pure Food Law requirements).

USES: As a source of phosphorus and non-protein nitrogen for ruminant feeds; Fire retardant; yeast food by yeast producers and breweries; as bread improvers, to control pH of soda crackers; catalyst for urea-formaldehyde resins; chrome dyeing of wool; source of N and P_2O_5 for soluble fertilizers.

SHIPPING INFORMATION: Phosphate of Ammonia. 100-lb. bags; 300 and 100-lb. fiber drums.

ETHYL AMMONIUM PHOSPHATE

INORGANIC DIVISION

TYPICAL ANALYSIS: 65% solution of Ethyl Acid Phosphate neutralized with ammonia 33% P_2O_5; Sp. Gr. @ 25°C., 1.21 or 10.1 lbs. per gal.

SHIPPING INFORMATION: 135-lb. and 500-lb. drums.

TRIETHYLAMMONIUM PHOSPHATE

INORGANIC DIVISION

GENERAL INFORMATION: An additive for non-aqueous materials for stabilizing corrosive and iron-sensitive liquids such as lacquers in metal containers.

SHIPPING INFORMATION: 40-lb. and 450-lb. drums.

CALCIUM PHOSPHATES

CALCIUM PYROPHOSPHATE

INORGANIC DIVISION

FORMULA: $Ca_2P_2O_7$

MOLECULAR WEIGHT: 254.20

STANDARD FORM: Powder.

PROPERTIES: Finely subdivided powder; contains CaO, 43.8%; P_2O_5, 55.5%.

USES: Food fortification and vitamin tablets as a mineral supplement and dentifrice polishing agent.

SHIPPING INFORMATION: Calcium Phosphate. 100-lb. bags; 400-lb. bbls.; 100-lb. drums.

DICALCIUM PHOSPHATE ANHYDROUS

INORGANIC DIVISION

FORMULA: $CaHPO_4$

MOLECULAR WEIGHT: 136.07

STANDARD FORM: Finely divided powder.

TYPICAL ANALYSIS: Total P_2O_5-51.3% total CaO. Conforms with all state and federal food laws and meets N.F. requirements.

PROPERTIES: White, tasteless, finely divided powder.

USES: Primarily as a polishing agent in tooth pastes and powders, and as a mineral supplement in foods and cereals.

SHIPPING INFORMATION: 50-lb. bags; 350 and 100-lb. drums.

DICALCIUM PHOSPHATE, DIHYDRATE

INORGANIC DIVISION

FORMULA: $CaHPO_4 \cdot 2H_2O$

MOLECULAR WEIGHT: 172.10

STANDARD FORM: Powder.

TYPICAL ANALYSIS: Phosphorus 18.1%; calcium 23.7%.

PROPERTIES: White tasteless crystalline powder; soluble in dilute citric acid solution; very slightly soluble in water; insoluble in alcohol and glycerin. The stabilized dentifrice grade is prepared specially for use in dentifrices and does not set-up hard when used to formulate tooth paste.

GRADES: Regular N.F. grade +stabilized dentifrice grades.

USES: Medicinal; mineral supplement for foods and cereals; polishing ingredient in tooth pastes and powders.

SHIPPING INFORMATION: Calcium Phosphate. 80 and 100-lb. bags; 100 and 225-lb. fiber drums.

0557186

TOWOLDMON0040920
WATER_PCB-00031966

DICALCIUM PHOSPHATE, FEED GRADE

See Page M-5/7

H. T. MONOCALCIUM PHOSPHATE *Monohydrate.*

INORGANIC DIVISION

STANDARD FORM: Powder to granular.

PROPERTIES: A free-flowing bead form of MOP; soluble in water, giving an acid reaction.

GRADES: Differ in particle size only. Regular for phosphated and self-rising flour and baking powder. Granular for baking powder. Fine for bread improvers and yeast food. All grades meet U. S. Pure Food Law requirements. Special grades will be supplied on request.

USES: Leavening agent in biscuits and crackers and acid leavening agent in pancakes; sole acid agent or mixed with sodium aluminum sulfate or sodium acid pyrophosphate in baking powders; in making self-rising, phosphated plain flour and prepared flours; to control pH of solution in malt. Used as ingredient in manufacture of glass.

SHIPPING INFORMATION: Phosphate of Calcium. 100-lb. bags; 350-lb. drums.

PY-RAN® ANHYDROUS MONOCALCIUM PHOSPHATE

INORGANIC DIVISION

FORMULA: $CaH_4P_2O_8$ or $CaH_4(PO_4)_2$

MOLECULAR WEIGHT: 234.17

PROPERTIES: An anhydrous monocalcium phosphate used as an acid component for leavening agents in self-rising flours and corn meal, also baking powders and prepared mixes. Has delayed leavening properties. Conforms with all Federal and State Pure Food Laws.

SHIPPING INFORMATION: Phosphate of Calcium. 100-lb. bags.

TRICALCIUM PHOSPHATE

See Page M-5/7

PHOSPHORIC ACIDS

PHOSPHORIC ACID *(75, 80 and 85%)*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: H_3PO_4

MOLECULAR WEIGHT: 98.00

GRADES: U.S.P.; food, meets all U. S. Pure Food Law requirements: commercial, clear, water-white liquid.

SPECIFICATIONS: Clear, water-white liquid miscible with water in all proportions: 75%, 80% and 85% H_3PO_4.

PHOSPHORIC ACID PLANTS. Complete, wet phosphoric acid manufacturing plants using the Prayon process offered by Engineering Sales Department.

USES: To increase translucency and improve color of porcelains and as a vitrifying agent and flux; manufacture of sodium phosphates, ammonium phosphates, calcium phosphates and other phosphates; production of albumin derivatives; drying agent in the synthesis of various intermediate chemicals and dyes; process engraving and litho trades; penetrant to aid in the absorption of the gum on envelopes; the manufacture of gelatin; substitute for tartaric and citric acids in jelly, preserves and soft drinks; opacifier in glass manufacture; manufacture of certain pharmaceutical chemicals and dental cements; glycerophosphate manufacture and purification of hydrogen peroxide; for brightening the finish on rope and twine; coagulant of rubber latex; manufacture of rustproofing compounds; silage preservation; defecating and clarifying agent in sugar; for brightening the color of silk; dyeing of cotton; calico printing; water softening and correction of alkalinity; bright polishing of aluminum; electro polishing of stainless and carbon steels; steel pickling; manufacture of special bricks; petroleum catalyst; aluminum bright dip bath component.

SHIPPING INFORMATION: Phosphoric Acid, 200 and 700-lb. stainless steel drums; 700-lb. lacquer lined drums; tank cars and tank trucks.

PHOSPHOLEUM*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: H_3PO_4

MOLECULAR WEIGHT: 98.00

GRADES: Industrial, commercial liquid.

SPECIFICATIONS: Clear miscible with water in all proportions 105% H_3PO_4.

USES: Natural desiccant; sequestrant for trace minerals; catalyst or dehydrator in organic synthesis; drying agent in the synthesis of various intermediate chemicals and dyes; manufacture of rustproofing compounds; steel pickling; manufacture of special bricks; petroleum catalyst.

SHIPPING INFORMATION: Phosphoric Acid. Tank cars and tank trucks.

*Monsanto trademark

POTASSIUM PHOSPHATES

MONOPOTASSIUM PHOSPHATE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: KH_2PO_4

MOLECULAR WEIGHT: 136.09

STANDARD FORM: White crystals.

TYPICAL ANALYSIS: P_2O_5, 51.69%; K_2O, 34.31%; ignition loss 13.24%; SO_3 none; pH 4.6.

USES: To control pH of culture media in penicillin manufacture; special medicinal purposes; soluble fertilizers.

SHIPPING INFORMATION: Potassium Phosphate. 350 and 150-lb. net drums; 100-lb. bags.

TETRAPOTASSIUM PYROPHOSPHATE

Potassium Phosphates.

INORGANIC DIVISION

FORMULA: $K_4P_2O_7$

MOLECULAR WEIGHT: 330.34

STANDARD FORM: Powder.

PROPERTIES: White powder, hygroscopic in air; pH value in 1% solution 10.4 at 25°C.; solubility 190 gms. in 100 gms. water at 25°C.

USES: In textile oils and soaps to increase emulsifying values and to prevent formation of insoluble hard water soaps; clarifying agent; to improve cleansing action of soaps.

SHIPPING INFORMATION: Washing Compound Dry. 350 and 150-lb. drums.

TRIPOTASSIUM PHOSPHATE *Potassium Phosphates.*

INORGANIC DIVISION

FORMULA: K_3PO_4

MOLECULAR WEIGHT: 212.27

STANDARD FORM: Powder.

PROPERTIES: White crystalline powder soluble in water; insoluble in alcohol; very hygroscopic.

GRADES: Hydrated.

USES: Used in synthetic (cold) rubber manufacturing.

SHIPPING INFORMATION: Potassium Phosphate. 300-lb. net fiber drums.

SODIUM PHOSPHATES

DISODIUM PHOSPHATE, ANHYDROUS

INORGANIC DIVISION

FORMULA: Na_2HPO_4

MOLECULAR WEIGHT: 141.98

STANDARD FORM: Powder.

PROPERTIES: Soluble in water; insoluble in alcohol; on exposure to air will absorb 2-7 mols H_2O depending on humidity and temperature; loses molecular water at 240°C. forming tetrasodium pyrophosphate; pH of 1% solution 8.8 at 25°C. One lb. anhydrous product equivalent to 2.5 lbs. crystalline (dodecahydrate).

GRADES: Food (Granular and Powdered) Medicinal, U.S.P.

USES: For boiler water treatment; in making glazes for potteries, porcelains and chinaware; as an emulsifier in making process cheese; in various chemical processes; in manufacture of dyestuffs such as Schnitzler's green; in the preparation of enamels; in tinning and soldering; in leather tanning; as a bath ingredient in galvanoplastic work; in the manufacture of pigments such as cobalt phosphate; in the weighting of silk and impregnating of textiles in dyeing and calico printing; in the adjustment of condensed milk; medicinal.

SHIPPING INFORMATION: Disodium Phosphate. 100-lb. bags; 350 and 100-lb. drums.

DISODIUM PHOSPHATE, DUOHYDRATE

INORGANIC DIVISION

FORMULA: $Na_2HPO_4 \cdot 2H_2O$

MOLECULAR WEIGHT: 178.0

STANDARD FORM: Crystalline powder.

PROPERTIES: Soluble in water, insoluble in alcohol; equivalent to 82% of sodium phosphate, di, anhydrous (see preceding product for further information on properties.)

GRADES: Food (conforms with Federal and State Pure Food Laws).

USES: Especially recommended for use in preventing coagulation during condensation of milk and as an emulsifying agent in processing cheese.

SHIPPING INFORMATION: Disodium Phosphate. 100-lb. bags.

TOWOLDMON0040921
WATER_PCB-00031967

LEVN-LITE*

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: Sodium Aluminum Phosphate-based product.

USES: As a leavening in cake mixes; characterized by its delayed leavening properties; conforms to all Federal and State Pure Food Laws.

SHIPPING INFORMATION: Phosphate of Soda. Packaged in 100-lb. fiber drums.

MONOSODIUM PHOSPHATE

See Page M-5/7

OILFOS® GLASSY SODIUM PHOSPHATE

INORGANIC DIVISION

STANDARD FORM: Dry powder.

PROPERTIES: *Oilfos* is used exclusively for controlling viscosity of oil well drilling muds.

SHIPPING INFORMATION: Phosphate of Soda. 100-lb. net paper bags; triotex bags.

PAN-O-LITE*

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: Sodium Aluminum Phosphate-based product.

USES: As a leavening agent in pancake mixes and cake mixes; characterized by its delayed leavening properties. Conforms to all Federal and State Pure Food Laws.

SHIPPING INFORMATION: Phosphate of Soda. Packaged in 100-lb. fiber drums.

PETROFOS® SODIUM TRIPOLYPHOSPHATE

INORGANIC DIVISION

FORMULA: $Na_5P_3O_{10}$

MOLECULAR WEIGHT: 367.93

STANDARD FORM: Granules or powder.

PROPERTIES: White granular material or white powder; water-soluble with excellent water-softening and detergent properties; pH 9.5 of 1% solution. A calcium sequestering agent and also has a high binding power for most of the metals of Group II and Group IV.

USES: Soap builder; detergent and water softener; conditioning oil drilling muds; eliminates scum and soap curds in hard water.

SHIPPING INFORMATION: Phosphate of Soda. 100-lb. bags; 350 and 100-lb. drums.

SODIUM ACID PYROPHOSPHATE

INORGANIC DIVISION

FORMULA: $Na_2H_2P_2O_7$

MOLECULAR WEIGHT: 221.97

STANDARD FORM: Powder.

PROPERTIES: White powder, soluble in water; min. neutralizing value 74; pH of 1% solution 4.2.

GRADES: Food and Industrial. Food Grade meets all U. S. and State Pure Food Law requirements.

USES: As baking acid for prepared flours, refrigerated doughs, doughnut flours; in manufacture of baking powders and baking creams; in oil well drilling muds.

SHIPPING INFORMATION: Sodium Phosphate. 100-lb. bags; 325 and 100-lb. drums.

SODIUM HEXAMETAPHOSPHATE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: An amorphous glass of composition equivalent to $Na_{n+2}P_nO_{3n}$.

AVERAGE MOLECULAR WEIGHT: 1490

STANDARD FORMS: Glass platelets, granules and powder.

TYPICAL ANALYSIS: 32.5% total Na_2O; 67.0% total P_2O_5; pH 1% solution, 6.9; less than 1.0 ppm Pb; less than 1.0 ppm F; 0.1 ppm As_2O_3; trace SO_4; 0.010% iron.

PROPERTIES: Infinitely soluble in water. Bulk density—glass platelets, 77.5 lbs./cu. ft.; granules, 99.5 lbs./cu. ft.; powder, 100.0 lbs./cu. ft.

USES: Water softener; in treatment of boiler water; in dishwashing compositions and detergents; deflocculating agent; textile and food processing.

SHIPPING INFORMATION: Sodium Phosphate, NOIBN. 100-lb. net multiwall paper bags; 100-lb. net burlap bags.

**Monsanto trademark*

SODIUM TRIPOLYPHOSPHATE

INORGANIC DIVISION

FORMULA: $Na_5P_3O_{10}$

MOLECULAR WEIGHT: 367.93

STANDARD FORM: Granules or powder.

PROPERTIES: White granular material or White powder; water-soluble with excellent water-softening and detergent properties; pH 9.5 of 1% solution. A calcium sequestering agent and also has a high binding power for most of the metals of Group II and Group IV.

USES: Soap builder; detergent and water softener; conditioning oil drilling muds; eliminates scum and soap curds in hard water.

SHIPPING INFORMATION: Phosphate of Soda. 100-lb. bags; 350 and 100-lb. drums.

SQ PHOSPHATE

INORGANIC DIVISION

STANDARD FORM: Dry powder.

TYPICAL ANALYSIS: P_2O_5 63.0%; Na_2O 36.0%; pH 1% solution 7.9.

PROPERTIES: SQ Phosphate is a glassy poly phosphate with high calcium sequestering properties. It is used in formulating industrial cleaning compounds such as dishwashing and dairy cleaners.

SHIPPING INFORMATION: Phosphate of soda. 100-lb. net paper bags or triotex bags.

STABIL -9*

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: Sodium Aluminum Phosphate blended with calcium phosphates.

USES: Primarily as a leavening in self-rising flour. Conforms with all Federal and State Pure Food Laws.

SHIPPING INFORMATION: Phosphate of Soda. Packaged in 100-lb. bags.

TRISODIUM PHOSPHATE, ANHYDROUS

INORGANIC DIVISION

FORMULA: Na_3PO_4

MOLECULAR WEIGHT: 164

STANDARD FORM: Granular, nearly white crystals.

TYPICAL ANALYSIS: Assay, Na_3PO_4—97.9%. Loss on ignition at 550°C.—1.0%.

USES: The same as ordinary Trisodium Phosphate but where higher concentration or less bulk is desired, one pound is equivalent to 2.33 pounds of the crystalline grade.

SHIPPING INFORMATION: Trisodium Phosphate. 100-lb. bags; 350 and 100-lb. drums.

TRISODIUM PHOSPHATE, CRYSTALLINE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $Na_3PO_4 \cdot 12H_2O$

MOLECULAR WEIGHT: 380.16

STANDARD FORM: Crystalline material.

SPECIFICATIONS: White crystalline material, uniformly sized; quickly soluble in water giving an alkaline reaction; pH of 1% solution 11.8.

USES: Principally in cleaners and detergents for both household and industrial use; in fruit cleaning to remove insecticide sprays and inhibit growth of fruit mold; in water treatment for softening and conditioning water.

SHIPPING INFORMATION: Trisodium Phosphate. 100-lb. bags; 325 and 100-lb. drums.

TETRASODIUM PYROPHOSPHATE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $Na_4P_2O_7$

MOLECULAR WEIGHT: 265.95

STANDARD FORM: Crystals or granules.

PROPERTIES: White crystalline material or white granular powder; pH of 1% solution 10.2; solubility: 6 parts in 100 parts of water at 15°C., 40 parts in 100 parts of water at 100°C.

GRADES: Anhydrous.

USES: As a soap builder; conditioning oil drilling wells; in bleaching, especially for straw, and as an ink eradicator; in manufacture of iron pyrophosphate and other pyrophosphates; household and industrial cleaner and detergent; in dye bath for putting certain types of dye in complete solution; electroplating; metal cleaning; electrolytic separation of various metals; as emulsifier in process cheese manufacture; degumming textiles; stabilizing hydrogen peroxide baths; reagent for de-inking newsprint.

SHIPPING INFORMATION: Sodium Phosphate, Regular—100-lb. paper bags; 300-lb. and 100-lb. drums; Powdered—100-lb. paper bags; 350-lb. and 100-lb. drums.

0557188

TOWOLDMON0040922
WATER_PCB-00031968

OTHER PHOSPHORUS AND PHOSPHORUS DERIVATIVES

ALKOPHOS® *Aluminum Acid Phosphates.*

INORGANIC DIVISION

STANDARD FORM: Liquid.

PROPERTIES:

	Alkophos O®	Alkophos OE
P_2O_5	33.1%	36.0%
Al_2O_3	8.6%	11.0%
Sp. Gr. 25°/15.5°C.	1.47	1.60

USES: Coating for electrical steel transformer and motor laminations; binder for high temperature insulation brick and other refractories; high temperature water insoluble binder or adhesive.

SHIPPING INFORMATION: Aluminum Phosphorus. 175-lb. and 650-lb. drums.

ALKYL ACID PHOSPHATES

INORGANIC DIVISION—LITERATURE AVAILABLE

TYPICAL ANALYSIS:

Phosphoric Acid Ester	P_2O_5 %	Sp. Gr. @ 25°C.	Lbs. per Gal.	Acid No. Mg KOH/g
Amyl	40	1.09	9.1	362
n-Butyl	40	1.13	9.4	396
Ethyl	54	1.29	10.7	523
n-Propyl	45	1.21	10.1	455

USES: Additions to paint and varnish compositions to improve adhesion to metal surfaces; as catalyst in urea resin formation; as polymerizing agents for resins and oils.

SHIPPING INFORMATION: Acids Liquid NOIBN. Amyl: 135-lb. and 500-lb. drums. n-Butyl: 135-lb. and 500-lb. drums. Ethyl: 150-lb. and 575-lb. drums. n-Propyl: 140-lb. and 525-lb. drums.

CRESYL DIPHENYL PHOSPHATE *(Gasoline Grade)*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Clear, light amber liquid.

SPECIFICATIONS: Color NPA 1.5 max.; Sp. Gr. 1.200—1.215 at 25/25°C.; Phosphorus 8.7—9.2%; Acidity 0.2 mg. KOH/gram max.

GENERAL INFORMATION: Soluble in aromatic and alifatic solvents; insoluble in water. Soluble in gasoline at dosage normally used.

USES: Effective in combating abnormal combustion due to glowing combustion chamber deposits and fouled spark plugs. A proved surface ignition control agent and combustion deposit modifier. Recommended dosage 0.4—0.6 cc Cresyl Diphenyl Phosphate per gallon of gasoline (varies depending on lead content of gasoline.)

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. non-returnable black iron drums; tank cars and tank trucks.

CRESYL DIPHENYL PHOSPHATE *(Plasticizer Grade)* SANTICIZER® 140

See Page M-5/40

FERROPHOSPHORUS *Iron Phosphide.*

INORGANIC DIVISION

STANDARD FORM: Chill cast lumps, egg size, ½ inch or less.

TYPICAL ANALYSIS: A gray alloy of iron and phosphorus which fractures easily; contains 23-26% phosphorus.

USES: Used in iron and steel castings to increase fluidity; in sheet steel to prevent sticking of sheets in final rolling; in wire to give stiffness and better surface for drawing; paint pigment.

SHIPPING INFORMATION: Ferrophosphorus. Bulk; 500-lb. bbls.

METHYL DIPHENYL PHOSPHATE *(Phosflex® MDP)*

See Page M-5/28

PHOSPHORUS, ELEMENTAL

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: Light yellow, wax-like semi-transparent solid; burns spontaneously in air to form P_2O_5; M.P.44. 1°C.; very soluble in carbon bisulfide; insoluble in water.

GRADES: Monsanto process of manufacture provides over 99.9% purity.

USES: Manufacture of phosphorus alloys, phosphoric anhydride, phosphorus compounds, phosphoric acid, rodent poisons, flares, smoke screens, etc.

SHIPPING INFORMATION: Phosphorus Yellow, toxic and inflammable (yellow label required). 400-lb. drums; tank cars.

PHOSPHORUS OXYCHLORIDE

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: $POCl_3$

MOLECULAR WEIGHT: 153.35

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Water-white liquid; assay 99.75% $POCl_3$; Sp. Gr. 15.5°C./15.5°C., 1.685; free Cl_2, trace; PCl_3, 0.12%; distillation range °C.: first drop 106.7, 1-96 ml 1.0, dry point 107.9.

USES: A chlorinating agent and catalyst in the preparation of various intermediates, dyestuffs, medicinals; reagent in the preparation of acetic anhydride and organic phosphates.

CAUTION: Care must be exercised in handling this product. Avoid breathing its vapors. Avoid contact with the skin. It reacts with water with explosive violence.

SHIPPING INFORMATION: Phosphorus Oxychloride. Corrosive liquid (white label required). 725-lb. nickel drums; 4,000 and 8,000-gal. nickel tank cars.

PHOSPHORUS PENTASULFIDE

INORGANIC DIVISION

FORMULA: P_2S_{10}

MOLECULAR WEIGHT: 444.58

STANDARD FORM: Light greenish yellow granular powder.

PROPERTIES: Monsanto is unique in offering both highly reactive and low reactive grades distilled for highest purity.

USES: Manufacture of lubricating oil additives; thiophosphate insecticides; thiophosphate salts for ore flotation; also as a catalyst in production of blown asphalt; and as an intermediate in organic synthesis.

SHIPPING INFORMATION: Chemicals NOIBN. 150 and 325-lb. drums.

PHOSPHORUS PENTOXIDE *(Phosphoric Anhydride)*

INORGANIC DIVISION

FORMULA: P_2O_5

MOLECULAR WEIGHT: 141.96

STANDARD FORM: White microcrystalline powder.

PROPERTIES:

Vapor Pressures: (after J. C. Southard and R. A. Nelson—JACS, 59, 911 –1937–)

p = vapor pressure in cm. of mercury
T = absolute Temperature
A (low temperature form)
B (high temperature form)
L (liquid)

$\text{Log}_{10}p = 9.792—(5000/T)$
$\text{Log}_{10}p = 11.113—(7930/T)$
$\text{Log}_{10}p = 6.809—(4320/T)$

Atmospheric sublimation temperature: 358.9°C.
Heat of vaporization:
A—22.800 calories per gm. molecule
B—36.200 calories per gm. molecule
L—19.700 calories per gm. molecule
Heat of fusion: 16.500 calories per gm. molecule
Probable molecular formula of vapor: P_4O_{10}

TYPICAL ANALYSIS: P_2O_5—99.5% lower oxides .01% as P_2O_5; color 60% water solution 50 APHA.

USES: As a desiccant; in the production of alkyl phosphates; a catalyst in air blown asphalt; in the manufacture of fluorophosphates; in the making of phosphorus insecticides; and in the production of oil additives.

SHIPPING INFORMATION: Phosphoric Anhydride. (Flammable—yellow label required). 400 and 80-lb. drums.

PHOSPHORUS TRICHLORIDE

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: PCl_3

MOLECULAR WEIGHT: 137.35

TYPICAL ANALYSIS: Water-white liquid; assay 99.75% PCl_3; Sp. Gr. 15.5°C./15.5°C. 1.586; distillation range °C.: first drop 74.8, 1-96 ml 0.9, dry point 76.0.

