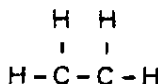




Technical data

ETHYLENE DICHLORIDE



Cl

Cl Cl

this is a small letter l, not the number 1

Chemical Synonyms: Ethylene Chloride; 1, 2 Dichloroethane

Description:

A volatile liquid with a characteristic ~~odor~~ resembling that of chloroform.

Physical Properties of Pure Ethylene Dichloride:

Molecular weight	99.0	Solubility: EDC in water	0.87% at 20° C
Specific gravity (20° /20° C)	1.255	water in EDC	0.16% at 20° C
Boiling point (at 760 mm)	83.5° C	Latent heat of evaporation	77.3 cal/g
Freezing point	-35.3° C	Specific heat at 20° C	0.31 cal/g
Flash point (closed cup)	17° C (63° F)	Explosive mixtures with air at 20° C	
Refractive index	1.445 at 20° C	Upper limit	15.6%
Evaporation rate	2.7 (Diethyl ether=1)	Lower Limit	6.2%
	380 (n-Butyl acetate=100)	Pounds per gallon (60° F)	10.5

Specifications:

	Specification:	Typical Analysis:
Color,	10 A.P.H.A. max	8 A.P.H.A.
Specific Gravity		
20° /20° C		
(68° /68° F)		
Distillation Range	1.252 - 1.256	1.254
	100% within 1.256 ° C	100% within 1.256 ° C
	including 83.5° C	including 83.5° C
Acidity (as HCl)	0.001% max	0.0003%
Residue on evaporation	0.002% max	0.001%
Water content	0.010% max	0.003%

Applications:

As a Chemical Intermediate used in the preparation of the following: vinyl chloride monomer, ethylene diamine and its derivatives, succinonitrile and derivatives, glycol ethers and esters, certain types of polysulfide synthetic rubbers, perchloroethylene and trichloroethylene.

As a Tetraethyl Lead Scavenger: to scavenge deposits of lead compounds.

As a solvent: for paint stripper formulations, for low molecular weight polymers of vinyl acetate which, when used in a solution form are valuable as adhesives and for impregnating paper and textiles, for oils, fats, gums, resins and a wide variety of other materials; for textile cleaning; for degreasing of metals; as a constituent of rubber cements and adhesives based on nitrile and polysulfide rubbers. A mixture of 80 parts by volume of ethylene dichloride with 20 parts of ethanol is an active solvent for ethyl cellulose, cellulose acetate butyrate, and most grades of cellulose acetate.

As a Fumigant: ethylene dichloride can be used as a 3:1 mixture with carbon tetrachloride (which reduces its flammability) for the fumigation of grain, upholstery, carpets, etc.

ETHYLENE DICHLORIDE

CCR 000002519

(OVER)

Safe Handling

Physiological Properties and Safety Precautions:

The vapor of ethylene dichloride is noticeable even in safe concentrations. Excessive exposure is hazardous as it is toxic by inhalation, oral intake, or by skin contact.

Inhalation causes irritation of the mucous membranes of the nose and throat, but this effect is not sufficient warning to indicate that a dangerous concentration has been reached. Moderate concentrations can cause nausea, narcosis and subsequently anaesthesia.

The following safety rules should be observed:

Adequate ventilation must be provided in confined areas and persons showing symptoms of ethylene dichloride vapor poisoning must be moved immediately into fresh air.

Prolonged contact with the skin can cause burns. The affected area should be thoroughly flushed