USES: A chlorinating agent and catalyst in the preparation of various intermediates and dyestuffs; reagent in the preparation of acetic anhydride, organic phosphates, germicides and medicinals; manufacture of phosphorus oxychloride and phosphorus pentachloride; in producing iridescent metallic deposits.

CAUTION: Care must be exercised in handling this product. Reacts with water. Avoid breathing its vapors. Avoid contact with the skin.

SHIPPING INFORMATION: Phosphorus Chloride. "Corrosive liquid" label required. 675-lb. (approx.) nickel drums; 4,000 and 8,000-gal. nickel tank cars.

TRICRESYL PHOSPHATE *See Page M-5/37*

TRIPHENYL PHOSPHATE *See Page M-5/38*

0557189

TOWOLDMON0040923
WATER_PCB-00031969

TRIPHENYL PHOSPHITE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 310.28

SPECIFICATIONS: Light yellow solid or oily liquid; Sp. Gr. 1.179 to 1.183; free phenol 0.8% max.; hydrolyzable chlorine 0.01% max.; color APHA 150 max.; refractive index at 25°C. 1.587 to 1.590.

PROPERTIES: A crystalline solid at slightly below room temperature; at higher temperatures is an oily liquid weighing about 9.85 lbs. per gal.

USES: A color improver and metal scavenger in alkyd resin production. Also used as a stabilizer in polyvinyl chloride compounds. Monsanto's patent No. 2572571 covers this and resellers and users must be licensed.

SHIPPING INFORMATION: Chemicals NOIBN. 55 and 5-gal. drums.

PETRO CHEMICALS

ETHYLENE AND ETHYLENE CO-PRODUCTS

BENZENE

HYDROCARBONS DIVISION

FORMULA:



MOLECULAR WEIGHT: 78.1.

STANDARD FORM: Liquid.

GENERAL INFORMATION: Benzene is an aromatic hydrocarbon, used in the manufacture of styrene, phenol, cyclohexane synthetic detergents, and many other organic chemicals and intermediates.

SHIPPING INFORMATION: Benzol. Flammable liquid. Red label. Tank cars, tank trucks.

BUTENE-2 CONCENTRATE

HYDROCARBONS DIVISION

FORMULA: $CH_3\ CH=CH\ CH_3$

MOLECULAR WEIGHT: 56.1.

STANDARD FORM: Liquid (under pressure).

GENERAL INFORMATION: Butene-2 Concentrate is a colorless olefinic hydrocarbon used as a cross-linking agent in the manufacture of chemical intermediates and in specialty solvent applications. It is predominantly *cis* and *trans* butene-2.

SHIPPING INFORMATION: Liquefied petroleum gas. Flammable gas; red gas label. Tank cars, tank trucks.

BUTYLENES — *Mixed Isomers*

HYDROCARBONS DIVISION

FORMULA: C_4H_8

MOLECULAR WEIGHT: 56.1.

STANDARD FORM: Liquid (under pressure).

GENERAL INFORMATION: Mixed butylenes are used in the manufacture of resins and chemical intermediates. Principal constituents are *iso*-butylene and *n*-butene-1.

SHIPPING INFORMATION: Liquefied petroleum gas. Flammable gas; red gas label. Tank cars, tank trucks.

C_5 STREAM — *Mixed Hydrocarbons*

HYDROCARBONS DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: This mixed C_5 Stream contains primarily mono and di-olefinic five-carbon hydrocarbons, including isoprene, piperylenes, and various pentylene isomers. It is used in resins and other polymers.

SHIPPING INFORMATION: Flammable liquid. NOS (Petroleum Oil, NOIBN). Red label. Tank cars, tank trucks.

C_9 AROMATIC CONCENTRATE *Mixed Isomers*

HYDROCARBONS DIVISION

FORMULA: CH_3



MOLECULAR WEIGHT: 120.2

STANDARD FORM: Liquid.

GENERAL INFORMATION: This is a highly concentrated C_9 aromatic stream containing primarily tri-methyl-benzene isomers. It is used in specialty solvent applications and in manufacture of chemical intermediates.

SHIPPING INFORMATION: Petroleum Naphtha. Tank cars, tank trucks.

ETHYLENE

HYDROCARBONS DIVISION

STANDARD FORM: Gas

FORMULA: C_2H_4

MOLECULAR WEIGHT: 28.05.

TYPICAL ANALYSIS: 99.80% min.

USES: Major uses are in the production of polyethylene, ethyl alcohol, ethylene glycol and styrene and various other chemical intermediates.

SHIPPING INFORMATION: Ethylene Gas by Pipeline.

NAPTHALENE

HYDROCARBONS DIVISION

FORMULA:



MOLECULAR WEIGHT: 128.2.

STANDARD FORM: White, crystalline, volatile solid.

GENERAL INFORMATION: Naphthalene is an aromatic hydrocarbon, used in the manufacture of phthalic anhydride and insecticides, and as a moth repellent.

SHIPPING INFORMATION: Naphthalene. Tank cars, tank trucks.

ORTHO-XYLENE

HYDROCARBONS DIVISION

FORMULA: CH_3



MOLECULAR WEIGHT: 106.2.

STANDARD FORM: Liquid.

GENERAL INFORMATION: Ortho-Xylene is an aromatic hydrocarbon used primarily in manufacture of phthalic anhydride as well as other chemical intermediates. Principal impurities are often C_9 aromatic isomers.

SHIPPING INFORMATION: Xylol. Flammable liquid; red label. Tank cars, tank trucks.

PROPYLENE

HYDROCARBONS DIVISION

FORMULA: $CH_2CH=CH_2$

MOLECULAR WEIGHT: 42.1.

STANDARD FORM: Liquid (under pressure).

GRADES: 92% min. purity; 80% min. purity.

GENERAL INFORMATION: Propylene is an olefinic hydrocarbon raw material used in manufacture of alcohols, acrylonitrile, phenol and other chemical intermediates. The other principal component in both grades is propane.

SHIPPING INFORMATION: Liquefied petroleum gas. Flammable gas; red gas label. Tank cars, tank trucks.

RESIN OIL

HYDROCARBONS DIVISION

STANDARD FORM: Liquid.

GENERAL INFORMATION: Resin Oil is a highly unsaturated alkyl-aromatic hydrocarbon mixture used in the manufacture of high-grade petroleum resins.

SHIPPING INFORMATION: Petroleum naphtha. Tank cars, tank trucks.

0557190

TOWOLDMON0040924
WATER_PCB-00031970

RESIN PR

HYDROCARBONS DIVISION

DESCRIPTION: An aromatic resinous petroleum residue.

USES: In the production of petroleum coke, carbon black and miscellaneous other industrial applications.

SHIPPING CLASSIFICATION: "Resinous petroleum residue—by-product of ethylene production." In barges, tank cars and trucks.

TOLUENE

HYDROCARBONS DIVISION

FORMULA:



MOLECULAR WEIGHT: 92.1.

STANDARD FORM: Liquid.

GENERAL INFORMATION: Toluene is an aromatic hydrocarbon, used in the manufacture of a variety of organic intermediates and in a broad range of solvent applications.

SHIPPING INFORMATION: Toluol. Flammable liquid; red label. Tank cars, tank trucks.

XYLENES, MIXED *Mixture of meta and para isomers*

HYDROCARBONS DIVISION

FORMULA:



MOLECULAR WEIGHT: 106.2

STANDARD FORM: Liquid.

GENERAL INFORMATION: Mixed (meta-para) Xylenes are used in manufacture of chemical intermediates and in specialty solvent applications.

SHIPPING INFORMATION: Xylol. Flammable liquid; red label. Tank cars, tank trucks.

PETROLEUM ADDITIVES

METHYL DIPHENYL PHOSPHATE *(Phosfanex® MDP)*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Clear, oily liquid.

SPECIFICATIONS: Color APHA 200 mx.; Sp. Gr. 1.225—1.235 at 25°/25° C.; phosphorus 11.5% min.; pour point −85°F.

USES: Effective in combating abnormal combustion due to glowing combustion chamber deposits and fouled spark plugs. A proved surface ignition control agent and combustion deposit modifier.

SHIPPING INFORMATION: Carbon, Gum or Sludge Removing Compounds, NOIBN; 55-gal., non-returnable black iron drums, tank cars, tank trucks.

SANTOLENE® C FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Viscosity @ 100°F. 259 SUS. Flash Point, °F. 170. Sp. Gr. 60°/60°F. 0.884.

USES: Corrosion and rust inhibitor in light petroleum distillates resulting in significant reduction of rusting and corrosion of pipelines and other petroleum product transmission equipment.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. steel drums; tank cars.

SANTOLENE® F-C FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An oily liquid having the following typical properties: Sp. Gr. 60°/60°F. 1.02; color ASTM diluted 7; barium 10%; sulfur 2%.

USES: Functions as a dispersant in burner fuel oils to prevent screen clogging and reduce rusting. Concentrations as low as .002% have been satisfactory.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 54-gal. black iron drums.

SANTOLENE® H-LV FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Liquid having the following typical properties: Viscosity at 100°F. 8.03 cs., Flash Point, 235°F.; Sp. Gr. 60°/60°F. 8.36.

USES: Sludge inhibitor for fuel oils to prevent burner screen and filter clogging and to reduce rusting. Concentrations as low as 25#/1000 barrels have been used.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. black iron drums.

SANTOLENE® J FUEL OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An amber colored liquid having the following typical properties: Viscosity of 1.30 centistokes at 210°F.; Flash Point 200°F.; Specific Gravity at 60°/60°F. of 0.840.

USES: Fuel oil stabilizing agent designed to prevent color degradation and sediment formation and reduce rusting in fuel oils. A concentration of 25 pounds per 1000 barrels is satisfactory for most base oils.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. black iron drums; tank cars.

SANTOLUBE® 70 OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An oily viscous liquid having the following typical properties: Sp. Gr. 0.926 at 60°/60°F.; Saybolt Universal viscosity 240 seconds at 210°F.

USES: Rust inhibitor for turbine oils.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. steel drums.

SANTOLUBE® 203-C OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A more concentrated (10% Barium) form of *Santolube* 203A and 203B. Saybolt Universal viscosity of 450 seconds at 100°F.; Barium concentration 10%; Specific Gravity 60°/60°F. of 0.981.

USES: A detergent-dispersant additive designed primarily for use in motor oils. When used with suitable anti-oxidants and corrosion inhibitors, alone and with a phenate (*Santolube* 333), it is recommended for compounding Heavy Duty Oils of the MIL-L-2104A type. Also recommended for Supplement I and Series III formulations.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums and tank cars.

SANTOLUBE® 333 OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid with the following typical properties: Viscosity at 210°F. of 11.0 centistokes; Flash Point 360°F.; Sp. Gr. 60°/60°F. of 1.01; Barium Concentration of 10%.

USES: A detergent-dispersant additive designed primarily for use in Heavy Duty Motor Oils. Recommended for use with *Santolube* 203O and suitable corrosion inhibitor (*Santolube* 393) for compounding MIL-L-2104A and Supplement I and Series III oils.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums; tank cars.

0557191

TOWOLDMON0040925
WATER_PCB-00031971

SANTOLUBE® 392 OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Flash Point 330°F.; phosphorus 7.3%; sulfur 15.2%; zinc 6.3%; viscosity at 100°F. 1260 SUS, at 210°F. 60 SUS; Sp. Gr. at 60°/60°F. 1.104.

USES: An effective inhibitor and motor oil anti-oxidant for upgrading the quality of straight base oils when used alone and which is also used in combination with detergent-dispersant additives (e.g., *Santolubes* 203-C, 333, 401, 410) to meet operating conditions imposed by passenger cars, trucks, tractors and other equipment powered by petroleum fuels.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums or tank cars.

SANTOLUBE® 393 OIL ADDITIVE (ZINC DIALKYL DITHIOPHOSPHATE)

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid with the following typical properties: Viscosity at 100°F. of 150 centistokes; Flash Point 260°F.; Sp. Gr. 60°/60°F. of 1.120.

USES: An effective and versatile anti-oxidant and bearing corrosion inhibitor for lubricating oils. Finds wide application in compounding Premium and Heavy Duty Motor Oils.

SHIPPING INFORMATION: Chemicals NOIBN. 55-gal. black iron drums; tank cars.

SANTOLUBE® 394-C OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An amber, viscous liquid with the following approximate properties: viscosity 15 to 25 cts. at 210°F.; Sp. Gr. 1.02 at 60°/60°F.; phosphorus 4.7%; sulfur 13.1%.

USES: An effective and versatile anti-oxidant and bearing corrosion inhibitor for engine lubricating oils. Finds wide application in compounding Premium and Heavy Duty Motor Oils.

SHIPPING INFORMATION: Petroleum Oils NOIBN. 55-gal. steel drums; tank cars.

SANTOLUBE® 395-X OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: An amber liquid with the following typical characteristics: Viscosity 12 to 18 cts. at 210°F.; Sp. Gr. 1.005 at 60°/60°F.; phosphorus 3.7%; sulfur 11%; barium 1.1%.

USES: An oxidation and bearing corrosion inhibitor for crankcase oils designed to meet Premium Motor Oil requirements.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. steel drums; tank cars.

SANTOLUBE® 401 OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid having the following typical properties: Viscosity @ 100°F. 1153.2 SUS, @ 210°F. 113.3 SUS; barium 8.4%; sulfur 3.35%; zinc 0.80%; Sp. Gr. 60°/60°F. 1.0151.

USES: A detergent-dispersant-inhibitor additive which when used alone and in combination with inhibitor (*Santolube* 392 or 393) permits the compounding of single and cross-graded motor oils of the MIL-L-2104A, and Supplement I types.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums; tank cars.

SANTOLUBE® 410 OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A liquid having the following typical properties: Viscosity at 100°F. 1350 SUS, at 210°F. 148 SUS; flash point 380°F.; barium 9.50%; sulfur 1.82%.

USES: A detergent-dispersant additive which is used at varying concentrations to formulate motor oils meeting the performance requirements of the Military and the automotive industries. This product is always used with a suitable inhibitor (*Santolube* 392 or *Santolube* 393).

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums; tank cars.

SANTOPOID® 22-RI GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam-inhibited, dark, oily liquid having superior rust preventive properties and having the following typical properties: Sp. Gr. 60°/60°F. 1.135%; flash point 300°F.; sulfur 13.3%; phosphorus 4.0%; chlorine 14.5%; zinc 3.7%.

USES: Used in compounding gear lubricants as defined by the American Petroleum Institute as GL-4 type service. Also used in compounding gear lubricants complying with MIL-L-002105A Ordinance (this specification will be called MIL-L-2105B when it receives full acceptance by the armed services as anticipated).

SHIPPING INFORMATION: Chemicals NOIBN. 54-gal. black iron drums; tank cars.

SANTOPOID® 23-RI GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam-inhibited, dark liquid having superior rust preventive properties and the following typical properties: Pour Point +15°F.; flash point 300°F.; Sp. Gr. 60°/60°F. 1.130; vis. at 100°F. 750 SUS; sulfur 13.3%; chlorine 14.0%; phosphorus; 4.1%; zinc 3.7%.

USES: To compound multipurpose Hypoid lubricants providing adequate performance in automotive axles equipped with limited-slip mechanisms, and as well to formulate gear lubricants complying with MIL-L-002105A Ordinance (this specification will be called MIL-L-2105B when it receives full acceptance by the armed services as anticipated).

SHIPPING INFORMATION: Chemicals NOIBN. 54-gal. black iron drums; tank cars.

SANTOPOID® 33 GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam inhibited, dark, oily, viscous liquid with the following typical properties: Sp. Gr. 1.13 at 60°/60°F.; Flash Point 250°F.; Saybolt Universal viscosity 60 at 210°F.; sulfur 8.5%; chlorine 26.0%; phosphorus 0.56%.

USES: Recommended for compounding gear lubricants formerly known as Military Specification MIL-L-2105 quality.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. steel drums; tank cars.

SANTOPOID® 35 GEAR OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A foam inhibited, dark, oily, viscous liquid with the following typical properties: Sp. Gr. 60°/60°F. approx. 1.15; flash point 250°F.; viscosity @ 210°F. 87 SUS; sulfur 8.4%; chlorine 28%; phosphorus 0.54%.

USES: Used for compounding gear lubricants of former MIL-L-2105 quality.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums; tank cars.

SANTOPOID® S OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A dark, oily, viscous liquid, chemically a chlornaphtha xanthate: Sp. Gr. approximately 1.19 at 60°/60°F.; Flash Point 250°F.; viscosity 63 cts. at 100°F.; sulfur 11%; chlorine 31%.

USES: *Santopoid S* may be used for compounding extreme pressure lubricants. Lower percentages are used for milder E. P. Products.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. steel drums; tank cars.

SANTOPOUR® C OIL ADDITIVE

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A dark liquid with the following typical properties: Flash Point 360°F.; viscosity 1020 SUS at 210°F.; Sp. Gr. 60°/60°F. 0.910.

USES: An effective and economical pour point depressant for all types of wax-bearing oils. Effective at concentrations as low as 0.02%.

SHIPPING INFORMATION: Petroleum Oil NOIBN. 55-gal. black iron drums; tank cars.

0557192

TOWOLDMON0040926
WATER_PCB-00031972

PLASTICS RESINS PLASTICIZERS

STYRENE RESINS / PLASTICS

LUSTRAN® MOLDING AND EXTRUDING COMPOUND

PLASTICS DIVISION—LITERATURE AVAILABLE

Lustran 1

Extrusion	Molding	
761	710	Highest shock resistance, greatest elongation, greatest flexibility.
	610	High shock resistance, good tensile strength, intermediate rigidity.
461	410	Medium shock resistance, intermediate rigidity, high tensile strength, hard surface, high gloss.
261	210	Highest tensile strength, highest gloss, best chemical resistance, best abrasion resistance.

Lustran A

Extrusion & Molding	
10 Series (Regular Flow)	Transparency, high strength, highest rigidity, chemical resistance to such chemicals as acids, bases and petroleum derivatives.
20 Series (Softer Flow)	

LUSTREX® STYRENE MOLDING COMPOUND

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORMS: Monsanto *Lustrex*, one of the lightest and most widely used thermo-plastic molding materials, is available for compression molding, injection molding and extrusion in all types of machines and molds. Special formulations available for sheet extrusion and vacuum forming applications. Special formulations for general purpose application: *Lustrex* HI-Flow 55 (improved flow), *Lustrex* HI-Flow 66 (long flow, moderate set-up), *Lustrex* HI-Flow 77 (good flow, fast set-up); medium and high impact strength applications, *Lustrex* HI-Test 42 and *Lustrex* HI-Test 48 (medium impact), *Lustrex* HI-Test 88 (high impact); heat resistance applications: *Lustrex* High-Heat 99 (up to 204°F.), *Lustrex* HI-Test 89 (heat resistant, high impact).

GENERAL INFORMATION: Other special formulations available for applications requiring ultra-violet light stability (general purpose and impact *Lustrex* perma tone) and dust resistance (general purpose and impact formulations of *Lustrex* Lo-Stat).

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Molding Compound. Monsanto *Lustrex* is tasteless, odorless and non-toxic with high dimensional stability, hardness, rigidity and dielectric strength. It can be molded to any sharply defined detail and finish. Available in a broad range of transparent, translucent and opaque colors as well as crystal.

USES: A wide range of typical applications includes: Refrigerator parts, toys, packaging, air conditioner cabinets, radios, housewares, wall tile, television components, displays, electrical equipments, lighting fixtures, furniture drawers and phonograph records.

INDUSTRIAL USERS: Automotive, Construction, Electronics, Machinery and Appliances, Packaging, Toys, Housewares, Furniture, Lighting.

SHIPPING INFORMATION: Hopper cars (Dri-Flo) fiberboard containers (1000 lbs.), multiwall bags (50 lbs.), drums (350 lbs.). Rail: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Granules.

LUSTREX® EXTRUDING AND CALENDERING MATERIAL

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Monsanto *Lustrex* styrene is furnished in pellets, either natural or colored.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Extruding and calendering material. Can be extruded as sheeting or as profile shapes for various applications requiring high impact strength.

USES: Monsanto *Lustrex* styrene is widely used for such applications as: Refrigerator door liners, toys, lighting fixtures and games.

INDUSTRIAL USERS: Automotive, Construction, Electronics, Machinery and Appliances, Packaging, Toys, Housewares, Furniture, Lighting.

SHIPPING INFORMATION: Hopper Cars (Dri-Flo), fiberboard containers (1,000 lbs.), multiwall bags (50 lbs.), drums (350 lbs.). Rail: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Granules.

LYTRON®

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resins. Promotes adhesion, stabilizes, hardens and thickens emulsion systems.

USES: Alkali-soluble and water soluble resins used in water and latex coating systems.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Automotive, Chemicals, Machinery and Appliance, Packaging, Pulp and Paper, Rubber, Textiles, Emulsion floor waxes, Detergents.

SHIPPING INFORMATION: Bags. Rail: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Granules.

LYTRON® LATEX

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Plasticized or unplasticized latices.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resin.

USES: Main vehicles for latex paints and as modifiers in compounding rubber and other latices.

INDUSTRIAL USERS: Drug, Paint, Varnish and Lacquer, Automotive, Chemical, Detergents, Pulp and Paper, Rubber, Textiles.

SHIPPING INFORMATION: Fiber drums (475 lbs.), Rail: Plastics, Synthetic, liquid NOIBN. Truck: Plastics, Liquid NOI.

LYTRON® TEXTILE RESIN

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Unplasticized polystyrene emulsion used to produce coating and finishes without curing or after-treatment.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile Resin. Gives woolens, rayon and cottons slip resistant finishes.

USES: Textile resin that furnishes durable finishes and long-life to treated fabric without curing or after-treatment.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: Liquipaks (475 lbs.); liquid bulk. Rail: Plastics, Synthetic Liquid, NOIBN. Truck: Plastics, Liquid, NOI.

LYTRON® SYNTHETIC

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Water emulsion and powder.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resin. Used as binders or dispersing agents.

USES: *Lytron* emulsions are used as a binder for glass fibers employed in battery separators, filters, etc. In powder form *Lytron* is used to prevent clay balls in foundry sand and waste water clarification systems.

INDUSTRIAL USERS: Chemicals, Construction.

SHIPPING INFORMATION: Steel Drums (475 lbs.), tank cars, tank trucks. Rail: Plastics, Synthetic Liquid, NOIBN. Truck: Plastics, Liquid, NOI.

POLYVINYL ACETATE

GELVA® COPOLYMER SOLUTIONS

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: Water white or slightly yellow solvent solutions.

PROPERTIES: Available in two types of solvent solutions—*GELVA* C-254B in benzene and *GELVA* C-254H in a mixture of hexane-heptane. Viscosity of *GELVA* C-254B is 1200 cps., while *GELVA* C-254H has a viscosity of 500 cps. Both materials are supplied at 35% solids.

USES: An effective release coating for pressure sensitive tapes. Gives controlled release when used in combination with common backsizing agents which have been applied to paper from organic solutions.

SHIPPING INFORMATION: Available in 55-gallon, resin-lined, closed-head, steel drums, 420 lbs. net weight for *GELVA* C-254B; 350 lbs. net weight for *GELVA* C-254H. Also shipped in truckload quantities (20,000 lbs. min.).

TOWOLDMON0040927
WATER_PCB-00031973

GELVA® POLYVINYL ACETATE COPOLYMER RESINS

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: White, fine beads.

PROPERTIES: Available in six grades of carboxylated polyvinyl acetate resins which have all the properties of polyvinyl acetate but are also soluble in dilute alkali. The resins are also soluble in organic solvents. Films produced from solvent solutions are water resistant, yet may be removed with dilute alkali. Viscosity of 86 grams of resin in 1000 ml. of ethanol ranges from 10 cps. for *GELVA* C-3 V-10 to 110 cps. for *GELVA* M-7 V-100. Softening points range from 123°C. to 180°C. The copolymers have outstanding adhesion to such materials as metals, leather and cellulosics.

USES: Typical applications include hot melt and solvent adhesives; heat-sealable, clear coatings for paper with excellent gloss, printability, grease-proofness, wet rub and abrasion resistance; sizing for rayon, cotton and acetate yarns; anti-tarnish lacquers for silver and metal objects and temporary protective coatings for metal surfaces on aircraft and ships. The alkali soluble nature of copolymer coatings allows easy recovery of scrap in a number of applications.

SHIPPING INFORMATION: Available in non-returnable fiber drums, 100 lbs. net weight.

GELVA® POLYVINYL ACETATE EMULSIONS

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: Aqueous dispersions of polyvinyl acetate resins—milk-white in color.

PROPERTIES: Available in a full range of homopolymers and copolymers which vary in viscosity, particle size, molecular weight, film forming properties and emulsifying systems. Some grades are borax stable, dextrine compatible and have varying solvent tolerance. Emulsions are also compatible with a wide range of plasticizers, resins and extenders, pigments and dyes. Films and coatings produced from the different emulsions vary in adhesion, tensile strength, hardness, heat-sealing temperature, water resistance and other physical properties.

USES: Typical applications are in the manufacture of adhesives for paper, wood, vinyl, leather, cloth, polyethylene, foil and a wide variety of surfaces; as binders for paper pulp, cork and textile fabrics; as coatings for paper, cloth, wood, metals and ceramics; as fast drying, tough, odorless paints; as coatings and impregnators for paper and paperboard; as pigment binders for paper and paperboard coatings; and as textile sizes and finishes.

SPECIFIC USES: Each grade of emulsion generally has a number of broad end uses. However, in some cases, the emulsions are highly suited for specific applications. *GELVA* Latex 925 makes a high pick resistant, non-yellowing, odorless pigment binder for paper coatings. *GELVA* Emulsion TS-100 is used in making adhesives with good performance on difficult surfaces such as vinyl, Mylar and similar surfaces. *GELVA* Emulsions S-98 and S-99, which are dextrine compatible, are used in making remoistenable adhesives. *GELVA* Emulsions S-51 and 900 are used as wet-end additives in producing tough, bend-resistant paperboard. *GELVA* Emulsion S-55 has superior compounding stability, quick tack and bond strength and is used in a wide number of adhesive applications. *GELVA* Emulsions TS-30 and TS-31 are used in formulating quality exterior and interior paints, as are *GELVA* Emulsions TS-70 and TS-71. Films cast from *GELVA* C-3 Emulsion are highly water resistant, but, due to carboxyl groups on the polymer chain, are soluble in dilute alkali. Other emulsions are available for specific adhesive, paint and paper coating applications.

SHIPPING INFORMATION: Available in non-returnable steel drums or fiber containers, 500 lbs. net weight; in tank trucks (1,000–3,000 gals.) and in rail tank cars (4,500–8,000 gals.).

GELVA® POLYVINYL ACETATE POWDERS 700 and 702

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: White or cream-colored free-flowing powders.

PROPERTIES: Available in two grades of spray dried powder—*GELVA* Powder 700 and *GELVA* Powder 702. *GELVA* Powder 700 has long term stability and may be added to dry mix formulations for greater flexibility, toughness, cohesive and adhesive strength and resiliency. *GELVA* Powder 702 is used where borax stability and dextrine compatibility are essential. Used to produce high solids, low viscosity adhesives and building products which are tough, fast drying, flexible and easy to prepare.

USES: Principal applications are in manufacture of dry mix adhesives and building products. In adhesives, the Powders impart water insensitivity, toughness, flexibility and blocking resistance. Also used as a binder in various cementitious building products.

SHIPPING INFORMATION: Available in polyethylene bags within non-returnable fiber drums, 100 lbs. net weight.

GELVA® POLYVINYL ACETATE RESINS

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: Granules and lumps.

PROPERTIES: Available in eight different grades with viscosities ranging from 1.35 cps. to 900 cps. (86 grams of resin in 1000 ml. of benzene). *GELVA* Resins are thermoplastic, transparent, colorless, odorless and tasteless with excellent adhesion to a wide variety of surfaces. The grades also differ in tensile strength, flexibility and softening point. Soluble in ketones, esters, chlorinated and aromatic hydrocarbons, and certain alcohols. Compatible with many plasticizers, including phthalates and phosphates.

USES: Typical applications for *GELVA* Resins include hot melt and solvent based adhesives, paper and textile coatings, printing inks, and as a base for chewing gum.

SHIPPING INFORMATION: Available in multi-wall bags, 50 lbs. net weight. *GELVA* Resins V-1½ shipped in non-returnable fiber drums, 70 lbs. net weight; *GELVA* Resin V-2½ shipped in fiber drums, 83 lbs. net.

GELVA® RESIN SOLUTIONS

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: Viscous solvent solutions of polyvinyl acetate.

PROPERTIES: Available in four types of *GELVA* solutions—V-55-E26, V-55-E30 and V-55-E34 in ethyl alcohol; and V-7-M50 in methyl alcohol. Viscosity ranges from approximately 2,500 cps. for V-7-M50 to approximately 56,000 cps. for V-55-E34. Total solids range from 26% to 50%. Films and coatings produced from the solutions have excellent gloss, clarity and water resistance. They are also non-corrosive and neutral.

USES: Can be used for bonding paper, wood, glass, leather, textiles, ceramics, metal foil and many plastic materials. Used in shoe cements, in laminating metal foil to cellophane and for preparing plastic wall tile adhesives. In the paper industry, solutions are used to produce transparent high gloss coatings, which adhere well to surfaces and are unusually stable to light and oxygen. Also used as overprint varnishes, greaseproof coatings and pigment binders.

SHIPPING INFORMATION: Available in non-returnable steel drums, 400 lbs. net weight, and in truckloads (20,000 lbs. min.) and carloads (30,000 lbs. min.).

POLYVINYL ALCOHOL RESINS

GELVATOL®

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: White, high bulk density powder.

PROPERTIES: Available in a large number of grades which differ in degree of polymerization, per cent hydrolysis and residual acetate content. Resins are water soluble and glycerine is the most widely used plasticizer. Viscosity of a 4% aqueous solution ranges from approximately 2 cps. for *GELVATOL* 40-10 to 60 cps. for *GELVATOL* 1-90. The resins are non-dusting, have high bulk densities which make storage easier, and provide clear solutions in water. Films cast from *GELVATOL* are extremely tough and have excellent solvent, oil and grease resistance, high tensile strength, and a high degree of impermeability to most gases.

USES: Typical applications include dry mix adhesives and building products; textile sizing and finishing; paper coating and sizing; as protective colloids or surface active agents for emulsion polymerization; as binders for china, ceramics, etc.; as photo sensitive coatings on stencil screens and printing plates; and as water soluble films for packaging soaps, detergents, chemicals, etc.

SHIPPING INFORMATION: Available in multi-wall paper bags, 50 lbs. net.

POLYVINYL BUTYRAL RESINS

BUTVAR®

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: White free-flowing powder.

PROPERTIES: Produced in five types or grades varying in viscosity and hydroxyl content. Viscosity of 10% solution in ethanol ranges from 75 cps. (for *BUTVAR* B-98) to 1570 cps. (for *BUTVAR* B-72A). The resins are generally soluble in alcohols, glycol esters and certain mixtures of polar and non-polar solvents. They are compatible with a number of plasticizers including phthalates, phosphates, castor oils and others.

USES: Used in making metal primers and conditioners; wood primers and sealers; structural and hot melt adhesives; textile coatings and printing inks. As a coating for rainwear and other textiles, *BUTVAR* provides outstanding adhesion, flexibility, abrasion resistance, water resistance and is transparent. As an additive to metal and wood coatings and primers, the resins upgrade intercoat adhesion, flexibility, impact and abrasion resistance, and flow properties. Can be used to upgrade coating performance of such thermosetting materials as phenolics, ureas, melamines, epoxies, alkyds, polyurethanes and polyesters.

SHIPPING INFORMATION: Available in lined, non-returnable fiber drums, 115 lbs. net weight. *BUTVAR* B-76 is available in 100 lb. net weight fiber drums.

0557194

TOWOLDMON0040928
WATER_PCB-00031974

BUTVAR® DISPERSIONS BR AND FP

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: Aqueous dispersion of plasticized polyvinyl butyral resin. Milk-white in color.

PROPERTIES: Dispersions are supplied in two grades which differ in viscosity and plasticizer content. *BUTVAR* Dispersion BR has a viscosity of 1500 cps. and contains 40 parts plasticizer per 100 parts resin. *BUTVAR* Dispersion FP has a viscosity of 150 cps. and contains 5 parts plasticizer. Films cast from Dispersion BR are tough and light transparent and dry at room temperature. Dispersion FP films require heating to achieve continuity and non-redispersibility. They dry to clear, colorless films which are unaffected by boiling water. Films of both dispersions are strong and adhere well to a range of surfaces; resistance to water, heat and sunlight is excellent.

USES: Used in textile industry to impart abrasion resistance, durability, strength, slippage control and reduced color crocking to a variety of materials. Used as abrasion resistant finish for automobile seat belts and parachute harnesses. They are also used in the textile industry as a soft, full-bodied finish for rayon, cotton, or nylon; as a durable, non-raveling finish for filament yarns; and as a finish for curtain and drapery fabrics, glass fabrics, upholstery goods, webbing, awnings, canvas and duck. Also used as a rug backing, and greaseproof, washable coatings for wallpaper, window shades and packaging materials.

SHIPPING INFORMATION: Available in non-returnable 55-gallon steel drums, 400 lbs. net. Less than one drum lots packaged in 5-gallon containers.

FORMVAR®

SHAWINIGAN RESINS CORPORATION—LITERATURE AVAILABLE

STANDARD FORM: White, free-flowing powder.

PROPERTIES: Available in six basic grades varying in viscosity and solubility. Viscosity of a 5% solution in ethylene chloride ranges from 7-11 cps. for *FORMVAR* 7/70 to 50-80 cps. for *FORMVAR* 15/95S. The resins are soluble in phenols, some chlorinated hydrocarbons, and in mixtures of alcohols and aromatic hydrocarbons. *FORMVAR* 7/70, with a high acetate content, is also soluble in glycol esters, lower molecular weight esters and ketones. Plasticizers for the resins include phthalates, phosphates, glycollates and many others.

USES: *FORMVAR* 15/95E is widely used in making tough, heat-resistant wire enamels for hermetic systems. Enamels are solderable, bondable, have high cut-through and burnout resistance, and excellent resistance to common refrigerants. *FORMVAR* resins are also used in structural and hot melt adhesives; in wash primers, can and drum linings; and as wood sealers and knot sealers.

SHIPPING INFORMATION: Available in non-returnable fiber drums—*FORMVAR* 7/95 and 7/70, 100 lbs. net; *FORMVAR* 12/85, 110 lbs. net; and *FORMVAR* 15/95, 130 lbs. net.

SANTOFOME®

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: 36-inch wide rolls in gauges of 10, 12, 15 and 25 mils.

PROPERTIES: Outstanding insulation; good liquid and grease barrier; low abrasion; will not lint or dust; soft; resilient; printable; can be embossed and laminated to other flexible webs. F. and D. A. acceptable.

USES: Food service containers; food packaging; industrial and non-abrasive packaging; industrial protective packaging; decorative wrapping; electrical insulation.

SHIPPING INFORMATION: Ship as wrapped rolls, or in containers f.o.b. plant of origin with transportation allowed by carrier of seller's choice up to 150-mile radius.

STYMER® VINYL STYRENE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: *Stymer* LF-25 is vinyl resin, soluble with ammonium hydroxide: *Stymer* S is styrene copolymer resin, soluble in water.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile Resin. Outstanding as sizing agents for acetate. *Stymer* LF-25 designed as durable size. *Stymer* S is water soluble removable size.

USES: Sizes for filament acetates.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: *Stymer* LF-25—drums (100 lbs.). *Stymer* S—multiwall bags (50 lbs.); drums (250 lbs.). Rail & Truck: Sizing NOIBN.

OPALON® VINYL CHLORIDE EXTRUDING AND CALENDERING MATERIAL

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Resins and compounds produced in several formulations for diversified industrial applications.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Opalon® 660 & 650 resins supplied for calendering and extrusion are especially recommended for dry blending, provide color depth, uniformity, toughness and flexibility at low temperatures. Opalon® 630 resin for ease of processing. Opalon® 410 and 440 is a specially developed paste resin for vinyl plastisol compounding, supplied as a "stir-in" powder to increase speed and ease of preparation.

USES: Typical applications are wire & cable insulation, rainwear, upholstery, floor tile, coatings (metal, paper, fabrics and glass), foams, sponges, garden hose, slush moldings, and dipping operations.

SHIPPING INFORMATION: Multiwall bags (50 lbs.); resins in airslide cars (10,000 lbs.). Resins: Rail—Plastics, Synthetics, other than liquid NOIBN. Truck—Plastics, Powder. Compounds: Rail—(same as above) Truck—Plastics, Granules.

OPALON® VINYL CHLORIDE MOLDING COMPOUNDS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Free-flowing resins available to formulate opaque, translucent or transparent compounds. Compounds available in granular form for injection and compression molding.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Molding material. Outstanding heat stability, moldability, short molding cycles and low shrinkage. Resistant to moisture, oxidation, most acids and alkalies, petroleum and many common organic solvents.

USES: Appliance parts, toys, masks, goggles, swim accessories, grommets, sporting goods, bundles, knobs, coil forms, housings, wiring devices, electrical system components, housewares and phonograph records.

INDUSTRIAL USERS: Automotive, Construction, Machinery and Appliance, Rubber, Textiles.

SHIPPING INFORMATION: Multiwall bags (50 lbs.). Resin in airslide cars (130,000 lbs.). Rail: Plastics, Synthetic, Other Than Liquid, NOIBN. Truck: Plastics, Powder.

SAFLEX® VINYL BUTYRAL

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: A continuous adhesive film supplied in clear, translucent, tinted or gradated color, for the plastic interlayer in laminated safety glass.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Laminating material. Tough and resilient; transparency of a superior quality; excellent adhesion to glass.

USES: *Saflex* is used as a protective interlayer for laminating safety glass in automotive, aircraft, and architectural applications. It can be printed in decorative patterns or used for laminating embedments between layers of glass for room dividers, shower stalls, interior doors and wall panels, exterior doors and table tops. Industrial uses of *Saflex* include light and heat control, ultra-violet excluding and safety applications.

SHIPPING INFORMATION: Standard 15 ga. film supplied in 750 ft. rolls; heavier gauges available in 400 to 500 ft. rolls; shipments made in tubes or on pallets. Rail: Plastics, sheets, not woven, NOIBN. Truck: Plastic film, transparent or translucent other than cellulose, not woven, not printed in sheets, not further processed than cut to size.

STYMER® VINYL STYRENE

See first column, this page

ULTRON® VINYL CHLORIDE *Flexible Film and Sheeting.*

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Flexible film, embossed or plain, in gauges .002 to .020" and widths up to 75". Specially formulated film with "built-in" properties and varying degrees of flexibility are available for specific industrial and agricultural applications.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Fabricating material. *Ultron* film is noted for its uniformity of gauge and color clarity. Water resistant, abrasion resistant. Available as translucent, opaque or transparent film which may be printed, embossed or molded. Tasteless, tough, pliable and long-lasting. *Ultron* film is highly adaptable to various manufacturing techniques such as laminating and heat sealing.

TOWOLDMON0040929
WATER_PCB-00031975

USES: Low temperature formulations are used as protective coverings for machinery. Industrial applications include moisture barriers, industrial and electrical tapes. As a laminating material, *Ultron* has proven valuable for sheet building materials, flooring, glass batt insulation, paper and fabrics.

INDUSTRIAL USERS: Agriculture, Automotive, Construction, Machinery and Appliance, Textiles, Furniture, Housewares, Wire and Cable, Luggage.

SHIPPING INFORMATION: Cardboard Box, (150 lbs.) Corrufiex paper wrap, (350 lbs.) Rail: Plastics, sheets not woven NOIBN. Truck: Transparent or translucent material: Plastic film, transparent or translucent other than cellulose, not woven, not printed in rolls exceeding 8½" in diameter. Opaque: Plastic film or sheeting not woven, other than cellulose, other than transparent or translucent.

VYRAM® RIGID VINYL COMPOUNDS FOR EXTRUSION AND MOLDING

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Free-flowing 1/8 inch cubes in natural and colors.

Vyram 2645 Translucent ultra-violet stabilized rigid vinyl extrusion compound, intermediate impact for architectural applications requiring light transmission.

Vyram 2736 A type 2 high impact rigid vinyl extrusion compound for industrial applications

Vyram 2746 An intermediate impact rigid vinyl extrusion compound for industrial applications.

Vyram 2745 An intermediate rigid vinyl extrusion compound ultra violet outdoor stabilized for structural applications.

PROPERTIES: Balanced combinations of high strength, toughness, chemical resistance, abrasion resistance, non-combustible and ultra-violet light resistance. This product's ease of fabrication, uniform quality and increased extrusion rates mean lower processing costs and improved part quality.

SHIPPING INFORMATION: Supplied in 50-lb. bags or bulk carloads.

POLYETHYLENES

MONSANTO® POLYETHYLENE MOLDING COMPOUNDS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Pelleted molding compounds are available for injection, compression or blow molding over a wide range 0.5—30 melt index. Readily processed by dry blending into a broad range of colors.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Molding compound. One of the most useful and versatile of all plastics, Monsanto Polyethylene, natural, is chemically inert, non-toxic and odorless. Products molded from Monsanto Polyethylene resins are tough and resilient with a high impact resistance and flexibility over a wide temperature ranke having an extremely low dielectric constant and low power loss factor.

USES: Some of the typical applications are: Housewares, toys, industrial parts, packaging and packaging components, "squeeze" bottles, vials, molded liners and closures.

MARKETS: Automotive, Appliance, Packaging, Toys, Housewares, Industrial Components.

SHIPPING INFORMATION: Hopper cars; sealdbins (approx. 10,000 lbs.); fiberboard containers (2 types, both 1,500 lbs.), multiwall bags (50 lbs.). Rail—Plastics Synthetic Other than Liquid, NOIBN. Truck—Plastics, Granules.

MONSANTO® POLYETHYLENE COATING MATERIALS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied in pellet and compound forms.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Paper and coating resin. Fortifies surface with high gloss and scuff resistance. Heat sealable. Improves printability of wax coatings.

USES: Wax reinforcement for paper and board coatings for packaging.

MARKETS: Packaging.

SHIPPING INFORMATION: Hopper cars; sealdbins (approx. 10,000 lbs.); fiberboard containers (2 types—1,500 lbs.); multiwall bags (50 lbs.).

MONSANTO® POLYETHYLENE EXTRUDING AND CALENDERING MATERIAL

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Comes in pelleted form, natural and black.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Extruding material. Monsanto Polyethylene is a tough, impact-resistant resin, extruded as film and sheeting, wire insulation, piping, tubing and profile shapes. It is chemical-resistant, flexible over wide temperature ranges, non-toxic, odorless, nonpolar, low dielectric and easily processed by dry blending into a wide range of colors.

USES: Packaging films, vapor barrier materials, agriculture films, wire and cable insulation, extrusion coatings, profile shapes, high clarity films, packaging and barrier laminations and coatings.

MARKETS: Automotive, Agriculture, Construction, Packaging, Electronics, Wire and Cable manufacturers.

SHIPPING INFORMATION: Synthetic Resin Granules. Hopper cars, sealdbins (approx. 10,000 lbs.); fiberboard containers (2 types, both 1500 lbs.); multiwall bags (50 lbs.); 10 mil polyethylene bags (50 lbs.) for wire and cable compounds. Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, Granules.

PHENOLIC RESINS

RESINOX® PHENOLIC *Lump and Resin Compound*

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder or lump.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resin. Excellent resistance to high heat, maximum bond strength and good chemical resistance.

USES: Manufacturing of Resinoid grinding wheels, brake linings, pulp moldings and for bonding of foundry sand in the production of shell molds and cores.

INDUSTRIAL USERS: Automotive, Chemicals, Electronics, Jets, Missiles, Machinery and Applicance, Foundry, Abrasives.

SHIPPING INFORMATION: Multiwall bags (50 lbs.); non-returnable fiber drums (200-275 lbs.). Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, Powder.

RESINOX® LIQUID PHENOLIC RESINS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Water solutions.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resin. Excellent resistance to high heat, maximum bond strength and good chemical resistance.

USES: For impregnating or coating filler materials such as paper, cloth, wood (compreg) veneers, glass and mineral wool fibers. Bonding material for Resinoid grinding wheels. Resin impregnated paper for automotive battery separators. For glass and rock wool thermal and accoustical insulation. Foundry sand core binder.

INDUSTRIAL USERS: Foundry, Automotive, Chemicals, Construction, Electronics, Jets, Missiles, Machinery and Appliance, Pulp and Paper.

SHIPPING INFORMATION: Steel drums (450-550 lbs.); tank cars, tank trucks. Rail—Plastics, Synthetic, Liquid, NOIBN; Truck—Plastics, Liquid, NOI.

RESINOX® PHENOLIC VARNISHES

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied in alcohol solutions for laminating filler materials—paper, cloth, glass or asbestos. Special high heat resistant formulations are available for use with glass, asbestos and similar fillers for jet and rocket components.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial Resins. Provides tough, durable, heat resistant bonds that also resist acids and weak alkalies.

USES: For impregnating laminate filler materials such as paper, cloth, glass or asbestos. Special high heat resistant formulations are available for jet and rocket components. Used in decorative laminate core stock; electrical and mechanical grade laminates for radio, TV and home electrical appliances; as well as gears, ball-bearing races, pulleys; bushings for light and heavy machinery, cars, planes and ships; oil, chemical and paper filters; sand binders for shell molding.

INDUSTRIAL USERS: Foundry, Automotive, Chemicals, Construction, Electronics, Jets, Missiles, Machinery and Appliances, Pulp and Paper, Rubber.

SHIPPING INFORMATION: Steel drums (450-550 lbs.); tank cars; tank trucks. Rail and Truck: Varnish, NOIBN.

0557196

TOWOLDMON0040930
WATER_PCB-00031976

RESINOX®

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Phenolic liquid solutions.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resin. Imparts high heat resistance and promotes good chemical resistance.

USES: Baked enamel and industrial finishes for can, drum and tank car linings, special primers and coatings and wire enamels.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Automotive; Chemical, Machinery and Appliance.

SHIPPING INFORMATION: Steel drums (450 lbs.). Rail—Plastics, Synthetic Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

MELAMINE AND UREA RESINS

RESIMENE® MELAMINE AND RESIMENE® U UREA

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied in organic liquid solution.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Surface coating resin. Imparts improved surface hardness, weathering, alkali and chalk resistance. Promotes fast cure and excellent color retention.

USES: Melamine and urea-formaldehyde resins improve baked enamel and industrial finishes on appliances, automobiles and other fabricated metal items.

INDUSTRIAL USERS: Paint, Varnish and Lacquer, Automotive, Chemical, Machinery and Appliance.

SHIPPING INFORMATION: Steel drums (450 lbs.). Rail—Plastics, Synthetic, Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

RESIMENE® MELAMINE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Available in water-alcohol, soluble spray-dry powders.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Industrial resin. Produce laminates displaying strong durable surface that is heat, flame and chemical resistant. Color stability and high electrical arc resistance are additional characteristics.

USES: *Resimene* Melamine powder solutions can be combined with paper, cloth and glass fibers to provide a durable surface for all types of furniture, counter tops, cabinets, walls and industrial electrical components.

INDUSTRIAL USERS: Chemicals, Construction, Electronics, Missiles, Machinery and Appliances, Pulp and Paper.

SHIPPING INFORMATION: Multiwall bags (50 lbs.); fiber drums (200 lbs.). Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, powder.

RESLOOM® ESSENTIALLY MONOMERIC MELAMINE

PLASTICS DIVISION

STANDARD FORM: Available in powder (*Resloom* HP) or liquid form (M-75, M-80, M-85, E-63 and U-30) as a series of essentially monomeric melamine resins.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile resin. Permanently effective to fabrics made from a wide range of textile fibers.

USES: To impart shrinkage control, wrinkle resistance and textural effects to cotton, rayons, synthetics and wools.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: M-75 thru M-85—550 lb. drums; *Resloom* HP—100 lb. drums; E-63—525 lb. drums; U-30—500 lb. drums liquid bulk (except *Resloom* HP, which is in powder form). Powder: Rail—Plastics, Synthetic, Other Than Liquid, NOIBN. Truck—Plastics, Powder, Liquid: Rail—Plastics, Synthetic Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

RESLOOM® E-50

See Page M-5/51

CELLULOSIC RESINS / PLASTICS

VUEPAK® CELLULOSE ACETATE

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: *Vuepak* is a crystal clear, rigid acetate that is readily fabricated into boxes and containers of outstanding appearance and sales appeal. Available in continuous, untrimmed, and slit-to-size rolls up to 60" wide and 2000' long, in thicknesses from .005" to .020"; and, in stock size sheets or cut-to-size pieces. *Vuepak* is adaptable to various fabricating methods such as shaping, drawing, folding and scoring.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Fabricating Material. Can be fabricated on automatic machines into square, rectangular, or cylindrical shapes. Combines readily with other packaging materials such as metal, paper, boxboard, foil, etc. May be printed, embossed, stapled, cemented, hot-stamped or metallized.

USES: For rigid "see-through" packaging of products ranging from small hardware items to women's fashion accessories. Also ideally suited for transparent protective sleeves; billfold swing arms; used in lamination of advertisements and promotional material, giving such printed matter permanent display value; filing tabs; diagrammatic drawings; canisters; fabricated parts; and transparent windows.

INDUSTRIAL USERS: Packaging, Stationery, Display Manufacturers, Laminators.

SHIPPING INFORMATION: Fiberboard containers (2 sizes—1,500 lbs.).

ROLLS: Rail & Truck—Cellulose film, not printed, in rolls exceeding 8½" in diameter.

SHEETS & CUT PIECES: Rail & Truck—Cellulose film, not printed, in sheets not further processed than cut-to-size pieces.

COAL TAR RESINS

MONTAR® SYNTHETIC RESINS

See Page M-5/37

SULFONAMIDE RESINS

SANTOLITE® MHP

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Hard resin.

SPECIFICATIONS: Hard, practically colorless resin: refractive index (25 gms. in 75 gms. normal butyl acetate) 1.4280–1.4310; penetration (200 gm. load for 5 seconds at 25°C.) 2.0 mm. max.

GENERAL INFORMATION—PROPERTIES: An aryl sulfonamide-formaldehyde resin similar to *Santolite* MS in characteristics, except that it is much harder, softening at about 62°C., brittle at normal temperatures. Nearly colorless, well adapted to specialty and heat-sealing lacquers, fabric coatings, molding compositions and the like. Being incompatible with drying oils it cannot be used as a varnish material.

Exceptional features of this resin are the ease with which it may be worked into practically any formula using a cellulose ester and the wide variation of properties obtained by its use. Its high degree of solubility makes very concentrated solutions possible: its extreme compatibility with plasticizers and cellulose esters removes much of the danger of blushing, sweating and separation.

USES: Can be used in spraying, dipping or brushing lacquers to make clear, colorless, odorless coatings of good gloss and adhesion. It does not materially increase the viscosity of the solution and permits the building up of a high-solids content in the lacquer. Compatible with all the common plasticizers.

CONTAINERS: 60-lb. cased cans.

SHIPPING CLASSIFICATION: Resin Synthethic NOIBN Without Filler.

TOWOLDMON0040931
WATER_PCB-00031977

SANTOLITE® MS *80% Industrial Resin*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Light-colored viscous liquid; free-flowing at temperatures above 20°C.; composition 78.8—81.2% *Santolite* MS, 18.8 to 21.2% solvent.

PROPERTIES: Soft, practically colorless resin made by the condensation of formaldehyde and aromatic sulfonamides.

USES: *Santolite* MS like *Santolite* MHP, is compatible with both nitrocellulose and cellulose acetate; as a solvent for both, it can be used in any proportion. Forms brittle compositions with both resins but the addition of a plasticizer makes such combinations permanently flexible. Readily miscible with all the common organic solvents and thinners except petroleum hydrocarbons; not miscible with varnish and paint oils. Excellent for water-white lacquers which will not be exposed to extreme weather conditions; possesses exceptional clarity and high gloss.

SHIPPING INFORMATION: Resin Synthetic NOIBN Without Filler. 450-lbs. approx., 55-gal. drums; 45-lbs. approx., 5-gal. drums.

RESIN INTERMEDIATES

ADIPIC ACID

See Page M-5/15

DIBUTYL FUMARATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 248

STANDARD FORM: Liquid.

SPECIFICATIONS: Acidity 0.20 meq/100 grams max.; Color 40 APHA max.; Crystallizing Point −21.0°C. min.; Moisture (KF in methanol) 0.10% max.; Sp. Gr. 25°/25°C. 0.982-0.986.

USES: Internal plasticizing resin former for copolymerizing with vinyl acetate and vinyl chloride for adhesives, textile, paint and paper coatings. Intermediate for chemical synthesis.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal., 18-gauge steel drums with tight heads. 2-inch and ¾-inch openings in the head. Gross weight: 498 lbs. Also tankcars or tank trucks 2,000-gal. minimum.

DIBUTYL MALEATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 248

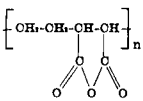
USES: Internal plasticizing resin former for copolymerizing with vinyl acetate and vinyl chloride for adhesives, textile, paint and paper coatings. Intermediate for chemical synthesis.

SHIPPING INFORMATION: Resin Plasticizer. 490 lb. and 45-lb. steel drums; tank cars, tank trucks 2000 gal. min.

DX-840 RESINS *(Ethylene Maleic Anhydride Copolymers)*

INORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA:



STANDARD FORM: Fine water-soluble powders available as both straight-chain and cross-linked polymers in a variety of molecular weights.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: The EMA resins are easily converted to the free-acid form; and to its sodium and amide-ammonium salts; and are readily reacted with alcohols and substituted alcohols and with amines to form esters and resins. By selecting the proper reactant, the following types of derivatives can be prepared: transparent film-formers, polymeric liquids, waxy solids and polyampholytes.

SUGGESTED USES: Beneficiation agent for clays used in oil-well drilling muds; stabilizers and thickeners in liquid detergent and cosmetic formulations; thickeners for water-based latex paints, textile sizes, textile print pastes and binders; suspending agents for ink pigments, thickener for aqueous resin systems, adhesives, binder for foundry cores, etc.

SHIPPING INFORMATION: Multiwall bags (50 lbs.). F. O. B. Texas City, Texas. Rail and Truck, Sizing NOIBN.

MALEIC ANHYDRIDE

See Page M-5/15

PHTHALIC ANHYDRIDE

ORGANIC DIVISION

MOLECULAR WEIGHT: 148.11

STANDARD FORM: White flakes or fused mass.

SPECIFICATIONS: Solubility in benzene (1:20) clear. Assay 99.5% min.; C.P. 130.8°C. min.

USES: An intermediate in the production of alkyd and polyester resins; dyestuffs; perfume bases; alcohol denaturants; pharmaceuticals; and plasticizers such as octyl phthalate, dibutyl phthalate, dimethyl phthalate, diethyl phthalate and phthalyl glycollates.

SHIPPING INFORMATION: Phthalic Anhydride. 80-lb. bags; tank cars; tank trucks.

STYRENE MONOMER

See Page M-5/19

VINYL CHLORIDE MONOMER

See Page M-5/19

FORMALDEHYDE RESINS

UREA, INDUSTRIAL GRADE UNCOATED PELLETS

INORGANIC DIVISION

STANDARD FORM: Urea pelleted form without coating agent.

ANALYSIS:

Nitrogen (Min.)	46.0%
Moisture (Max.)	.5%
Biuret (Max.)	1.0%

USES: Urea Formaldehyde resins for adhesives, plastics, paper and textiles; chemical intermediate, cosmetics, detergents, explosive stabilizer, paints, dentifrice, fermentation, finishes.

SHIPPING INFORMATION: Urea. 80-lb. multiwall paper bags with polyethylene lining. Also in bulk.

PLASTICIZERS

AROCLOR® POLYCHLORINATED POLYPHENYLS

See Page M-5/17

DI-2-ETHYLHEXYL ADIPATE (DOA)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 370.56

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear oily liquid; color APHA 25 max.; odor mild; acidity (as adipic acid) 0.02% max.; Sp. Gr. 0.924 ±0.003 at 25°/25°C.

USES: A primary plasticizer which imparts excellent low temperature flexibility to polyvinyl chloride resins and synthetic rubbers. Used in conjunction with DOP and Santicizer 160 to make quality vinyl garden hose. Imparts low viscosity to vinyl plastisols for cloth coating, wire coating, etc. Imparts excellent heat and light stability and superior softness to vinyl film and upholstery.

SHIPPING INFORMATION: Resin Plasticizer. 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

0557198

TOWOLDMON0040932
WATER_PCB-00031978

DI-2-ETHYLHEXYL PHTHALATE (DOP)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 390.54 (Pure compound)

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 25 max.; odor, very slight characteristic; Sp. Gr. 0.980-0.985 at 25°/25°C.; refractive index 1.4845-1.4858 at 25°C.; acidity (as phthalic) 0.01% max.

PROPERTIES: DI (2-EthylHexyl) Phthalate (DOP) is the largest volume plasticizer consumed in polyvinyl-chloride resin. It imparts very good low temperature flexibility, low volatility and good heat and light stability to a vinyl composition. It is often used with *Santicizer* 141 to give a composition of improved light stability, resistance to embrittlement and aging, flame resistance and ease of processing. In vinyl electrical compositions, DOP imparts excellent electrical characteristics with good aging properties.

USES: This plasticizer is widely used in plasticizing polyvinyl chloride for electrical insulation. DOP is also compatible with most of the other resins commonly used in the plastics industry. It is an excellent general purpose plasticizer for use in vinyl plastics. It has been widely used in such vinyl applications as shower curtains, aprons, rainwear, upholstery, draperies, garden hose and many others which require good flexibility and aging characteristics.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. (445-lb.) and 5-gal. (40-lb.) black iron drums; tank cars, tank trucks wherever possible.

DI-N-OCTYL, N-DECYL ADIPATE (DNODA)

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear oily liquid; color, APHA 50 max.; Sp. Gr. 25°/25°C., 0.912-0.920; refractive index, 25°C., 1.443-1.447; moisture, 0.10% max.; acidity, 0.35 meq/100 grms. max.

PROPERTIES: DNODA is a primary plasticizer for polyvinyl chloride and imparts excellent low temperature flexibility and efficiency along with softness, superior hand and drape, permanence, water resistance, heat and light stability. It has the best balance of properties of all adipates and on a cost/performance basis is the first choice of all low temperature flexibilizing plasticizers.

USES: The major use of DNODA is as a low temperature flexibilizing, specialty plasticizer used with basic type esters, such as DOP. It finds widespread use in film, sheeting and coated fabric. It will improve flexibility in garden hose and extrusion compounds and improve low temperature exposure characteristics of electrical jacketing formulae. It is especially useful in vinyl dispersions where its low initial viscosity and excellent shelf life characteristics are most desirable. In addition to being a primary plasticizer for polyvinyl chloride and chloride acetate copolymers, it is compatible and useful with nitrocelluiose, ethyl cellulose, chlorinated rubber, GRS and Buna N rubbers. It is also effective with polyvinyl butyral, cellulose acetate butyrate, polystyrene, methacrylate and damar resins.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. (415-lb.) and 5-gal. (40-lb.) black iron drums; tank cars, tank trucks wherever possible.

DIBUTYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 278.34

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 20 max.; odor slight; acidity (as phthalic acid) 0.01% max.; Sp. Gr. 1.0445-1.0465 at 25°/25°C.; refractive index 1.4895-1.4915 at 25°C.; assay (ester content) 99% min.; sulfur (copper-strip test) negative.

USES: One of the most widely used plasticizers for nitrocelluiose and polyvinyl acetate; miscible with all the common organic solvents and with oils; soluble in water only to 0.001% at 30°C.; excellent light stability which permits its use in colorless, white or delicately tinted products. The stability of dibutyl phthalate and its high solvent power for most plastic materials make it one of the most acceptable plasticizers for general use in celluiosics and vinyl acetate.

SHIPPING INFORMATION: Dibutyl Phthalate. 475-lb. steel drums; 40-lb. drums; tank cars; tank trucks.

DICYCLOHEXYL PHTHALATE (DCHP)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 330

STANDARD FORM: White solids.

SPECIFICATIONS: Appearance, white solid; color of melt, 100 APHA max.; odor, moderate aromatic, slight phthalic; moisture in methanol, 0.1% maximum; melting point, 63°C. minimum; acidity (as phthalic acid), 0.01% max.; ester content 99.0% min.

PROPERTIES: Dicyclohexyl Phthalate is an excellent primary plasticizer for ethyl cellulose, polystyrene, acrylics and chlorinated rubber. It is partially compatible with cellulose acetate butyrate, polyvinyl butyral, polyvinyl chloride and incompatible with cellulose acetate.

USES: This plasticizer is widely used as a plasticizer for nitrocellulose lacquers where it contributes adhesion, oil resistance, heat sealability and hardness. It is also used in combination with liquid plasticizers for plasticizing polyvinyl acetate to make heat sealing adhesives. Dicyclohexyl Phthalate is a processing aid for polyvinyl chloride semi-rigid and rigid films. It serves as a liquid plasticizer at processing temperature, but has little or no softening or flexibilizing effect at room temperature. This is especially useful in semi-rigid films for floor coverings, wall coverings, automobile floor panels, etc.

SHIPPING INFORMATION: Resin Plasticizer. 350-lb. metal containers.

DIETHYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 222.23

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, water-white oily liquid; color APHA not darker than 10; odor very slightly aromatic; acidity (as phthalic acid) 0.01% max.; Sp. Gr. 1.112-1.122 at 25°/25°C.; refractive index 1.4990-1.5010 at 25°C.; sulfur (copper-strip test) negative.

STANDARD FORM: Liquid.

SPECIFICATIONS: Acidity 0.20 meq/100 grams max.; Color 60 APHA max.; Moisture (KF in methanol) 0.10% max.; Sp. Gr. 0.992-0.995.

USES: Internal plasticizing resin former for copolymerizing with vinyl acetate and vinyl chloride for adhesives, textile, paint and paper coatings. Intermediate for chemical synthesis.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal., 18-gauge steel drums with tight heads. 2-inch and ¾-inch openings in the head. Gross weight: 498 lbs. Also tankcars or tank trucks 2,000-gal. minimum.

DIISODECYL ADIPATE (DIDA)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 426.67

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear oily liquid; color APHA 100 max.; odor mild; acidity (as adipic acid) 0.04% max.; Sp. Gr. 0.916 ±0.003 at 25°/25°C.; moisture (by KF in methanol) 0.10% max.

USES: A low volatile, low temperature plasticizer for polyvinyl chloride resins. It is similar to dioctyl adipate in properties imparted to vinyls, but has the advantage of lower volatility. Diisodecyl adipate is an excellent coplasticizer with DIOP or DIDP for vinyl plastisols and organosols. DIDA imparts very low initial viscosity to plastisols and a negligible increase in viscosity on storage.

SHIPPING INFORMATION: Resin Plasticizer. 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

DIISODECYL PHTHALATE (DIDP)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 446.65

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear oily liquid; color APHA 50 max.; odor slight; acidity (as phthalic acid) 0.01% max.; Sp. Gr. 0.962 0.973 at 25°/25°C.

USES: A general purpose primary plasticizer for polyvinyl chloride being similar to dioctyl phthalate (DOP) but with lower volatility characteristics and superior resistance to soapy water extraction. Especially useful for wire compounds, floor tile and vinyl plastisols where it imparts low initial viscosity and very little viscosity build-up on prolonged storage at elevated temperatures (40-50°C.). For the electrical industry Monsanto offers DIDP-E, a special grade of DIDP stabilized with 0.25% Bisphenol A for improved electrical characteristics and retention of physical properties of heat aging.

SHIPPING INFORMATION: Resin Plasticizer. 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

DIISOOCTYL PHTHALATE (DIOP)

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 390.55

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 35 max.; odor slight; acidity (as phthalic acid) 0.10% max.; Sp. Gr. 0.980 to 0.985 at 25°/25°C.

0557199

TOWOLDMON0040933
WATER_PCB-00031979

USES: General purpose primary plasticizer for polyvinyl chloride. Uses similar to those for DOP. DIOP superior for vinyl organosols and plastisols having lower initial viscosity and lower viscosity build-up on storage than DOP.

SHIPPING INFORMATION: Resin Plasticizer. 55 and 5-gal. drums; tank cars, tank trucks wherever possible.

DIMETHYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 194.18

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, water-white oily liquid; color APHA not darker than 10; odor not more than slightly aromatic; acidity (as phthalic acid) 0.01% max.; Sp. Gr. 1.190±0.001 at 25°/25°C.; refractive index 1.5133±0.001 at 25°C.; sulfur (copper-strip test) negative.

PROPERTIES: A solvent plasticizer for cellulose acetate; miscible with all common organic solvents and with oils (except petroleum oils); solubility in water 0.4% at 32°C.; excellent light stability; B.P. 282°C.; crystallizing point 0°C.; wt. per gal. 10 lbs.

USES: Widely used in cellulose acetate molding compounds and polyvinyl acetate adhesives. Its meter use is primarily in the cellulose acetate field where, as a general rule, it is used in combination with diethyl phthalate or some other plasticizer.

SHIPPING INFORMATION: Dimethyl Phthalate. 530 and 40-lb. steel drums. Tank cars and tank trucks wherever possible.

DIPHENYL PHTHALATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 318.31

STANDARD FORM: Fused solid.

SPECIFICATIONS: Essentially white fused solid; free acid (as phthalic acid) 0.20% max.; free phenol 0.20% max.

PROPERTIES: Crystallizing point approx. 69°C.; readily soluble in ketones, esters and chlorinated hydrocarbons; solubility in alcohols, turpentine and linseed oil rather low, approx. 5.0 gm. per 100 cc. of solvent at 25°C.; completely insoluble in water and gives increased water resistance to all compositions in which it is used.

USES: Compatible with nitrocellulose and with the sulfonamide, phenolic, polystyrene and vinyl types of synthetic resins. In nitrocellulose lacquers produces hard coatings that have excellent gloss retention and weather resistance. Mixtures of diphenyl phthalate with either *Santolite* MS—80% or *Santolite* MHP Industrial Resins are excellent plasticizers for nitrocellulose in odorless, flexible, adhesive coatings. Especially recommended for vinyl resins, polystyrene, ethyl cellulose and some of the natural resins such as damar.

SHIPPING INFORMATION: Resin Plasticizer. 400-lb. fiber drums.

DYTROL® *Paint brush preserver.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear, oily liquid; color, APHA 100 max.; Sp. Gr. 25°/25°C., 1.088-1.091; refractive index at 25°C., 1.507-1.510; moisture, 0.10% max.

PROPERTIES: *Dytrol* is a non-volatile, non-flammable, pleasant smelling liquid that possesses a strong softening action on paints, lacquers, varnishes, etc. It is non-toxic and miscible with most common solvents, thinners and oils.

USES: The characteristics of *Dytrol* suggests its use as a preservative for paint brushes. It is also useful as a reconditioner for paint brushes containing dried paint or for removing paint from the skin after a paint job.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. (495-lb.) and 5-gal. (45-lb.) steel drums; tank trucks.

HB-40® PARTIALLY HYDROGENATED TERPHENYL

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A clear, mobile, high-boiling hydrocarbon; almost colorless, oily liquid with faint, pleasant odor; density 1.001-1.007 at 25°/15.6°C.; wt. per gal. 8.37 (average); refractive index 1.5600-1.5750 at 25°C.; insoluble in water; miscible in all proportions at room temperature with several solvents and oils.

USES: Low-cost, secondary plasticizer for vinyl sheeting, films and fabric or paper coatings. Plasticizer for vinyl protective coatings and adhesives. Used to plasticize vinyl profile extrusions, tubing, wire coating and injection- and slush-molding compounds. Plasticizer for styrene-water dispersion paints, paper coatings, adhesives and styrene casting resins.

SHIPPING NFORMATION: Resin Plasticizer. Tank cars; 460-lb. drums.

MOD-EPOX®

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid (solid below 77°F.)

SPECIFICATIONS: Color, APHA 150 max.; neutralization number (mg. of KOH/gm.), 0.2 max.

PROPERTIES: *Mod-Epox* is a unique modifier for epoxy resins. It reduces the viscosity of liquid epoxy resins, accelerates the cure, improves compressive yield strength, electrical characteristics and adhesive characteristics. It does not adversely affect such important characteristics as hardness, solvent resistance or water resistance. Since *Mod-Epox* is considerably lower in price than the epoxy resins the use of this product results in decreased costs.

USES: *Mod-Epox* is used in the tool and die industry, electronic potting compounds, encapsulations, adhesives, surface coatinks, body solder compounds and other applications being developed in epoxy resins.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. (510-lb.) and 5-gal. (45-lb.) galvanized drums.

MONTAR® SYNTHETIC RESINS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Resin.

PROPERTIES: A series of related brown-to-black resins of the following characteristics:

	Softening Point	% Cl	% CaO	% Fe
Montar 3	120-170°C.	50-52	5-10	0.3-0.6
Montar 4	140-200°C.	54-56	5-10	0.5-1.0
Montar 5	180-250°C.	53-56	1-3	0.1-0.2
Montar 6	150-210°C.	59-61	2-5	0.2-0.4
Montar 9	130-160°C.	—	—	0.2-0.4

USES: Used primarily to impart fire resistance and to reduce cost of resin formulations.

SHIPPING INFORMATION: Coal Tar Resins. Catch-weight drums.

SANTONOX®

See Page M-5/22

SANTONOX® R

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Solid.

SPECIFICATIONS: Appearance, light colored crystalline material; ash 0.05% max.; melting point, 155°C. min.; heat loss, 1.0% max.

PROPERTIES: *Santonox* R is probably the best antioxidant available for both high and low pressure polyethylene. It offers the same advantages as *Santonox*, but, in addition, offers the added advantages of lower color, reduced odor, larger particle size and 10-15% greater efficiency.

USES: *Santonox* R is used as an antioxidant for polyethylene. It has been approved by the FDA as an antioxidant in high pressure (low density) polyethylene at a 0.05% level for all uses except fatty foods.

SHIPPING INFORMATION: Chemicals NOIBN. 150-lb. fiber containers.

SANTOWHITE® POWDER

See Page M-5/44

TRICRESYL PHOSPHATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 368.36

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, practically colorless liquid; Sp. Gr. 1.165±0.008 at 25°/25°C.; acidity (as H_3PO_4) 0.01% max.; potassium permanganate test, no change in 30 minutes.

PROPERTIES: High boiling point; relatively non-volatile, evaporation loss less than 0.10% in 100 hours at 100°C. Refractive index is approx. 1.556 and 20°C. Viscosity increases rapidly at temperatures below normal; at approx. −35°C. a solid transparent mass without crystalline structure. Miscible with all the common solvents and thinners, linseed, china wood and castor oils; solubility in water less than 0.002% at 85°C., imparts good moisture resistance to nitrocellulose films. The ortho isomer which is reputed to be the toxic element in normal tricresyl phosphate, has been virtually eliminated from Tricresyl Phosphate Monsanto, thereby reducing toxicity dangers to a minimum and making the product more suitable for many applications. Elimination of the ortho isomer causes no impairment in plasticizing qualities.

USES: The standard fire-retarding plasticizer for nitrocellulose and vinyls. Being a solvent for nitrocellulose, it has a high retentivity and can be used in large proportions without danger of sweating or separation. Widely used in vinyl resins, particularly in electrical applications; has good electrical properties and imparts flame resistance to the composition. Compatible with most lacquer resins and gives firm, tough, flexible films of excellent weathering qualities.

SHIPPING INFORMATION: Resin Plasticizer. 530-lb. and 45-lb. steel drums; tank cars; tank trucks wherever possible.

TOWOLDMON0040934
WATER_PCB-00031980

TRIPHENYL PHOSPHATE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 326.28

STANDARD FORM: Flakes.

SPECIFICATIONS: White flakes, faintly aromatic; M.P. 48.5°C. min. start permanganate test, no change in 30 minutes; acidity (as H_3PO_4), 0.003% max.

PROPERTIES: Miscible with the common solvents and thinners and with vegetable oils; solubility in water 0.001% at 34°C., 0.002% at 54°C.; imparts some moisture resistance to cellulose-acetate films. Retentivity in cast cellulose-acetate films nearly 80%; that is, it can be incorporated in the proportion of 8-10 of acetate without separation and blooming. Imparts good flexibility and gives clear, tough compositions without tendency toward tackiness. One of its most valuable properties is that of fire retarding. When used alone on cellulose-acetate films an amount of triphenyl phosphate equal to 20% of the cellulose-acetate weight produces films which will not support combustion.

USES: Triphenyl phosphate is primarily used as a flame retardant plasticizer for cellulosics. It also is of interest in heat sealing coatings and adhesives.

SHIPPING INFORMATION: Resin Plasticizer. 225-lb. fiber drums.

SANTICIZER® 140

See Page M-5/40

SANTICIZER® 141

See Page M-5/40

SANTICIZER® 160 PLASTICIZER

Butyl Benzyl Phthalate

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 312.35

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 40 max.; Sp. Gr. 1.113-1.121 at 25°/25°C.; acidity (as phthalic acid) 0.02% max.

PROPERTIES: A clear oily liquid plasticizer having a slight characteristic odor. Gives good low temperature performance; possesses good heat and light stability and low volatility.

USES: A relatively non-volatile plasticizer for polyvinyl chloride, polyvinyl chloride-acetate, polyvinyl butyral, ethyl cellulose and nitrocellulose. In addition, compatible with cellulose triacetate, polyvinyl formal, cellulose acetate-butyrate, cellulose propionate, polyvinyl acetate and acrylics. Superior to many other commonly used plasticizers in its permanence, oil resistance, flexibility and stability. An excellent vinyl plasticizer where stability and flexibility are desired. Because of its high plasticizing efficiency, it is of outstanding value in increasing output of processing equipment such as extruders and calenders. Used successfully in vinyl organosols which are useful for coatings and films. Very effective in cellulosic lacquers, imparting toughness, flexibility, low moisture-vapor transfer; has good permanence and heat and light stability. An excellent plasticizer for polyvinyl butryal and for low-molecular-weight polystyrene, which is further polymerized later for coating and impregnating work.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. and 5-gal. drums; tank cars; tank trucks.

SANTICIZER® 213 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Sp. Gr. 1.040-1.045 at 25°/25°C.; acid value, 0.33 meq./100 gms; color APHA 75 max.

PROPERTIES: A clear, oily liquid with unusual properties in PVC, particularly in plastisols.

USES: Low-cost primary plasticizer for polyvinyl chloride. *Santicizer* 213 has the unique ability to reduce "surface tack" of vinyl surfaces. It is of special value in plastisol formulations—contributes low initial viscosity, slow viscosity build-up, and fast fusion in a single plasticizer. *Santicizer* 213 improves mold release in plastisol molded vinyls.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars, tank trucks; 55-gal. and 5-gal. drums.

SANTICIZER® 214

See Page M-5/40

SANTICIZER® 215 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid, free of sediment or turbidity; color APHA 100 max.; acidity 0.12% max.; Sp. Gr. 0.974-0.980 at 25°/25°C.

USES: *Santicizer* 215 is a low-cost phthalate type ester designed for use in the electrical wiring field. Its primary use is in competitive 60°T, TW and NM applications. It can also be used in semirigid insulation and as the vinyl cover jacket in type NM wiring for homes.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars; tank trucks.

SANTICIZER® 602 PLASTICIZER

isooctyl isodecyl Phthalate.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 75 max.; odor mild; acidity (as phthalic acid) 0.01% max.; Sp. Gr. 0.967-0.977 at 25°/25°C.

USES: A primary plasticizer for polyvinyl chloride with lower volatility than dioctyl phthalate (DOP). Imparts lower initial viscosity and less viscosity build-up in plastisols than DOP. Has excellent soapy-water-extraction and alkali resistance. Used in vinyl floor tile, film and sheeting.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars; tank trucks.

SANTICIZER® 603 PLASTICIZER

Butyl Decyl Phthalate.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, oily liquid; color APHA 100 max.; acidity 0.01% max. (as phthalic acid); odor, characteristically mild; Sp. Gr. 0.977 to 0.987 at 25°/25°C.

PROPERTIES: A low-cost primary plasticizer that offers an attractive pound/volume cost. Its good color and low odor enable the film, sheeting, extrusion and plastisol compounder to effect cost saving with minimum loss of quality.

USES: *Santicizer* 603 is a low-cost primary plasticizer for polyvinyl chloride and copolymer resins. *Santicizer* 603 imparts good low-temperature flexibility and is useful in calendered vinyl products such as film and sheeting for shower curtains, drapes and upholstery. *Santicizer* 603 imparts good viscosity characteristics to vinyl plastisols and organosols and is useful in slush-molding compounds for dolls and formulations for coated fabrics.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars; tank trucks; 55-gal. and 5-gal. drums.

SANTICIZER® 9 PLASTICIZER

Mixture of ortho and para-Toluenesulfonamides.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 171.21

STANDARD FORM: Fine granules.

SPECIFICATIONS: Appearance, fine white to light cream colored particles; moisture, 1.0% max.; color (33⅓% by weight in acetone) APHA 60 max.

PROPERTIES: Solubility quite low in coal-tar hydrocarbons and negligible in petroleum hydrocarbons; readily soluble in most other solvents, and in hot linseed, chinawood and castor oils; soluble in water only about 1.0% at 34°C., but more soluble in alkali; least soluble Monsanto plasticizer in ethylene dichloride and benzene; solubility in ethylene dichloride approx. 4%, in benzene approx. 1.5%, each at 30°C.

USES: *Santicizer* 9 differs greatly from other plasticizers in its action. Relatively small amounts impart a gloss to polished articles, give smooth working and uniform curing of molded thermosetting products. Blends readily with most synthetic resins, does not impart the softening action of liquid plasticizers. Particularly valuable to the makers of molding compositions. In some phenol-aldehyde resins it appears to act not only as a lubricant, but also as a promoter, giving more uniform and thorough curing. In amounts of about 20 parts per 100, has a temporary plasticizing action on protein compounds, such as corn protein and soybean protein. In melamine coating and laminating resins, *Santicizer* 9 promotes solution stability and compatibility, improves flowout during baking or curing, and increases impact strength and abrasion resistance.

SHIPPING INFORMATION: Resin Plasticizer. 250-lb. fiber drums.

0557201

TOWOLDMON0040935
WATER_PCB-00031981

SANTICIZER® 3 PLASTICIZER

N-Ethyl para-Toluene Sulfonamide.

ORGANIC DIVISION—LITERATURE AVAILABLE

Available on Special Manufacturing only.

MOLECULAR WEIGHT: 199.27

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: Practically White crystalline solid; C.P. 58.0°C. min.; acidity (as acetic acid) 0.10% max.; moisture (by KF in methanol) 0.25% max.

USES: *Santicizer* 3 is a solid, sulfonamide plasticizer. It has limited compatability with commonly used resins but is widely used in combination with other plasticizers. Either in combination or alone it imparts high gloss, toughness and hardness. It sharpens the softening point of some thermoplastics, especially the cellulose esters. Its use makes possible such products as heat-sealing lacquer coatings and adhesives. It is compatible with cellulose acetate to the extent of 50 parts per 100 parts of resin. In addition to its effect on toughness and gloss, it improves the flow of molding compositions and lowers moisture permeability. It is about as compatible with polyvinyl formal as with cellulose acetate and its use improves flow and imparts excellent gloss.

SHIPPING INFORMATION: Resin Plasticizer. 400-lb. steel drums.

SANTICIZER® 8 PLASTICIZER

Mixture of N-Ethyl-ortho- and para-Toluenesulfonamides.

ORGANIC DIVISION—LITERATURE AVAILABLE

Available On Special Manufacturing Only

MOLECULAR WEIGHT: 199.27

STANDARD FORM: Liquid.

SPECIFICATIONS: Light yellow, viscous liquid; odor slight, characteristic; unsubstituted amide 9-13%; acidity (as acetic acid) 0.80 meq/100 gms. max.; color of melt 200 APHA max.

PROPERTIES: Readily miscible with all common organic solvents except the petroleum hydrocarbons in which it is only very slightly soluble. In water, soluble to approx. 0.12% at 23°C., 0.21% at 48°C.; solubility in water decreased by presence of ammonia but increased by other alkalies; soluble in castor oil, slightly soluble in chinawood oil; insoluble in linseed oil; retentivity in cellulose acetate approx. 90 parts by weight to 100 of acetate; imparts a high degree of plasticity. A solvent for both nitrocellulose and cellulose acetate.

USES: An excellent plasticizer for cellulose acetate, giving a brilliance and polish not obtainable with other plasticizers. Being practically insoluble in petroleum hydrocarbons, is a valuable plasticizer for coatings designed to withstand gasoline and related products. Has some plasticizing action on such protein compounds as casein, glue, soybean protein and corn protein. May be used alone or in conjunction with other materials such as glycerine or similar compounds; greatly increases the flexibility of shellac with considerable softening effect; also very useful with polyvinyl acetate adhesives. *Santicizer* 8 is one of the best plasticizers known for synthetic polyamides such as nylon and related resins.

SHIPPING INFORMATION: Resin Plasticizer. 530-lb. and 50-lb. drums.

SANTICIZER® 1-H PLASTICIZER

N-Cyclohexyl para-Toluenesulfonamide.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 253.36

STANDARD FORM: Yellow-brown fused mass.

SPECIFICATIONS: C.P. 82.5°C. min.; moisture 0.15% max.; color of melt APHA 300 max.

PROPERTIES: *Santicizer* 1-H is a solid plasticizer which is relatively light stable and of a low order of toxicity. It is soluble in alcohol, esters, ketones, aromatic hydrocarbons and vegetable oils. It is insoluble in water. It is compatible with a wide variety of resins including most of the cellulosic and vinyl resins.

USES: *Santicizer* 1-H is used in special crystallizing finishes, paper coatings, textile coatings and adhesives. It is a useful plasticizer in nitrocellulose lacquers, imparting a relatively sharp softening point. It is also used to incorporate incompatible components such as paraffin wax for producing special coating effects such as crystallizing lacquers. For improved adhesion where flexibility in nitrocellulose is required, it is used in combination with dibutyl phthalate or *Santicizer* 160. It improves the moisture resistance of cellulose acetate and improves flexibility, hardness and light stability of ethyl cellulose. It is compatible with and imparts good flexibility to shellac and kauri resin.

SHIPPING INFORMATION: Resin Plasticizer. Approx. 320 lbs. fiber drums.

SANTICIZER® M-17 PLASTICIZER

Methyl Phthalyl Ethyl Glycollate.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 266.24

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 20 max.; Sp. Gr. 1.217 –1.227 at 25°/25°C.; acidity (as acetic acid) 0.02% max.; odor, slight characteristic; sulfur (copper-strip test) negative.

PROPERTIES: A solvent for both nitrocellulose and cellulose acetate; imparts a high degree of plasticity undiminished even in extremely thin films exposed to air currents for a long time. Very light-stable and may be used in transparent or tinted articles without danger of yellowing. Readily miscible with other organic solvents; solubility in water 0.09% at 30°C., but imparts a considerable degree of resist. ice to moisture penetration to both nitrocellulose and cellulose acetate film.

USES: Probably the best cellulose acetate plasticizer available. Dissolves *Santolite* resins, and as both are very resistant to petroleum products and compatible with so many film-forming materials, they make an excellent combination for producing gasoline-resistant coatings.

SHIPPING INFORMATION: Resin Plasticizer. 550-lb. steel drums; 5-gal. drums. Tank cars; tank trucks.

SANTICIZER® E-15 PLASTICIZER

Ethyl Phthalyl Ethyl Glycollate.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 280.27

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 20 max.; Sp. Gr. 1.180–1.185 at 25°/25°C.; acidity (as acetic acid) 0.02% max.; odor slight; sulfur (copper-strip test) negative.

PROPERTIES: Miscible with the common organic solvents except the petroleum hydrocarbons; when heated miscible with vegetable oils but partially separates on cooling; solubility in water 0.0175% at 30°C.

USES: Solvent for both nitrocellulose and cellulose acetate and for most resins. Light-fast; does not evaporate even from the thinnest films. With both cellulose acetate and nitrocellulose gives clear, tough, flexible films which have high resistance to moisture penetration. Highly recommended for use with cellulose acetate. Has been approved by Bureau of Animal Industry as a nontoxic plasticizer; may be used in cellulose-based lacquers for paper or in foils for food wrapping and packaging.

SHIPPING INFORMATION: Resin Plasticizer. 535-lb. steel drums; 5-gal. drums; tank cars, tank wagons.

SANTICIZER® B-16 PLASTICIZER

Butyl Phthalyl Butyl Glycollate.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 336.37

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 45 max.; Sp. Gr. 1.093–1.103 at 25°/25°C.; acidity (as acetic acid) 0.02% max.; essentially odorless; sulfur (copper strip test) negative.

PROPERTIES: A practically colorless liquid plasticizer; B.P. 219°C. at 5 mm.; does not crystallize at temperatures as low as –35°C.; water solubility 0.0012% at 30°C.; extremely light-stable; darkens on heating above 290°C.

USES: A widely used polyvinyl chloride plasticizer where a tasteless and non-toxic composition is required; has complete FDA approval for use in vinyl food wrappings. Imparts good heat and light stability. Especially useful in beverage tubing, food packaging, hospital sheeting and anatomical restorations. Solvent for nitrocellulose; compatible with most resins, imparting good flexibility. Miscible with castor, linseed and chinawood oils; somewhat retards gel formation in the latter on heating. An excellent plasticizer for chlorinated rubber, from 10 to 25 parts per 100 usually required. An exceptionally good plasticizer for polystyrene. Mixtures of *Santicizer* B-16 and *Santolite* resins may be used to plasticize casein and corn protein.

SHIPPING INFORMATION: Resin Plasticizer. 500-lb. steel drums; 5-gal. drums; tank cars; tank wagons.

0557202

TOWOLDMON0040936
WATER_PCB-00031982

SANTICIZER® 140 PLASTICIZER

Mixed Cresyl Phenyl Phosphate.

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear mobile liquid; color APHA 40 max.; Sp. Gr. 1.203-1.213 at 25°/25°C.; refractive index 1.550-1.570 at 25°C.; acidity (as H_3PO_4) 0.01% max.; moisture (by KF in methanol) 0.15 max.

PROPERTIES: An essentially odorless and colorless liquid plasticizer: B.P. approx. 258°C. at 10 mm.; pour point −37°C. approx.

USES: Quite similar to tricresyl phosphate in that it imparts flame retardance, excellent permanence, and chemical stability and equal heat and light stability; gives better low-temperature flexibility and abrasion resistance; is a stronger solvent and slightly more efficient than tricresyl phosphate. Can be used wherever tricresyl phosphate is used. Improved flexibility imparted by *Santicizer* 140 makes it preferable to tricresyl phosphate in many applications such as vinyl sheeting, lacquers and paper coating. Considerably more compatible than tricresyl phosphate with cellulose acetate. As a liquid, it is much easier to handle so it is often used in cellulose acetate, especially in conjunction with other active plasticizers. Other resins with which it is useful are cellulose nitrate, ethyl cellulose, cellulose acetate-propionate, polyvinyl formal and polyvinyl butyral.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. and 5-gal. drums; tank cars; tank trucks.

SANTICIZER® 141 PLASTICIZER *Alkyl Aryl Phosphate.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 100 max.; odor, slight characteristic; Sp. Gr. 1.089-1.093 at 25°/25°C.; refractive index 1.507-1.510 at 25°C.; acidity (as H_3PO_4) 0.01% max.; moisture (by KF in methanol) 0.10% max.

PROPERTIES: *Santicizer* 141 combines into one compound the non-flammability of tricresyl phosphate, and the efficiency and permanence of other vinyl plasticizers. Imparts superior low-temperature flexibility, improved abrasion and moisture resistance and good electrical properties. Gives excellent resistance to embrittlement and deterioration to polyvinyl-chloride compositions exposed to sunlight.

USES: Excellent for use in polyvinyl chloride films, sheets, extrusions, moldings, organosols and plastisols—in any application where an efficient, permanent, flame-retardant plasticizer is required. Small amounts (5-7 PHR) considerably improve light stability of vinyl compounds. Especially recommended in flexible films for curtains, aprons, rainwear and hospital sheeting and in soft, pliable coatings for tablecloths, upholstery and drapery. Suitable for use in products that touch the human body. *Santicizer* 141 has FDA approval as a nontoxic plasticizer for food packaging.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. and 5-gal. steel drums; tank cars; tank wagons.

SANTICIZER® 165 *Mixed-alcohol phthalate.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear oily liquid; color, APHA 30 max.; acidity, 0.12 meq/100 gms. max.; moisture, 0.12% max.; refractive index at 25°C., 1.484-1.487; Sp. Gr. 25°/25°C., 0.989-0.994.

PROPERTIES: *Santicizer* 165 is a low-cost, fast-fusing, primary plasticizer for polyvinyl chloride and nitrocellulose. It offers good, general-purpose properties at lower cost than Dioctyl Phthalate.

USES: Since *Santicizer* 165 is slightly more volatile than Dioctyl Phthalate, its use is recommended for average rather than severe conditions. The main applications for this plasticizer are in film, sheeting, floor tile and extrusions.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. (445-lb.) and 5-gal. (40-lb.) black iron drums; tank cars; tank wagons.

SANTICIZER® 214 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color, APHA 100 max.; appearance, clear oily liquid, essentially free of suspended matter or turbidity; acidity 0.15 meq/100 gms. max.; moisture (KF in methanol), 0.15% max.; refractive index at 25°C., 1.483-1.485; Sp. Gr. 25°/25°C., 0.950-0.955.

PROPERTIES: *Santicizer* 214 is an unusual primary plasticizer for polyvinyl chloride. The initial plastisol viscosity of this material is very low. It allows formulators to produce a low viscosity formulation which is harder than usual after curing.

USES: *Santicizer* 214 imparts unique properties to polyvinyl chloride compounds. In proper concentration is gives the finished product a hard, tough surface, especially in vinyl coatings on metal.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. (440-lb.) and 5-gal. (40-lb.) black iron drums; tank cars; tank trucks.

SANTICIZER® 409 POLYMERIC PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Appearance, clear, viscous liquid; color of solution (50 ml., 50 m 2-B alcohol), 250 APHA max.; moisture (by KF in methanol), 0.15 max.; odor, very faint ester; Sp. Gr., 25°/25°C., 1.081-1.084; viscosity at 210°F., 115 to 130 centistokes; acidity, 2.0 meq/100 gms. max.

PROPERTIES: *Santicizer* 409 combines the ideal properties of several plasticizers for polyvinyl chloride in one primary polymeric plasticizer. *Santicizer* 409 has low specific gravity, color and toxicity. Polyvinyl chloride compositions plasticized with *Santicizer* 409 show excellent compatibility, excellent permanence, super electrical properties, fast fusion, good low-temperature flexibility, good heat and light stability and excellent retention of physical properties.

USES: Because of its excellent electrical properties, *Santicizer* 409 is especially useful in wire coatings and tapes. It is also widely used in high-quality film and sheeting (adhesive backed), organosol fabric coatings, refrigerator gasketing and in other applications requiring a high degree of permanence and resitance to extraction. It is compatible with polyvinyl chloride, ethyl cellulose, cellulose acetate-butyrate and nitrocellulose.

SHIPPING INFORMATION: Resin Plasticizer. 55-gal. (450-lb.) and 5-gal. (45-lb.) steel drums; tank cars.

SANTICIZER® 411 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Viscous, some solids on standing.

SPECIFICATIONS: Color APHA 300 max. (50% ethanol solution); Acidity 1.0% max.; odor, slight characteristic; Sp. Gr. 1.101-1.105 at 25°C.

USES: *Santicizer* 411 is a low-cost permanent polymeric plasticizer with unusual resistance to solvent extraction and rubber migration. *Santicizer* 411 is designed for application in outerwear, baby pants, coated cloth (for automobile and furniture upholstery, etc.), wall covering, wire coatings, modified plastisols and organosols, vinyl-metal laminates, and high density foam vinyl where its excellent resistance-to-extraction and rubber migration properties are required.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars, tank trucks; 55-gal. and 5-gal. drums.

SANTICIZER® 630 MODIFIED-PHTHALATE PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color, APHA 70 max.; acidity, 0.12 meq/100 gms. max.; moisture (by KF in methanol), 0.10% max.; refractive index at 25°C., 1.5095-1.5160; Sp. Gr. 25°/25°C., 0.987-0.994.

PROPERTIES: *Santicizer* 630 is a low cost, primary plasticizer for polyvinyl chloride plastics. In some characteristics *Santicizer* 630 is superior to Dioctyl Phthalate especially in migration resistance to nitrocellulose and in plastisol-viscosity stability. Since this material is much more volatile than Dioctyl Phthalate, it is not recommended for applications where permanence is essential.

USES: *Santicizer* 630 is useful in formulating vinyl plastisols, extrusions, coatings or sheeting compounds. It imparts to vinyl compounds properties comparable to those imparted by DOP, but it costs less.

SHIPPING INFORMATION: Resin Plasticizer. Tank trucks and tank cars only.

SANTICIZER® 631 MODIFIED-PHTHALATE PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color APHA 60 max.; acidity, 0.12 meq/100 gms., max.; moisture (by KF in methanol), 0.10% max.; refractive index at 25°C., 1.4990-1.5045; Sp. Gr. 25°/25°C., 0.984-0.990.

PROPERTIES: *Santicizer* 631 is a low cost, primary plasticizer for polyvinyl chloride plastics. It offers a unique balance of cost versus performance in this resin. *Santicizer* 631 is better than DOP in migration resistance to nitrocellulose and in plastisol-viscosity stability.

USES: *Santicizer* 631 is useful in formulating vinyl plastisols, extrusions, coatings or sheeting compounds. It imparts properties to PVC compounds in the range of those imparted by DOP and is used when cost is a decisive factor. It lies between *Santicizer* 630 and DOP in price versus performance.

SHIPPING INFORMATION: Resin Plasticizer. Tank trucks and tank cars only.

0557203

TOWOLDMON0040937
WATER_PCB-00031983

SANTICIZER® 644 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: Clear, oily liquid, free of sediment or turbidity; color APHA 50 max.; acidity 0.35 meq/100 grams, max.; Sp. Gr. 0.917-0.922 at 25°/25°C.

USES: *Santicizer* 644 is a primary plasticizer for PVC and other resins to which it imparts excellent low temperature flexibility. Its use assures low volatility, excellent efficiency and superior flexibility. *Santicizer* 644 offers low initial viscosity and excellent viscosity stability in plastisols. *Santicizer* 644 is predominately used in vinyl film, sheeting and coated fabric to impart flexibility without sacrificing volatility or efficiency. Plastisols widely use *Santicizer* 644 to provide excellent viscosity characteristics along with improved fusion characteristics.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars, tank trucks; 55-gal. and 5-gal. drums.

SANTICIZER® 636 *2-Ethylhexyl Isodecyl phthalate*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Color, APHA 75 max.; acidity, 0.12 meq/100 gms. max.; moisture (by Karl Fischer), 0.10% max.; refractive index at 25°C., 1.478-1.488; Sp. Gr. 25°/25°C., 0.969-0.977.

PROPERTIES: *Santicizer* 636 is a practically colorless, high-boiling liquid of low viscosity and excellent electrical properties. It is miscible with most common solvents, thinners and oils. *Santicizer* 636 combines good low temperature properties, good resistance to migration and to water extraction, and excellent heat and light stability.

USES: *Santicizer* 636 is especially useful in plastisols where it offers lower viscosity build-up on aging than does Dioctyl Phthalate. It is also useful in electrical compounds where the higher molecular weight and lower volatility result in improved permanence of these products in end applications.

SHIPPING INFORMATION: Resin Plasticizer. Tank trucks and tank cars only.

SANTICIZER® 683 PLASTICIZER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear oily liquid free of sediment or turbidity; color APHA 100 max.; acidity 0.12 meq/100 gms. max.; Sp. Gr. 0.968-0.974 at 25°/25°C.

USES: *Santicizer* 683 is a modified phthalate ester. It is offered as a low-cost primary plasticizer for polyvinyl chloride. In some characteristics it is superior to DOP. It is particularly good in plastisols because of low initial viscosity and viscosity stability imparted. Resistance to N/C migration is excellent. *Santicizer* 683 is used in compounding vinyl plastisols, extrusions, coatings, film and sheeting.

SHIPPING INFORMATION: Resin Plasticizer. Tank cars, tank trucks.

SANTOLITE® MHP

See Page M-5/34

SANTOLITE® MS-80%

See Page M-5/35

HB-40® PARTIALLY HYDROGENATED TERPHENYL

See Page M-5/37

PLASTIC BOTTLES AND CONTAINERS

PLAX COMPANY—LITERATURE AVAILABLE

TYPE: Blow molded.

STOCK: High and Low Density polyethylene available in 37 basic shapes with capacities from 7 cc's to 13 gallons.

CUSTOM: Custom designed containers to meet specific marketing requirements can be produced in an endless variety of shapes and capacities. Dependant upon the specific needs, these custom containers can be made from polypropolyene, styrene, nylon, Delrin†, vinyl (rigid and flexible) as well as high or low density polyethylene.

USES: Safe lightweight containers for an endless variety of consumer and industrial products which are in liquid, cream or powder form.

† ® *E. I. duPont De Nemours & Co.*

PLASTIC CLOSURES

PLAX COMPANY—LITERATURE AVAILABLE

TYPE: Injection molded.

GENERAL INFORMATION: These closures are available in a variety of sizes as companion pieces to many Plax blow molded plastic bottles.

PLASTIC FITMENTS

PLAX COMPANY—LITERATURE AVAILABLE

TYPE: Injection molded.

STOCK: Good range of stock fitments for blow molded plastic bottles for dispensing liquid or powder in drop, spray or squirt form.

CUSTOM: Fitments can be designed for specialized needs.

PLASTIC SHEET AND FILM

PLAXACRIN® SHEET

PLAX COMPANY

DESCRIPTION: Acrylonitrile styrene copolymer (S.A.N.) rolls and sheets.

CODE: 2455.

END USE: Temporary glazing, blisters, box covers, fabricated boxes, tubes, etc.

GAUGES: .005", .0075", .010", .015".

POLYFLEX® SHEET

PLAX COMPANY—LITERATURE AVAILABLE

DESCRIPTION: Biaxially oriented polystyrene available in rolls and sheets—gauges .003" to .020".

Types	End Use
Code 1161 (Pressure Forming Grade)	Blisters, Domes, Lids, Trays, etc.
Code 1167 (Vacuum Forming Grade)	Blisters, Domes, Lids, Trays, etc.
Code 5127 (Optical Grade)	Printing, Laminating, Die Cutting
Code 4195 POLYFLEX® 400	Candy and Cooky Packaging
Code 1191 (Pressure Forming Grade)	Lids, Trays, etc.
R 501 Scratch Resistant (coated one side)	Document Protectors

POLYFLEX® FILM

PLAX COMPANY—LITERATURE AVAILABLE

PACKAGING GRADE FILM: Gauges .001", .00125", .0015", .002". Available on rolls.

DESCRIPTION: Biaxially oriented polystyrene, crystal clear, excellent dimensional stability, heat sealable, heat shrinkable and "breathing" characteristics necessary for packaging fresh produce.

POLYFLEX® 120 (laminating grade): Gauges .001", .00125", .0015", .002". Available on rolls.

RUBBER CHEMICALS

ACCELERATORS FOR NATURAL AND SYNTHETIC RUBBERS

ORGANIC DIVISION

THIAZOLE TYPE

EL-SIXTY® *1, 3-bis (2-benzothiazolylmercaptomethyl) urea.*

SPECIFICATIONS: (Treated to reduce dusting). Appearance and condition—buff powder; ash—0.5% max.; fineness (200 mesh)—0.5% max. retained; heat loss—0.5% max.; melting point—220°C. min.; dedusting agent—5.0 ±1.5%; sp. gr.—1.38 at 25°C.

(Continued on next page)

TOWOLDMON0040938
WATER_PCB-00031984

USES: Vulcanization accelerator for natural and synthetic rubbers. May be used alone but, for best results, an activator is usually desirable. Gives excellent processing and curing characteristics to many types of compounds. Effective in compounds containing high loads of retarding pigments such as clay.

SANTOCURE® *N-cyclohexyl-2-benzothiazolesulfenamide.*

SPECIFICATIONS: Appearance and condition—light tan or buff flakes or powder; ash—0.5% max.; fineness (20 mesh)—trace max. retained; melting point—94°C. min.; moisture—1% max.; ether insolubles—5.0% max. when shipped; sp. gr.—1.27 at 25°C.

USES: Delayed action vulcanization accelerator for natural and synthetic rubbers. Activators are sometimes desirable but not always needed. Exceptionally safe at processing temperatures but powerful at curing temperatures. Give high modulus and tensile.

SANTOCURE® 26 *2-(2,6-dimethyl-4-morpholinothio benzothiazole*

SPECIFICATIONS: Appearance and condition, cream to light yellow powder; ash 0.5% max.; fineness (10 mesh) trace max. retained; melting point 88°C. min.; moisture 0.5% max.; ether insolubles 2.0% max. when produced; sp. gr. 1.26 @ 25°C.

USES: Delayed action vulcanization accelerator for natural and synthetic rubbers. Activators are sometimes desirable but not always needed. Exceptionally safe at processing temperatures but powerful at curing temperatures. Gives high modulus and tensile.

SANTOCURE® MOR

2-(morpholinothio)-benzothiazole

SPECIFICATIONS: Appearance and condition, buff to brown flakes; ash, 0.5% max.; melting point, 80°C. min.; moisture, 0.5% max.; ether insolubles, 1.0% max. when shipped; specific gravity (approx.) 1.34 @ 25°C.

USES: *Santocure* MOR is used in the same way as the other *Santocure* products and responds in much the same manner to secondary accelerators. In most applications, its delayed action appears to lie between *Santocure* NS and *Santocure* 26.

SANTOCURE® MOR-90

Blend of Santocure MOR and thiofide

SPECIFICATIONS: Appearance, light buff to brown flakes; ash, 0.5% max.; moisture, 0.5% max.; ether insolubles, 12% max. when shipped; crystallizing point, 70°C. min.; specific gravity (approx.) 1.36 @ 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers.

SANTOCURE® NS *N-tert-butyl-2-benzothiazolesulfenamide.*

SPECIFICATIONS: Appearance and condition, light blue powder or flakes; ash 0.5% max.; fineness (20 mesh) trace max. retained; melting point 104°C. min.; moisture 0.5% max.; ether insolubles 1% max. (when shipped); sp. gr. 1.29 at 25°C.

USES: Delayed action vulcanization accelerator for natural and synthetic rubbers. *Santocure* NS is used in the same way and for the same purposes as *Santocure*. It provides even greater delayed action. *Santocure* NS is a little stronger than *Santocure* and it is customary to reduce the dosage by about 10% when making the substitution.

THIOFIDE® (MBTS)

2,2'-dithiobis (benzothiazole); also called benzothiazyl disulfide and 2,2'-dibenzothiazyl disulfide.

SPECIFICATIONS: Appearance and condition—cream powder; ash—0.5% max.; fineness (100 mesh)—0.1% max. retained; melting point—168°C. min.; moisture—0.5% max.; petroleum ether extractable—6.5±1.5%; sp. gr.—1.54 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. An activator is usually desirable. Safe handling when properly activated. Can be used successfully in a wide variety of stocks. *Thiofide* is treated to reduce dusting and aid dispersion.

THIOTAX* (MBT) *2-mercaptobenzothiazole.*

SPECIFICATIONS: Appearance and condition, cream to light yellow powder; ash 0.5% max.; assay (MBT content) 91% min.; fineness (100 mesh) trace max. retained; melting point 170°C. min.; dedusting agent 2.0-4.5%; moisture 0.5% max.; sp. gr. 1.50 at 25°C.

*Monsanto trademark

USES: Vulcanization accelerator for natural and synthetic rubbers. An activator is not needed but is often desirable. Activator must be adjusted carefully to avoid scorch difficulties. *Thiotax* is treated to reduce dusting and aid dispersion.

MERTAX* (MBT) *2-mercaptobenzothiazole.*

SPECIFICATIONS: Appearance and condition, cream to light yellow powder; ash 0.3% max.; assay (MBT) content 97% min.; fineness (200 mesh) 0.5% max. retained. (100 mesh) trace max. retained; melting point 175°C. min.; moisture 0.5% max.; sp. gr. 1.50 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Purified form of *Thiotax*—can be used in the same way. Its chief advantage is improvement in odor compared to *Thiotax*.

ALDEHYDE AMINE TYPE

A-32* *Reaction product of butyraldehyde and butylidene aniline.*

SPECIFICATIONS: Appearance and condition—red-yellow to orange liquid, may be faintly turbid; moisture—no liquid separation on standing; sp. gr.—1.01 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Used mostly for hard rubber.

A-100* *Reaction product of butyraldehyde, acetaldehyde and aniline.*

SPECIFICATIONS: Appearance and condition—dark, red brown oily liquid; moisture—no liquid separation on standing; sp. gr.—1.01 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Used mostly for hard rubber.

ULTRA TYPE

RZ-50®-A

50% Solution in Cellosolve of the N,N-dimethylcyclohexylamine salt of dibutyldithiocarbamic acid.*

SPECIFICATIONS: Appearance and condition—clear brown liquid color (NPA)—8.0 max. (when produced); assay—50±2%; sp. gr., 0.96 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Used in dry rubbers and cements. Very fast curing.

RZ-50®-B

50% Solution in Cellosolve† of the N,N-dimethylcyclohexylamine salt of dibutyldithiocarbamic acid, with emulsifying agents added.

SPECIFICATIONS: Appearance and condition, clear brown liquid; sp. gr. 0.96 at 25°C.; assay 50±2%; color (when produced) (NPA) 8.0 max.

USES: For latex emulsions, *RZ-50B* is especially effective. Vulcanization accelerator for natural and synthetic rubber latex. Gives fast cures.

†®An Ethylene Glycol Monoethyl Ether of Union Carbide & Carbon Chemicals Corporation.

R-2 CRYSTALS

Reaction product of carbon disulfide and 1,1'-methylenedipiperdine.

SPECIFICATIONS: Appearance and condition, grey white pellets; melting point 58°C. min.; sp. gr. 1.22 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Used mostly in cements and latex.

MONO THIURAD®

Bis(dimethylthiocarbamyl)sulfide; also called tetramethylthiuram monosulfide.

SPECIFICATIONS: (Standard Powder). Appearance and condition—lemon yellow powder; ash—0.5% max.; fineness (200 mesh)—1% max. retained. (100 mesh)—trace max. retained; melting point—103°C. min.; moisture—0.5% max.; sp. gr.—1.39 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Available in oiled and unoiled powder and pellet form.

0557205

TOWOLDMON0040939
WATER_PCB-00031985

THIURAD®

Bis(dimethylthiocarbamyl)disulfide; also called tetramethylthiuram disulfide.

SPECIFICATIONS: (Standard Powder) Appearance and condition—light buff to white powder; ash—0.5% max.; fineness (100 mesh)—trace max. retained; melting point—144°C. min.; heat loss—0.5% max.; sp. gr.—1.41 at 25°C.

USES: Sulfur bearing vulcanization accelerator for natural and synthetic rubbers. Available in oiled and unoiled powder form and pellet form.

ACCELERATOR B

SPECIFICATIONS: Accelerator B is a physical blend of 2 parts *Thiurad* and 1 part *Thiotax*. *Thiurad* and *Thiotax* are commonly used in this ratio as accelerators for butyl. Monsanto preblends the two compounds, offering the 2:1 mix as a convenience for the user.

GUANIDINE TYPE

DPG *Diphenylguanidine.*

SPECIFICATIONS: Appearance and condition, pinkish-white powder; ash 0.3% max.; fineness (100 mesh) trace max. retained; melting point 146°C. min.; heat loss 0.5% max.; dedusting agent 1.0 -3.0%; sp. gr. 1.20 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Used mostly as a secondary for thiazoles. DPG is treated to reduce dusting and aid dispersion.

GUANTAL® *Diphenylguanidine phthalate.*

SPECIFICATIONS: Appearance and condition—white powder; ash—0.3% max.; fineness (200 mesh)—0.5% max. retained; melting point—178°C. min.; heat loss—3.5% max.; sp. gr.—1.20 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers. Used mostly as a secondary for thiazoles.

THIOCARBANILIDE TYPE

A-1* THIOCARBANILIDE

Also called 1,3-diphenyl-2-thiourea and N,N'-diphenylthiourea.

SPECIFICATIONS: Appearance and condition—gray powder; ash—0.5% max.; fineness (100 mesh)—trace max. retained; melting point—148°C. min.; heat loss—0.75% max.; sp. gr.—1.32 at 25°C.

USES: Vulcanization accelerator for natural and synthetic rubbers—special applications.

ANTIOXIDANTS AND ANTIOZONANTS

FLECTOL® H

polymerized 1,2-dihydro-2,2,4-trimethylquinoline.

SPECIFICATIONS: Appearance and condition, brown powder or flakes; ash —0.5% max.; fineness: powder-200 mesh 0.5% max. retained, flakes-40 mesh 90.0% min. retained; moisture —1% max.; Sp. Gr. —1.03 at 25°C.; melting range, initial melt 75-100°C.

USES: For protection of rubber against heat deterioration and normal aging. It causes less discoloration than most other full-power antioxidants. It is an accelerator for Neoprene vulcanization. *Flectol* H is excellent for reducing frosting on dry heat cured compounds. For maximum protection use 1% to 3% based on the rubber.

**Monsanto trademark*

SANTOFLEX® AW *6-ethoxy-1,2-dihydro-2,2,4-trimethylquinoline.*

SPECIFICATIONS: Appearance and condition—dark viscous liquid; heat loss—1% max.; insolubles (benzene)—trace max.; sp. gr.—1.04 at 45°C.

USES: For reducing the harmful effect of ozone attack and in this respect it appears to be somewhat more effective with SBR than natural rubber. It is particularly suggested for compounds used in dynamic service where waxes are sometimes not desirable. 2% on the hydrocarbon is usually sufficient. *Santoflex* AW is a fairly good antioxidant for the prevention of the usual deterioration on aging. It also has considerable merit as a flex-cracking inhibitor. Discolors and stains very badly.

SANTOFLEX® DD *6-Dodecyl-1,2-dihydro-2,2,4-trimethylquinoline.*

SPECIFICATIONS: Appearance and condition—dark, viscous liquid; ash—0.1% max.; nitrogen content—3.1% max.; sp. gr.—0.93 at 45°C.

USES: For inhibiting flex-cracking and oxidation. It is especially recommended for rubber articles used in dynamic service but is equally effective in any type of rubber compound. It causes rather severe discoloration and staining. 1% to 2% on the hydrocarbon is usually sufficient but up to 4% can be used with improved results.

SANTOFLEX® 17

N,N¹-Bis-(1-ethyl-3-methylpentyl)-p-phenylenediamine

TYPICAL PROPERTIES: Appearance and condition, dark reddish brown liquid; sediment, trace max.; heat loss 2 hr. @ 105°C. 0.5% max.; copper content 10 ppm max.; vapor pressure @ 25°C. less than 1 micron; Sp. Gr. 0.90 approx.; wt. per gal. 7.5 lbs.

USES: An antiozonant to protect against degradation in poly unsaturated elastomers.

SANTOFLEX® 36

N-Isopropyl-N¹-phenyl-p-phenylenediamine

SPECIFICATIONS: Appearance and condition, dark gray to black flakes; ash 0.5% max.; crystallizing point range 72-76°C; Sp. Gr. (approx.) 1.04 @ 25°C.

USES: *Santoflex* 36 is an outstanding antidegradant for the protection of rubbers against oxidation, ozone, flex-cracking and poisoning by copper and manganese. It has high activity with all commonly used elastomers and may be used with other protective agents to achieve enhanced effects.

Santoflex 36 disperses most easily during mill or Banbury mixing. It stains and discolors rather severely. Depending upon the application, the recommended dosage varies from 1 to 3% on the rubber.

SANTOFLEX® 75

Mixture of N,N'-diphenyl-p-phenylenediamine (DPPD), 75%, and 6-dodecyl-1,2-dihydro-2,2,4-trimethylquinoline ("Santoflex" DD), 25%.

SPECIFICATIONS: Appearance and condition—dark flakes; ash—0.5% max.; sp. gr.—1.10 at 25°C.

USES: For reducing aging and oxidation effects. *Santoflex* 75 contains a high percentage of N,N'-diphenyl-p-phenylenediamine. It is designed for those who wish to use a high dosage of this material, with a lower amount of regular antioxidant. More than 0.4% on the hydrocarbon is liable to cause blooming.

SANTOFLEX® 217

N,N¹-Bis-(1-methylheptyl)-p-phenylenediamine

TYPICAL PROPERTIES: Appearance and condition, dark reddish brown liquid; sediment, trace max.; heat loss 2 hr. @ 105°C., 0.5% max.; copper content 10 ppm max.; vapor pressure @ 25°C., less than 1 micron; Sp. Gr. @ 80°F., 0.90 approx.; wt. per gallon 7.5 lb.

USES: An antiozonant to protect against degradation in poly unsaturated elastomers.

SANTOVAR® A *2,5-di-(tert-amyl) hydroquinone.*

SPECIFICATIONS: Appearance and condition—buff powder; ash—0.5% max.; fineness (100 mesh)—trace max. retained; melting point—172°C. min.; heat loss—1% max.; sp. gr.—1.05 at 25°C.

USES: For the protection of uncured rubber against oxidation. It also inhibits oxygen attack on unsaturated resins and oils. Cold flow of uncured compositions is reduced by a stiffening effect of *Santovar* A. Excellent for adhesives or other uncured films. It is non-staining and non-discoloring. Use 10.5% to 4% on the material to be protected.

TOWOLDMON0040940
WATER_PCB-00031986

SANTOWHITE® 54 *A modified hindered phenol*

SPECIFICATIONS: Appearance and condition, clear, viscous, straw-colored liquid; ash 0.25% max.; crystallizing point, will not crystallize but forms glass below −10°C.; heat loss 0.5% max.; Sp. Gr. (approx) 0.906 @ 25°C.

USES: *Santowhite* 54 is an outstanding antioxidant from the standpoints of discoloration and staining. It is easily emulsified for use in latex and incorporates readily in dry rubbers. It is employed at 1 to 2% based upon the hydrocarbon.

SANTOWHITE® 54-S *Solid form of Santowhite 54*

COMPOSITION: Two parts of active material and 1 part of inert filler.

USES: Antioxidant (See *Santowhite* 54).

SANTOWHITE® CRYSTALS *4,4'-thiobis-(6-tert-butyl-m-cresol).*

SPECIFICATIONS: Appearance and condition—light gray to tan powder; ash—0.5% max.; fineness (50 mesh)—trace max. retained; melting point—150°C. min.; moisture—1% max.; sp. gr.—1.10 at 25°C.

USES: For the protection of light colored rubber from oxidation. It is also useful in any rubber product used in contact with surfaces such as lacquer or enamel which are subject to staining by ordinary antioxidants. *Santowhite* Crystals provides excellent protection against normal aging. Use 1% to 2% on the hydrocarbon. Excellent for the protection of non-staining Neoprene compounds against heat deterioration.

SANTOWHITE® L *(Essentially) thiobis-(di-sec-amylphenol).*

SPECIFICATIONS: Appearance and condition—dark, viscous liquid; ash—0.25% max.; heat loss—0.5% max.; softening point—0°C. max.; sp. gr.—0.99 at 50°C.

USES: For protection of rubber and rubber latex from oxidation. It is easily emulsified and has no effect on latex stability. It is a non-staining and non-discoloring antioxidant of medium strength.

SANTOWHITE® MK

Reaction product of 6-tert-butyl-m-cresol and SCl₂.

SPECIFICATIONS: Appearance and condition—dark, viscous liquid; ash—0.5% max.; heat loss—5% max.; softening point—20° to 35°C.; sp. gr.—1.06 at 25°C.

USES: For protection of rubber from oxidation. It is excellent from the standpoints of staining and discoloration. Use 1% to 2% on the hydrocarbon. Gives good protection to uncured SBR latex compounds.

SANTOWHITE® POWDER

4,4'-butylidenebis (6-tert-butyl-m-cresol).

SPECIFICATIONS: Appearance and condition—white powder; ash—0.3% max.; fineness (100 mesh)—trace max. retained; melting point—209°C. min.; heat loss—0.5% max.; sp. gr. —1.03 at 25°C.

USES: For protection of latices and dry rubber against oxidation. It is unexcelled from the standpoints of staining and discoloration. Use 1% to 2% on the hydrocarbon.

SPECIAL MATERIALS

SULFASAN® R *4,4'-dithiodimorpholine.*

SPECIFICATIONS: Appearance and condition—gray to tan powder; ash—0.5% max.; heat loss—0.5% max.; melting point—122°C. min.; fineness (100 mesh)—0.1% max. retained, (200 mesh)—2.0% max. retained; sulfur—26 to 29%; sp. gr.—1.36 at 25°C.

USES: Vulcanizing agent. Stocks containing *Sulfasan* R give excellent aging and freedom from cured bloom. It does not discolor white compounds. Especially effective with Sulfenamide accelerators.

ELASTOPAR®

N-Methyl-N,4-dinitrosoaniline (33⅓%) plus inert diluent (66⅔%).

SPECIFICATIONS: Appearance and condition—light colored, free flowing powder; assay—31.6-35.0%; fineness (30 mesh)—trace max. retained; heat loss—0.5% max.; sp. gr.—2.05@25°C.

USES: For chemically modifying butyl rubber. Used in a range of 0.5 to 1.25% on the butyl. When mixing at about 300°F. under proper conditions, the following results may be expected: improved resilience; increased modulus; slightly lower hardness; increased resistance to abrasion; better low-temperature flexibility; increased electrical resistivity; reduced cold-flow of unvulcanized gum; reduced Mooney Viscosity.

NOTE: Butyl and *Elastopar* should be reacted in the absence of curatives and other reactive compounds. In a Banbury, the reaction will take place in about one minute at 300° F. Lower temperatures should be avoided and higher temperatures do no harm.

INSOLUBLE SULFUR 60

SPECIFICATIONS: Appearance and condition—greenish yellow *powder; fineness (45 mesh)—trace max. retained;* heat loss—1.4% max.; insolubles (carbon disulfide) 55% min.; sp. gr. —2.0 at 25°C.

USES: Used to retard sulfur bloom on uncured natural rubber or synthetic rubber surfaces. Used in the same amount as regular sulfur. With this type of sulfur there is usually a slightly enhanced rate of cure.

MONOMERS FOR SYNTHETIC RUBBER

ACRYLONITRILE

See Page M-5/18

STYRENE MONOMER

See Page M-5/19

SPECIALTY PRODUCTS

ADHESIVES

CASEIN AND SOYBEAN ADHESIVES

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Dry powder.

PROPERTIES: Exceptionally good for low-temperature bonding applications where average to superior water resistance is desired.

USES: Cold-setting glues used in the manufacture of plywood, furniture, assembly gluing, case goods of all types. Also used in Monsanto's patented NO-CLAMP Process for making plywood, as well as in nail pressure gluing operations.

INDUSTRIAL USERS: Plywood and Forest Products Industries.

SHIPPING INFORMATION: Multiwall bags (100-lbs.). Glues Dry, NOIBN.

TOWOLDMON0040941
WATER_PCB-00031987

PHENOLIC AND RESORCINOL RESINS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquids.

PROPERTIES: Various properties are available for requirements demanding an extremely high degree of water resistance. Bonds can be made capable of withstanding continuous boiling.

USES: Glues for plywood, hardboard, particle board and general woodworking. Used for hot and cold pressing and for radio frequency work.

INDUSTRIAL USERS: Plywood, Hardwood, Particle Board and General Woodworking Industries.

SHIPPING INFORMATION: Metal drums (500-lbs.); tank trucks and tank cars. Glues Liquid, NOIBN.

UREA AND MELAMINE RESINS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquids; dry powders.

PROPERTIES: Various properties are available for uses requiring varying degrees of water and weather resistance, speed of set and strength.

USES: Hot and cold setting adhesives for the plywood and woodworking industries. Bonding agent for particle board. Can be formulated for high frequency equipment.

INDUSTRIAL USERS: Plywood, Particle Board, and Forest Products Industries.

SHIPPING INFORMATION: Fiber drums (250-lbs.) for powdered melamine resins. Metal drums (550 lbs.), tank trucks and tank cars for liquid urea resins. Dry Powders: Rail—Plastics, Synthetic, other than liquid, NOIBN. Truck—Plastics, Powder, Liquid: Rail—Plastics, Synthetic, NOIBN. Truck—Plastics, Liquid, NOI.

ANTI-CAKING FLOW CONDITIONERS

SANTOCEL® *Silica Aerogel for Industrial Applications.*

INORGANIC DIVISION—LITERATURE AVAILABLE

TYPICAL ANALYSIS:

Range of Various Grades

	Unit	SANTOCEL
Bulk Density	lb/cu. ft.	5-6
Particle Size (AV)	microns	3-5
Surface Area	sq. meters/gm	130-398
Oil Absorption	gm. oil/gm	3.0-3.5
SiO_2	%	90.0-96
Volatile	%	3.5-5.0
Na_2SO_4	%	0.03-3
pH	—	3.5-3.8
Index of Refraction	—	1.45-1.46
Absolute density	lb/gal.	17.1

GRADES: *Santocel* C, *Santocel* OS, *Santocel* CX, *Santocel* 54, *Santocel* FR-C, *Santocel* 62, *Santocel* 2.

USES: Flatting agent to produce matte finishes in coatings of all types (lacquers, varnishes, vinyl resin coatings and resin dispersions); bodying agent in printing inks; bulking agent for dry powders, free-flowing and anticaking agent for dry powders; insecticide for stored industrial grains; application aid for rubber cements; reinforcing agent for silicone rubbers; bodying agent to make lubricating greases; dry grinding aid for DDT and other sticky powders; to raise heat distortion point, as in molded brake linings; mold lubricants for hard rubber; bodying agent for paint removers; antisettling agent for pigments; antislip agent in paste floor waxes; flatting agent for free film and textile coatings. Imparts thixotropy properties to polyester and epoxy resins dispersions and solutions; thickening and thixotropic agent for polyvinyl chloride plastisols and plasticizer dispersions.

SHIPPING INFORMATION: Silica NOIBN less than 10 lb. per cu. ft. Multiwall bags. C, OS, FR-C—25-lb.; CX—15-lb.; 54—20-lb.

SANTOCEL® *Silica Aerogel for Thermal Insulation.*

INORGANIC DIVISION

STANDARD FORM: *Santocel* A—sugar-sized particles.

TYPICAL ANALYSIS: Approximate analysis for all insulation grades of *Santocel*: SiO_2, 93.0-96.0%; volatile* 0.5-1.5%; Na_2SO_4, 2.5-3.5%; Fe_2O_3 and Al_2O_3, 1%.

*Volatile is water, alcohol, acetaldehyde.

PROPERTIES: Known technically as a silica aerogel, it possesses the lowest coefficient of thermal conductivity known. Dry bulk density: *Santocel* A, 5-lbs. per cu. ft.; absolute density 17.1 lbs. per gal.; specific heat 0.234; angle of repose 12.5°; thermal conductivity (mean temp. 60°F.) 0.150 BTU/Hr./Ft.²/in./°F.

USES: Adapted for any use where efficiency or space saving is a factor in thermal insulation, especially in freezers, shipping containers, insulated trucks, trailers and freight cars, liquid oxygen manufacture and storage, and cold-storage room doors.

SHIPPING INFORMATION: Silica NOIBN, less than 10 lb. per cu. ft. Multiwall paper bags 20-lbs. net.

TRICALCIUM PHOSPHATE

See Page M-5/7

ANTI-FOAMING AGENTS

PC-1244® DEFOAMER

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Clear light yellow liquid.

SPECIFICATIONS: Color ASTM 0.5; Sp. Gr. 0.86 at 60°/60°F.; viscosity, SUS at 100°F., 190; 7.72-lbs. per gallon.

GENERAL INFORMATION: Solubility—PC-1244 is soluble in benzene, toluene, kerosene, petroleum ether, carbon tetrachloride, isopropanol, tertiary amyl alcohol, butyl cellosolve and ethyl acetate. It is not soluble in water, methanol, ethanol and methyl cellosolve.

USES: Foam control in non-aqueous systems. In paraffin wax formulations it not only controls foam, but also imparts a leveling action. Unusually effective in neutral or acidic media.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. non-returnable black iron drums; 5-gal. cans; tank cars.

ANTI-SLIP AND ANTI-SOIL AGENTS

SYTON® AS-200 *Colloidal Silica.*

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Most carpet fabrics can have their soiling properties improved by a treatment of a very finely divided colloidal silica dispersion. Wool-rayon blends, cotton and other synthetic carpets can be markedly improved against soiling by a silica sol treatment. Pure wool carpets are less subject to improvement than the synthetics or blends. In combination with certain film formers, paper surfaces can be made soil resistant. When directly applied to hard surfaces, soil resistance results.

USES: For use as an anti-soilant for pile fabrics.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB freezes 32°F. Keep from freezing). 550-lb. drums.

SYTON® C-30 AND 200 COLLOIDAL SILICA

INORGANIC DIVISION

TYPICAL ANALYSIS:

	Syton C-30	Syton 200
SiO_2	30%	30%
Water	70%	70%
Na_2SO_4	0.15%	0.10%
Sp. Gr.	1.2	1.2
pH	10.0	8.7
Appearance	Milky white dispersion	Slightly turbid liquid
Ultimate particle size	350-400 angstroms	100-250 angstroms

GENERAL INFORMATION: Colloidal dispersion of silica in water. Will freeze at 32°F. and the silica is precipitated irreversible.

USES: Anti-blocking agent in water finishes. Gloss control agent in water finishes. Increase bond strength of rubber latex adhesives. Increase modulus of latex film and thread. Surface harden water base laminating resins. Suspending agent for pigments in water systems. Mold lubricant. Binder for precision casting molds. Flame retarding agent for water-based paints. Improves soil resistance of hard surfaces. Improves scrub and soil resistance of water-based paints.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 30°F. Keep from freezing). 550-lb. drums.

0557208

TOWOLDMON0040942
WATER_PCB-00031988

SYTON® C-40 & 240 COLLOIDAL SILICA

INORGANIC DIVISION—LITERATURE AVAILABLE

Typical Physical and Chemical Properties

	C-40	240
SiO_2	40	40
Water	60	60
Specific Gravity	1.28-1.30	1.28-1.30
Viscosity Centipoise (25°C. Brookfield #1 Spindle)	7	7
Appearance**	Milky White Dispersion	Slightly turbid liquid
pH at 25°C	9.8	9.0
Compatibility	Excellent with nonionic and anionic surfactants	
Ultimate particle size	350-400 Angstroms 35-40 millimicrons	100-250 Angstroms 10-25 millimicrons
Clarity (% transmission by Electrophotometer)	10	60
Lbs. per gallon	10.77	10.77
Lbs. SiO_2 per gallon	4.30	4.30

***The visual differences can be related to differences in ultimate particle size using light scattering techniques.*

A 40% concentration of SiO_2 in the form of colloidal silica sales. Have the same application as the 30% grades with added advantage of freight warehouse and handling savings.

These particles are rigid, chemically inert, pure SiO_2. The colloidal suspension has a low viscosity and may be applied by rolling, spraying, brushing or dipping.

Syton is used where frictionizing, reinforcing or surface modifying properties are desired.

Heat stability tests show that *Syton* undergoes no increase in viscosity when heated even as long as 200 hours at 77°C in a closed container. If the water is allowed to evaporate, either at room or higher temperatures, *Syton* 240 or *Syton* C-40 will exhibit a greater tendency toward formation of silica scale or deposits due to higher silica concentrations.

SYTON® DS AND DS-200 COLLOIDAL SILICA

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Extremely fine colloidal aqueous dispersions of silica. In textile spinning: controls the slippage between fibers, thereby increasing tensile strength of spun yarns, permitting less twist in some cases, or fewer breaks during spinning and weaving. In textile finishing: controls slippage in woven rayons, gives dry worsted-like hand, delusters in higher concentrations.

USES: Spinning, wet processing and finishing textiles.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 32°F. Keep from freezing). 550-lb. drums.

SYTON® P AND P-200 COLLOIDAL SILICA

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: The application of an extremely fine colloidal aqueous dispersion of silica applied either by spray or roller to multiwall paper bags or most any type of paperboard boxes or liner board will materially reduce slippage between the coated surfaces. *Syton* P is proving to be the most effective anti-skid agent.

USES: For use on paper containers to make slip-resistant coatings.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 32°F. Keep from freezing). 550-lb. drums.

SYTON® W-200 COLLOIDAL SILICAS

INORGANIC DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: *Syton* W-200 is an extremely fine colloidal aqueous silica dispersion and is used in wax emulsions primarily to give anti-slip properties to the wax applications.

USES: For use as an anti-slip agent in wax emulsion polishing compounds.

SHIPPING INFORMATION: Colloidal Silica, liquid (NB: Freezes 32°F. Keep from freezing). 550-lb. drums.

ANTIOXIDANTS

SANTOQUIN® AND SANTOQUIN® *MIXTURE #6*

ethoxyquin, 1-2-dihydro 6-ethoxy 2,2,4 trimethylquinoline

AGRICULTURAL DIVISION—LITERATURE AVAILABLE

GENERAL INFORMATION: Santoquin is an antioxidant used in dehydrated forage crops for the preservation of carotenes and Vitamin E. The use level permitted in the Regulation issued by the United States Food and Drug Administration is 0.015% or 0.3 pounds liquid form per ton of forage crops. *Santoquin* is also added to manufactured animal feeds to protect the important nutrients against oxidative destruction. The addition of 0.0125% or 0.25 pounds liquid or 6 ounces dry form per ton of complete animal feeds will preserve the carotenes and xanthopiyll pigments as well as Vitamins A and E.

LIQUID FORM: Dark Liquid — varies from yellow to black but biological activity is independent of color.

DRY FORM: (MIXTURE #6): 66.6% 1.2 dihydro 6-ethoxy 2,2,4 trimethylquinoline and 33.4% food grade vermiculite (verxite). A brown, free-flowing granular material with a density of 23 pounds per cubic foot.

SHIPPING INFORMATION: Rail: condition powders, regulators or tonics, animal or poultry, NOIBN. Truck: Feed Supplements not frozen. 5 and 55-gal. drums or 100-lb. lever packs.

SOPANOX® ortho-TOLYL BIGUANIDE

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 200.24

STANDARD FORM: Powder.

SPECIFICATIONS: White to off-white powder: assay 90% min.; loss on drying 5% max.: melting point 138°C. min.; trace retained on a 30 mesh sieve: alcohol insolubles 0.5% max.

PROPERTIES: An amino compound effective in minute quantities in restraining the oxidation of soap and the resulting rancidity, discoloration and other adverse qualities, all of which must be avoided in producing a product of highest grade.

USES: Our experience shows that *Sopanox* satisfies the exacting demands of manufacturers of soaps produced from animal or vegetable oils, filled or unfilled. Particularly valuable in preventing discoloration or refined toilet soaps.

SHIPPING INFORMATION: Chemicals NOIBN. 150-lb. lever paks.

BACTERIOSTATS / DISINFECTANTS / FUNGICIDES FUNGISTATS / GERMICIDES

ACL®

See Page M-5/53

ACTAMER® *2, 2' thiobis-(4,6-dichlorophenol)*

ORGANIC DIVISION—LITERATURE AVAILABLE

SPECIFICATIONS: White powder: assay 99.0% min.: color of Solution (10:100 of Acetone): 100 APHA max.: loss on drying 0.025% max.: screen test retained on 50 mesh 1.0% max., retained on 200 mesh 20.0% max.: melting point 187°C. min. (first menicaus).

USES: *Actamer* is an effective skin bacteriostat, a non-toxic, low cost, royalty-free degerming agent recommended for incorporation in soaps and other topically applied pharmaceutical and cosmetic preparations.

SHIPPING INFORMATION: Chemicals NOIBN, 200 and 50-lb. fiber drums.

CHLORAMINE-T

Also known as N-sodium-N-chloro-para-toluenesulfonamide

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 281.70

STANDARD FORM: Crystalline powder.

0557209

TOWOLDMON0040943
WATER_PCB-00031989

SPECIFICATIONS: White or faintly yellow powder or crystals; solubility in water (2:15) complete; moisture 18.0-20.0%; available chlorine 24.5-25.2%; assay 97.3% min.; trace max. retained on 10 mesh; .15% retained on 35 mesh.

CHLORINE-CAUSTIC SODA, CAUSTIC POTASH AND SODIUM SULFIDE PLANTS—Complete manufacturing plants using DeNora Mercury Cells offered by Engineering Sales Department.

USES: A water-soluble, chlorine-bearing powder used as a germicide, disinfectant and deodorant.

SHIPPING INFORMATION: Disinfectant Other Than Medicinal NOIBN. 300-lb. fiber drums; 125-lb. lever-paks.

MONSANTO® PENTA *Pentachlorophenol, Technical.*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 266.35

STANDARD FORM: Flakes. *Monsanto Penta* Oiled also available. Contains 3-lbs. oil per 100-lbs. of PENTA TECHNICAL. Oil decreases somewhat the dusting tendency of the product.

SPECIFICATIONS: Dark, grayish flakes; crystallizing point 174.0°C. min.; alkali insoluble material 1.0% max.; assay 96.0% min.; pine oil solution NPA 5.5 max. Meets Federal Specification TT-W-570.

PROPERTIES: Chlorophenolic odor; bulking value 45.5 lbs. per cu. ft.; stable under ordinary conditions; relatively non-hygroscopic and unreactive chemically; soluble to various degrees in organic solvents; relatively insoluble in water.

GENERAL INFORMATION: *Monsanto Penta* and its solutions and formulations may be irritating to the skin and mucous membranes and are somewhat toxic to man and the higher animals. Precautions suggested for handling should be observed.

USES: Highly toxic to fungi, termites and many forms of bacteria. Used industrially where the growth of microorganisms must be prevented or controlled; to protect wood against rot, termites and Lyctus (Powder-Post) beetles; as an effective herbicide. Penta is used frequently in oil solutions or as the sodium salt (see *Santobrite*).

SHIPPING INFORMATION: Pentachlorophenol, 100-lb. fiber container; 50-lb. multiwall paper bags. Oiled Penta 16½-gal. lever-pak; 51-lb. multiwall paper bags.

SANTOBRITE® SODIUM PENTACHLOROPHENATE, TECHNICAL

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 288.36

STANDARD FORM: Neutral powder, pellets, fines or briquettes.

SPECIFICATIONS: Light tan powder, pellets, fines or briquettes; assay 88.0% min.; free alkali (as NaOH) 0.5-0.9%.

PROPERTIES: Comparatively odorless; stable under ordinary atmospheric conditions when stored in dry place; bulking value: briquettes 40-50 lbs./ft.³, pellets 35-40 lbs./ft.³, powder 55-65 lbs./ft.³; soluble in water and various organic polar solvents. Relatively inert toward organic compounds.

GENERAL INFORMATION: *Santobrite* and its solutions may be irritating to the skin and mucous membranes of some individuals and are somewhat toxic to man and the higher animals. For detailed information on uses and methods of handling, write for listed literature.

USES: A water-soluble industrial preservative, fungicide and herbicide. Used for the manufacture of termite-resistant cellulose insulating board and for the preservation of wood, cellulose products, textiles, starches, adhesives, leather, oils, paints, latex and rubber. Also for control of slime and algae; manufacture of herbicides; as a fermentation disinfectant; for control of sap stain in green lumber.

SHIPPING INFORMATION: Sodium Pentachlorophenate, 100-lb. fiber containers.

SANTOPHEN® 1 GERMICIDE *ortho-Benzyl-Parachlorophenol.*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 218.68

STANDARD FORM: Flaked solid.

SPECIFICATIONS: White to light tan or pink flakes; crystallizing point 45.0°C. min.; Sp. Gr. 1.186-1.190 at 55°/15.5°C.; free acidity (as HCl) 0.01% max.; odor slight phenolic max.

PROPERTIES: *Santophen* 1 possesses high bactericidal and fungicidal activity, but low toxicity to higher animals. When properly formulated for disinfectant use, it is considered nonirritating in use dilutions. Insoluble in water, but highly soluble in alcohol and other organic solvents; dispersible in aqueous media with the aid of soaps or synthetic dispersing agents. Noncorrosive to most metals or other engineering materials. *Santophen* 1 can be easily rendered water soluble by converting it to the sodium salt.

USES: Used as the active chemical agent for finished products that destroy harmful microorganisms that attack human beings, animals and naturally derived materials.

SHIPPING INFORMATION: Disinfectant Other Than Medicinal NOIBN. 55 and 22-gal. lacquer-lined drums.

SANTOPHEN® 1 SOLUTION

75% Santophen 1, 25% isopropanol.

ORGANIC DIVISION

STANDARD FORM: Liquid

SPECIFICATIONS: Straw to amber colored liquid; assay 75.0 to 77.0%; Sp. Gr. 1.080-1.090 at 15.5°/15.5°C.; color Barrett Std. No. 3 max.; moisture 0.25% max.

USES: Used as the germicidal active principle, or as an enhancing agent for disinfectants. *Santophen* 1 solution is convenient for formulators who normally dissolve the compound in isopropyl alcohol. The use of *Santophen* 1 solution saves one step in formulation procedures.

SHIPPING INFORMATION: Disinfectant Other Than Medicinal NOIBN. 55 and 15-gal. drums.

TCC *3, 4, 4' Trichlorocarbanilide.*

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 315.6

STANDARD FORM: Micronized and unmicronized.

SPECIFICATIONS: Fine white to grayish white powder; loss on drying at 110°C., 0.15%; melting point 250.0°C. (first meniscus); particle size:

micronized	20 microns max. 3 microns ave.
unmicronized	0.1% retained on a 30 mesh screen

USES: 3,4,4' trichlorocarbanilide is recommended for incorporation into soap and other topically applied preparations as a degerming agent.

SHIPPING INFORMATION: Chemicals, NOIBN, 100-lb. fiber drums —micronized. 200-lb. fiber drums—unmicronized.

CHEMICAL SPECIALTY CATALYSTS

VANADIUM SULFURIC ACID CATALYST

ENGINEERING SALES—INORGANIC DIVISION

GENERAL INFORMATION: Sold in conjunction with complete plants of Monsanto design and also for replacement purposes in any contact plant.

USES: In manufacture of sulfuric acid by contact process. (Not suitable for other purposes).

SHIPPING INFORMATION: Chemicals NOIBN. 50-Liter Leverpak.

0557210

TOWOLDMON0040944
WATER_PCB-00031990

CURING AGENTS

CATALYSTS

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORMS: Catalyst AC is a light yellow liquid compatible in resin baths with most cationic, anionic, anionic and nonionic softeners and penetrants. Catalysts AC is used with *Resloom* HP finishes. Catalyst AC-4 and AC-9 are clear, compatible liquids. AC-7 is an organometallic catalyst designed for curing formaldehyde-containing resins used in the textile industry.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Speeds cure of cyclic-urea and melamine treating resins.

USES: To provide rapid and uniform resin cure and retention in treatment of fabrics, including rayons, cottons and the synthetics.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: AC—475-lb. drums; AC-2 thru AC-7—500-lb. drums; All AC series can be shipped in liquid bulk. Glue Catalyst NOIBN.

FLATTING AGENTS

SANTOCEL® 62

INORGANIC DIVISION—LITERATURE AVAILABLE

Flatting agent for clear and pigmented protective and decorative coatings. High flatting efficiency, short dispersion times in pebble mill or high speed mixers. Yields final film of excellent smoothness. Settling on storage only slight and can be easily redispersed.

FLAVORINGS

ETHAVAN® *Ethylvanillin.*

See Page M-5/17

VANILLIN U.S.P.

See Page M-5/17

METHYL SALICYLATE U.S.P. *Synthetic.*

See Page M-5/17

SACCHARIN, U.S.P.

See Page M-5/50

METAL PROCESSING COMPOUNDS

BONE ASH

INORGANIC DIVISION—LITERATURE AVAILABLE

PROPERTIES: A very finely divided bone ash used as a mold-wash for coating molds used in casting copper wire, bars, ingots and slabs. A superior mold coating for certain steel and aluminum casting operations. This product is also used in producing high-grade chinaware.

SHIPPING INFORMATION: Bone Ash.

NFB® 80 AND 85 *Non-fuming Aluminum Bright Dip Bath*

INORGANIC DIVISION

FORMULA: 80% H_3PO_4 + trace additives
85% H_3PO_4 + trace additives

STANDARD FORM: Liquid

TYPICAL ANALYSIS:	*NFB*® 80	*NFB*® 85
Sp. Gravity at 15.5°C.	1.64	1.7
P_2O_5	58.0%	61.8%
H_3PO_4	80.0%	85.0%
Copper	.01%	.01%

USES: Proprietary solutions used exclusively in the aluminum bright dipping industry as direct replacements for 80% and 85% phosphoric acid and various additives now used. It decreases nitric oxide fumes and chemical cost of operations, frequently with improved work quality.

SHIPPING INFORMATION: Phosphoric Acid. Tank car and tank truck.

ODORANTS

COUMARIN

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 146.14

STANDARD FORM: Crystalline solid.

SPECIFICATIONS: White crystals; melt (liquid) clear and colorless; M.P. 68.8°C. min.; solubility in ethyl alcohol (1:10) complete; moisture 0.10% max.; ash 0.05% max.; conforms to N.F. test for acetanilid.

GRADES: Crystals.

USES: Deodorizing and odor enhancing agent; used in perfumes, soaps, tobacco, inks, rubber and other products where aromatic ingredients are required.

SHIPPING INFORMATION: Chemicals NOIBN. 200 and 25-lb. fiber drums.

METHYL SALICYLATE U.S.P. *Synthetic*

See Page M-5/17

SANTOMASK® II ODOR-MASKING AGENT

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

SPECIFICATIONS: Clear, light yellow liquid; pleasant characteristic odor; Sp. Gr. 25°/25°C. 1.18 to 1.20; color NPA 2.0 max.; chill test, clear @ 0°C.

USES: Odor-masking ingredient for interior paints, printing inks and similar products having objectionable natural odors. Will not affect drying time, color durability and other characteristics of paints and inks.

SHIPPING INFORMATION: Chemicals NOIBN. 250 and 45-lb. drums.

VANILLIN U.S.P.

See Page M-5/17

PAINT / COATING INGREDIENTS

BENTHAL® ALKYD RESIN INTERMEDIATE

ORGANIC DIVISION

STANDARD FORM: White flakes.

TYPICAL ANALYSIS: Moisture 0.20% max.; C.P. 121.5°C. (min.); bulking value 12.7 lbs./gal.

USES: *Benthal* is used in short oil alkyds which are primarily baking finishes for appliance and automotive enamels. By reducing excess amounts of alcohols in the formulation and introducing *Benthal* in quantities of 3-20% by weight on the phthalic anhydride, enamels show substantial improvement in gloss, hardness and durability. The *Benthal* acts as a chain terminator hence retarding the viscosity increase until low acid values are obtained in the resin.

SHIPPING INFORMATION: Resin Plasticizer. 200-lb. net wt. fiber drums. 50-lb. bags.

0557211

TOWOLDMON0040945
WATER_PCB-00031991

D. P. SOLUTION® *Dibutylamine Pyrophosphate.*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: Pale straw-colored liquid; wt. per gal. 8.2 lbs.; 40% sol. in equal parts of ethyl alcohol and acetone.

USES: An anticorrosion agent in lacquers and cotton solutions; an agent to prevent the settling of "Santocel" in flat lacquer formulations; for light and heat stabilization of vinyl chloride and vinyl copolymer resins.

SHIPPING INFORMATION: Chemicals NOIBN, 55 and 5-gal. Heresite-lined steel drums.

LAMPBLACK

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder.

PROPERTIES:

Grade Black	% Free Carbon	#Oil/#Black Oil Absorption	Tinting Strength*	Under Tone	Top Tone
#1	99.57	1.14	238	Blue	Black
AA	97.97	1.65	225	Blue-Brown	Brown-Black
#2	99.42	1.26	208	Blue-Gray	Gray-Black
#8	91.46	1.54	205	Blue	Brown-Black
S-100	98.08	1.37	170	Blue	Black
BTA	98.62	1.42	160	Blue	Blue-Black
B-5	98.92	1.34	140	Blue	Blue-Black
#10	99.29	1.25	100	Blue-Gray	Gray
#10C	99.10	1.26	105	Blue-Gray	Gray

*NOTE: The figures in the column TINTING STRENGTH are relative values using No. 10 Lampblack as a standard. For example: A value of 225 for tinting strength of AA Lampblack means that this black is 2¼ times as intense as No. 10 Lampblack.

USES: Pigment in paints, varnishes, enamels, inks, leather finishes, stencils, crayons, polishes; in pressed forms as electrodes, carbon brushes and molded carbon products.

SHIPPING INFORMATION: Lampblack NOIBN when wt. per cu. ft. is under 17-lbs.; Lampblack Compressed when wt. per cu. ft. is 17-lbs. or over. Paper bags and cartons.

LYTRON® LATEX

See Page M-5/30

MALEIC ANHYDRIDE

See Page M-5/15

MERTONE® WB-4 *Precoat for Reproduction Papers.*

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Liquid.

PROPERTIES: A 30% colloidal dispersion of silica in water; odorless.

USES: As a precoat on blueprint and other reproduction papers for clearer, more legible prints. On blueprint a darker, more lively blue is obtained. Also used on diazo paper, blueprint cloth, negative paper and Van Dyke paper. Precoating is performed by coaters. U. S. reissue patent No. 23510 (Andrews Paper and Chemical Co.) relates to the precoating of photosensitive papers with colloidal silica.

SHIPPING INFORMATION: Chemicals NOIBN, 55-gal. lined steel drums.

MODAFLOW®

See Page M-5/15

PHTHALIC ANHYDRIDE

See Page M-5/35

RESIMENE®, RESIMENE® MELAMINE, RESINOX® PHENOLIC VARNISHES

See Page M-5/33 and 34

SANTOCEL® *Silica Aerogel for Industrial Applications.*

See Page M-5/45

SANTOMASK® II ODOR-MASKING AGENT

See Page M-5/48

SYTON® 200 COLLOIDAL SILICA

DISPERSION FOR WATER-BASED PAINTS

See Page M-5/45

PAPER CHEMICALS

ALUMINUM SULFATE

ORGANIC DIVISION

FORMULA: $Al_2(SO_4)_3 \cdot 14.5\ H_2O$ (dry); $Al_2(SO_4)_3$ (liq.)

MOLECULAR WEIGHT: 603.35.

STANDARD FORMS: Dry: white powder, ranging to small lumps. Liq: Clear liquid.

USES: Paper sizing and water treatment.

SHIPPING INFORMATION: Aluminum Sulfate, 100-lb. paper bags.

MERSIZE® *Paper Sizing Agent.*

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Paste, powder and liquid.

GENERAL INFORMATION: *Mersize RM 70%* and *Mersize RM 77%* are 70% and 77% solids paste sizes; *Mersize RM Dry* a dry granular powder; *Mersize CD-2* a 50% solids solution; *Mersize CD-2 Dry* a dry powder; *Mersize* TFL 70 and *Mersize* TFL 90 high efficiency pastes.

USES: *Mersize RM 70%*, *Mersize RM 77%* and *Mersize RM Dry* are forms of chemically fortified rosin-based sizes that are ready to use in a paper mill to reduce sizing costs, improve resistance to ink, water and other aqueous solutions, give better feathering resistance and more uniform dependable sizing. *Mersize CD-2* and *Mersize CD-2 Dry* are used in conjunction with typical rosin sizes to obtain the same results.

SHIPPING INFORMATION: Tank cars, 500-lb. steel drums and 50-lb. bags. Rosin Sizing NOIBN.

0557212

TOWOLDMON0040946
WATER_PCB-00031992

PHOSPHATES (SODIUM)

SODIUM HEXAMETAPHOSPHATE
See Page M-5/25

SODIUM TRIPOLYPHOSPHATE
See Page M-5/25

TRISODIUM PHOSPHATE, ANHYDROUS and CRYSTALLINE
See Page M-5/25

SANTOBRITE® SODIUM PENTACHLOROPHENATE
Paper Mill Slimicide.

See Page M-5/47

SCRIPSET* Series 100, 450, 500, 520, 530, 540 & 550
Specialty Coating Resins

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: *Scripset 100, 450*—Low-viscosity, clear liquids. *Scripset 500, 520, 530, 540 & 550*—Free-flowing white powders.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Paper coating resin. Outstanding polyelectrolyte resins which improve the surface characteristics and printability of paper products and have good wax hold-out properties. Also used as resin binders in clay coatings.

USES: Paper manufacturing.

INDUSTRIAL USERS: Paper and Pulp Industry.

SCRIPTITE® SERIES WET-STRENGTH RESINS

ORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORMS: *Scriptite* 330—Finely divided powder
Scriptite 400—Trans. colloidal solution

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Melamine Formaldehyde and Urea Formaldehyde resins.

USES: To impart exceptional wet-strength to paper and paperboard.

SALT CAKE SODIUM SULFATE, ANHYDROUS TECHNICAL.

ORGANIC DIVISION

MOLECULAR WEIGHT: 142.06

STANDARD FORM: Powder.

TYPICAL ANALYSIS: The 93-95% grade is typical white salt cake. The 98-99% grade is a special material having a light tan color and Na_2SO_4 content of approximately 99%.

USES: Manufacture of sulfate pulp and glass.

SHIPPING INFORMATION: Salt Cake. Bulk car loads.

**Monsanto trademark*

SODIUM SULFITE ANHYDROUS Santosite®

ORGANIC DIVISION—LITERATURE AVAILABLE

FORMULA: Na_2SO_3

MOLECULAR WEIGHT: 126.06

STANDARD FORM: Powder.

TYPICAL ANALYSIS: Tan to slightly pink crystalline powder; assay (Na_2SO_3) 97.7% min.; color of filtrate from 10% solution in water not darker than APHA 70.

PROPERTIES: Will oxidize to sodium sulfate if not kept dry. Normally contains less than 1% sodium chloride; less than 0.1% iron; less than 0.2% insoluble; less than 0.2% organic matter. The balance of impurity is sodium sulfate. The unfiltered water solution has a brown color due to suspended Fe (OH_3). Normally all of the product will pass through a No. 20 U. S. Standard sieve.

USES: Manufacture of paper, highly efficient in the semi-chemical pulping of straw and wood for paper manufacture.

SHIPPING INFORMATION: Sodium Sulfite. 100-lb. paper bags and hopper cars.

STEROX® CD/STEROX® DF/STEROX® DJ/ STEROX® NJ
See Page M-5/52

SULFUR DIOXIDE, LIQUID
See Page M-5/15

SYTON® P AND P-200 COLLOIDAL SILICA
See Page M-5/46

SWEETENERS

SACCHARIN, U.S.P.
Also known as saccharin insoluble, and orthosulfobenzimide.

ORGANIC DIVISION—LITERATURE AVAILABLE

MOLECULAR WEIGHT: 183.18

STANDARD FORM: Powder and coarse powder.

SPECIFICATIONS: White crystalline powder; assay 98% min.; M.P. 227.0°C. min.; moisture 0.50% max.; solubility in 10% Na_2CO_3 (1:5) complete; ash 0.2% max.; heavy metals 20 ppm max.

USES: Sweetener for tooth pastes, mouth washes and pharmaceutical preparations. Approximately 500 times the sweetening power of sugar.

SHIPPING INFORMATION: Chemicals NOIBN. 100-lb. fiber drums.

TANNING AGENTS

SANTOTAN® KR BASIC CHROME SULFATE

INORGANIC DIVISION

FORMULA: Contains approximately 50% of $Cr_2(SO_4)_3(OH)_3$

STANDARD FORM: Crystals.

TOWOLDMON0040947
WATER_PCB-00031993

TYPICAL ANALYSIS: Dark green crystals; solution in water (5:500) clear; basicity ($Cr_2O_3(SO_3)$ 101-105; basicity (Schorlemmer) 37.3-39.7; chromium as Cr_2O_3 23.9% min.

USES: In chrome tanning of calf, cow and horse hides and sheepskins.

SHIPPING INFORMATION: Tanning Extract Dry NOIBN. 100-lb. paper bags.

ZINC OXIDE, TECHNICAL

INORGANIC DIVISION

FORMULA: ZnO

MOLECULAR WEIGHT: 81.38

SPECIFICATIONS: Light gray or tan powder assaying 90.0% min. ZnO.

GENERAL INFORMATION: This technical grade has been found acceptable in the rubber trade and paper manufacture.

SHIPPING INFORMATION: Zinc Oxide Dry. 50-lb. bags.

TEXTILE CHEMICALS

RESLOOM® E-50

PLASTICS DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Supplied as 50% solids cyclic ethylene urea formaldehyde resin in liquid form.

PROPERTIES AND PERFORMANCE CHARACTERISTICS: Textile Resin. Gives permanent textured effects, dimensional stability and wrinkle resistance to cottons, rayons and other synthetics.

USES: Assures permanent wash and wear finish for textiles.

INDUSTRIAL USERS: Textiles.

SHIPPING INFORMATION: Drums (525 lbs.); tank cars, tank trucks. Rail—Plastics, Synthetic, Liquid, NOIBN. Truck—Plastics, Liquid, NOI.

STYMER® VINYL STYRENE

See Page M-5/32

SYTON® DS-200 COLLOIDAL SILICA DISPERSION

See Page M-5/46

THICKENING AGENTS

SANTOCEL® Z

INORGANIC DIVISION—LITERATURE AVAILABLE

Designed to perform thixotropic and thickening functions in polyvinyl chloride plastisols and in various plasticizer dispersions. Offers the following advantages to vinyl plastisol manufacturers: more efficient on a cost/performance basis; 65-70% more efficient thickening power; at low and shear rates; imparts higher degree of thixotropy at equivalent loading levels; less tendency to settle.

WOOD PRESERVATIVE

MONSANTO® PENTA *Pentachlorophenol, Technical.*

See Page M-5/47

SURFACE ACTIVE AGENTS, DETERGENTS and BLEACHES

ANIONIC SURFACE ACTIVE-AGENTS

DDBSA *Dodecylbenzene Sulfonic Acid.*

INORGANIC DIVISION

MOLECULAR WEIGHT: 320

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: DDBSA—88.5%, H_2SO_4—8.7%, water and unsulfonated matter—2.8%.

GENERAL INFORMATION: DDBSA is sulfonated alkyl benzene, but not neutralized; when neutralized with caustic or other alkaline salts, either dry or in solution, it yields a surface active material identical to the active portion of *Santomerse* 1 and 85.

USES: Intermediate for the preparation of neutral alkyl aryl sulfonates for use in dry and liquid detergents, and many other applications. See uses of *Santomerse*.

SHIPPING INFORMATION: Washing compound liquid. NOIBN. Tank cars and tank trucks; 450-lb. drums.

DDBSA-94

INORGANIC DIVISION

GENERAL INFORMATION: Similar to DDBSA, but contains 94% active and less than 1.5% H_2SO_4.

USES: Similar to DDBSA, but particularly useful in liquid detergents where a low sulfate content is required.

SHIPPING INFORMATION: Washing compound liquid, NOIBN. Tank cars and tank trucks; 450-lb. drums.

0557214

TOWOLDMON0040948
WATER_PCB-00031994

SANTOMERSE® ALKYL ARYL SULFONATES

See Page M-5/21

NONIONIC SURFACE ACTIVE-AGENTS

STEROX® AJ

STEROX® AJ-100

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Tridecanolethylene oxide condensates. (Polyoxyethylene ether)

PROPERTIES: *Sterox* AJ-100 is 100% active in a soft paste form. *Sterox* AJ is 85% active and a clear liquid. Each is soluble in water, and produces a moderate amount of foam. Extremely efficient as a surface active agent.

USES: Recommended for powdered detergent formulations, as an emulsifier in a variety of applications, and as an aid in textiles, paper and leather processing.

SHIPPING INFORMATION: Washing compound—NOIBN liquid. Tank cars and tank trucks; 450-lb. drums.

STEROX® AP

STEROX® AP-100

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Tridecanolethylene oxide condensates. (Polyoxyethylene ether)

PROPERTIES: Higher molecular weight than *Sterox* AJ-100. *Sterox* AP-100 is 100% active in soft paste form, while *Sterox* AP is 80% active and a clear liquid. Produce more foam than *Sterox* AJ-100 and are more soluble in water solutions, in presence of other materials.

USES: Generally same as *Sterox* AJ-100, but specifically designed for use in liquid detergents, or where greater solubility or solubilizing of other materials is desired.

SHIPPING INFORMATION: Washing compound—NOIBN liquid. Tank cars and tank trucks; 450-lb. drums.

STEROX® CD

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Tall oilethylene oxide condensate. (Polyoxyethylene ester)

PROPERTIES: Nonionic, 100% active surface-active agent with high detergent action accompanied by low foaming. Compatible with other type detergents and builder materials. Light amber liquid.

USES: Mixed with builder materials, an unusually high cleaning action is obtained with little sudsing. Used as a dedusting and conditioning agent for detergent compositions. Used in insecticide and herbicide formulations. Excellent rewetting agent for paper towels and products to increase water absorbency.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and 475-lb. drums.

STEROX® DF

INORGANIC DIVISION

CHEMICAL COMPOSITION: Dodecyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active miscible with water at room temperature. Soluble in nonpolar solvents. Excellent emulsifier. Chemically stable, low foaming.

USES: Designed as an intermediate for sulfation, thus producing high foaming, highly soluble surface active agents for liquid detergents. Per se, an excellent emulsifier, oil soluble, useful in metal cleaning, textile and paper processing, etc.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

STEROX® DJ

INORGANIC DIVISION

CHEMICAL COMPOSITION: Dodecyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active, soluble in water. Low odor and color. Higher molecular weight than *Sterox* DF. Chemically stable, low foaming. Optimum detergency.

USES: For low foaming powdered and liquid detergents. Excellent detergency properties. Low odor and color levels give more sales appeal to finished detergents.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

STEROX® NJ

INORGANIC DIVISION

CHEMICAL COMPOSITION: Nonyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active soluble in water. Chemically stable, medium foam. Low odor and color levels.

USES: General purpose nonionic for use in powdered and liquid detergents, textile, leather and paper processing, metal cleaning, toxicant formulations, deduster, etc.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

STEROX® NL

INORGANIC DIVISION

CHEMICAL COMPOSITION: Nonyl phenol-ethylene oxide condensate. (Alkyl aryl polyoxyethylene ether)

PROPERTIES: Liquid, 100% active, soluble in water. Chemically stable, medium foam. Higher molecular weight than *Sterox* NJ.

USES: Designed for use in liquid detergents, or where higher solubility or solubilizing power is desired. Other uses similar to *Sterox* NJ.

SHIPPING INFORMATION: Washing Compound NOIBN Liquid. Tank cars and tank trucks; 470-lb. drums.

STEROX® SK

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Polyoxyethylene thioether.

PROPERTIES: Light amber liquid, 100% active nonionic-type surface-active agent and detergent. Extremely fast wetting action, good detergency and emulsifying properties.

USES: Wetting agent and penetrant for insecticidal and herbicidal formulations. Wetting agent with low foam characteristics for wet collection dust systems. De-emulsifier for some hydrocarbon-water emulsions.

SHIPPING INFORMATION: Washing Compound, NOIBN Liquid. Tank cars and tank trucks; 465-lb. drums.

TOWOLDMON0040949
WATER_PCB-00031995

STEROX® NO. 6

INORGANIC DIVISION—LITERATURE AVAILABLE

CHEMICAL COMPOSITION: Polyoxyethylene thioether.

PROPERTIES: Nonionic surface-active agent, designed especially for operations where exceptionally fast wetting and high scouring efficiency is desired. Compatible with principle textile operations. 85% active liquid without inorganic salts.

USES: Designed especially for textile operations where fast wetting, good scouring and emulsification of grease soil are needed. Scouring efficiency particularly advantageous for raw wool and woolen piece goods scouring. Effective rewetting agent for textiles.

SHIPPING INFORMATION: Washing Compound, NOIBN, Liquid. Tank cars and tank trucks; 450-lb. drums.

BLEACHING COMPOUNDS

ACL®

INORGANIC DIVISION—LITERATURE AVAILABLE

STANDARD FORM: Powder and granular. A series of solid, organic chlorine liberating compounds, useful as active ingredients in household and commercial laundry bleaches, scouring cleansers, machine dishwashing compounds, sanitizing agents, etc.

PRODUCT DESCRIPTION:

ACL® Grade	Chemical Name	Typical % Available Chlorine
85	Trichloroisocyanuric Acid	90
70	Dichloroisocyanuric Acid	70
59	Potassium dichloroisocyanurate	60

SHIPPING INFORMATION: Fiber drums with polyethylene bag liner. *ACL*-85 and *ACL*-59 270-lbs. net. *ACL*-70 225-lbs. net.

DETERGENT INTERMEDIATES

ALKALATE 122 *Dodecyl Benzene*

INORGANIC DIVISION

FORMULA: $C_{18}H_{30}C_6H_5$

MOLECULAR WEIGHT: 246

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Appearance, water white liquid; Residue, less than 0.005 volume %; Sp. Gr. (60/60°F.) 0.872; Color, less than 15 APHA; Refractive Index 20°C.—1.4882; Bromine Number 0.06; Unsulfonatables 0.8%.

USES: Alkylate 122 is a dodecyl benzene specifically designed for use in the manufacture of synthetic organic detergents.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 10,000 and 8,000 and 4,000 gal. tank cars. 390-lbs. net (440-lbs. gross) weight black iron drums, nonreturnable.

ALKALATE 130 *Alkyl Benzene*

INORGANIC DIVISION

MOLECULAR WEIGHT: 260

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Appearance, water white liquid; Residue, less than 0.005 volume %; Color, less than 15 APHA; Sp. Gr. (60/60°F.) 0.873; Refractive Index 25°C.—1.4876; Bromine Number 0.1; Unsulfonatables 0.4.

USES: Alkylate 130 is a refined alkyl benzene designed primarily for use in the manufacture of synthetic organic detergents.

SHIPPING INFORMATION: Petroleum Oil NOIBN, 10,000 and 8,000 and 4,000 gal. tank cars. 390-lbs. net (440-lbs. gross) weight black iron drums, nonreturnable.

DODECYLPHENOL *Alkyl Phenol*

INORGANIC DIVISION

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Appearance, clear sparkling liquid; Odor, characteristic phenolic; Color, 60 APHA; 95% Distillation range, 606—625°F.; Hydroxyl No. 212; Refractive Index (27°C.), 1.5054; Water 0.05%.

USES: Monsanto's Dodecylphenol is an alkyl phenol specifically designed for use in the manufacture of synthetic organic detergents.

SHIPPING INFORMATION: Dodecylphenol (Chemicals, NOIBN); 415-lbs. net (465-lbs. gross) Heresite lined drums; 10,000, 8000 and 4000 gallon tank cars.

NONYLPHENOL *Alkyl Phenol*

INORGANIC DIVISION

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Appearance, clear sparkling liquid; Odor, characteristic phenolic; Color, 40 APHA; 95% Distillation Range, 558—590°F.; Hydroxyl No. 245; Refractive Index (27°C.), 1.5110; Water 0.05%.

USES: Monsanto's nonylphenol is an alkyl phenol specifically designed for use in the manufacture of synthetic organic detergents.

SHIPPING INFORMATION: Nonylphenol (Chemicals, NOIBN); 415-lb. net (465-lbs. gross) Heresite lined drums; 10,000, 8000 and 4000 gallon tank cars.

TRIDECYLBENZENE *Alkyl Benzene*

INORGANIC DIVISION

MOLECULAR WEIGHT: 260

STANDARD FORM: Liquid.

TYPICAL ANALYSIS: Clear liquid; residue less than .005 per cent by volume; color 8 APHA; Sp. Gr. 60°F./60°F., 0.873; Refractive Index 1.4876; Bromine Number 0.1; less than 0.4% unsulfonatable.

USES: A refined alkyl benzene designed for use in the manufacture of synthetic detergents. Exhibits extremely stable foam in presence of greasy soils, and often eliminates the need for foam stabilizers.

SHIPPING INFORMATION: Petroleum Oil, NOIBN, 390-lb. net wt. black iron nonreturnable drums; 8,000 and 4,000-gal. tank cars.

0557216

TOWOLDMON0040950
WATER_PCB-00031996

wholly owned subsidiaries

Filtered Rosin Products Company

A wholly owned subsidiary with manufacturing facilities at Baxley and Douglas, Georgia, for the production of rosin, turpentine and fortified gum rosin size (Mersizes®).

For Information:

FILTERED ROSIN PRODUCTS CO.
P. O. Box 179
Baxley, Georgia
Tele: 367-3616 (area code: 912)

Monsanto Research Corporation

A wholly owned subsidiary concerned with the conduct of specific scientific and technological research programs for the Government. With headquarters at St. Louis, the company has laboratories at Dayton, Ohio, and Everett, Massachusetts, and operates Mound Laboratory at Miamisburg, Ohio, which Monsanto Chemical Company built for the Atomic Energy Commission.

MRC also produces and markets a range of conveniently packaged nuclear sources of alpha, beta or neutron radiation, as well as custom-tailored nuclear sources.

For Information:

John L. Richmond, Manager or
David L. Prosser
Nuclear Sources Department
MONSANTO RESEARCH CORPORATION
1515 Nicholas Road
Dayton 7, Ohio
Tele: 268-5481 (area code: 513)

Leonard Construction Company

A wholly owned subsidiary with offices at Chicago, Illinois, engaged in engineering and construction chiefly for the process industry and particularly of chemical plants designed by Monsanto's engineering sales department. It has a Canadian subsidiary, Lenconco Construction Limited, with its main office at Ottawa.

For Information:

LEONARD CONSTRUCTION COMPANY
37 South Wabash Avenue
Chicago 3, Illinois
Tele: State 2-5041 (area code: 312)

Shawinigan Resins Corporation

Shawinigan Resins Corporation, a subsidiary of Monsanto, manufactures resins and resin emulsions.

For Information:

SHAWINIGAN RESINS CORPORATION
Post Office Box 2130
Springfield 1, Massachusetts
Tele: 788-9681 (area code: 413)

associated companies

Fome-Cor Corporation

Jointly owned with St. Regis Paper Company to develop markets for foamed polystyrene. Fome-Cor's great insulative qualities make it ideal for packaging and construction applications for low-cost housing. The company is headquartered at Springfield, Massachusetts, and has manufacturing facilities at Addyston, Ohio.

For Information:

FOME-COR CORPORATION
812 Monsanto Avenue
Springfield 2, Mass.
Tele: Republic 7-5305 (area code: 413)

Mobay Chemical Company

Jointly owned with Farbenfabriken Bayer, A. G. of Germany, for the development and manufacture of isocyanates and polyesters for sale and ultimate use in solid and rigid foams, solid rubberlike materials, surface coatings and adhesives.

For Information:

MOBAY CHEMICAL COMPANY
Penn Lincoln Parkway West
Pittsburgh 5, Pennsylvania
Tele: Walnut 2-4100 (area code: 412)

operating departments

Plax Company

The Plax Company, a department of Monsanto, manufactures formed plastic bottles and containers and plastic film and sheeting.

For Information:

PLAX COMPANY
P. O. Box 1019
Hartford, Connecticut
Tele: CHapel 2-6221 (area code: 203)

Gering Plastics Company

Gering Plastics Company, a department of Monsanto, manufactures polyethylene industrial bags and liners; PVC and Sewer/Drain Pipe; plastic garden hose; polyethylene film and sheeting for industrial, construction, agricultural and consumer markets—a broad line of polyethylene housewares products.

For Information:

GERING PLASTICS COMPANY
North Seventh St. & Monroe Ave.
Kenilworth, New Jersey
Tele: BRidge 6-2900 (area code: 201)

Building Products Department

The Building Products Department is engaged in the manufacture and marketing of plastic building materials.

For Information:

BUILDING PRODUCTS DEPARTMENT
Monsanto Chemical Company
800 North Lindbergh Boulevard
St. Louis 66, Missouri
Tele: WYdown 3-1000 (area code: 314)

TOWOLDMON0040951
WATER_PCB-00031997

MONSANTO CUSTOMER SERVICE CENTERS

ATLANTA, GEORGIA
Lenox Towers West
3390 Peachtree Rd. N.E. (5)
Tel. (404) 231-4320

BOSTON/Springfield, Mass.
Everett Station (49)
Tel. (617) Dunkirk 7-5010

CHICAGO, ILLINOIS
520 N. Michigan Ave. (11)
Tel. (312) Whitehall 4-6750

CINCINNATI, OHIO
2330 Victory Parkway (6)
Tel. (513) 751-6707

CLEVELAND, OHIO
3645 Warrensville Center Rd. (22)
Tel. (216) 991-5400

DETROIT, MICHIGAN
500 Northland Towers (35)
Tel. (313) 357-0910

HOUSTON, TEXAS
1401 S. Coast Bldg. (2)
Tel. (713) CApitol 3-4011

LOS ANGELES, CALIFORNIA
6670 E. Flotilla St. (22)
Tel. (213) Raymond 3-2492

MINNEAPOLIS, MINNESOTA
Room 515
Foshay Tower (2)
Tel. (612) Federal 9-4651

NEW YORK, NEW YORK
445 Park Ave. (22)
Tel. (212) Plaza 9-8200

PITTSBURGH, PENNSYLVANIA
No. 4 Gateway Center Bldg. (22)
Room 1406
Tel. (412) 261-2156

ST. LOUIS, MISSOURI
800 N. Lindbergh Blvd. (66)
Tel. (314) Wydown 3-1000

SANTA CLARA, CALIFORNIA
San Francisco Bay Area
2710 Lafayette
Tel. (408) 243-0414

SEATTLE, WASHINGTON
911 Western Ave. (4)
Tel. (206) Main 2-4203

SPRINGFIELD/Boston, MASS.
812 Monsanto Ave. (2)
Tel. (413) 788-6911

WILMINGTON, DELAWARE
2005 Concord Pike
Fairfax
Wilmington (3)
Tel. (302) Olympia 8-6531

Additional Agricultural Division offices are maintained at:

EL DORADO, ARK.
Smackover Highway
P. O. Box 231
Tel. (501) UNion 3-3151

PLAINVIEW, TEXAS
P. O. Box 1967
Tel. CApital 4-9363

LULING, LOUISIANA
P. O. Box 174
Tel. (504) 784-2911

Monsanto

MONSANTO CHEMICAL COMPANY
800 N. LINDBERGH BOULEVARD
ST. LOUIS 66, MISSOURI

Copyright 1963 by MONSANTO CHEMICAL CO.

1-693-0763-10 LITHO IN U.S.A.

0557218
TOWOLDMON0040952
WATER_PCB-00031998





YOUR MONSANTO DISTRIBUTOR: HE'S CAREFULLY SELECTED FROM MANY TO SERVE YOU BEST

***COMPETENCY*—THAT'S WHAT WE LOOK FOR WHEN WE SELECT A MONSANTO DISTRIBUTOR. HE HAS TO KNOW YOU AND YOUR INDUSTRY . . . HAVE THE PEOPLE, FACILITIES AND *DESIRE* TO KEEP UP WITH NEW PRODUCTS, NEW TRENDS . . . NOT BE JUST A "WAREHOUSER," BUT AN EXTENSION OF MONSANTO'S MARKETING TEAM. FOR NAME OF YOUR NEAREST MONSANTO DISTRIBUTOR, WRITE DISTRIBUTOR SERVICES, MONSANTO CHEMICAL COMPANY, ST. LOUIS 66, MISSOURI.**

Monsanto

0557219

1 R06 0663-10 LITHO IN U.S.A.

TOWOLDMON0040953
WATER_PCB-00031999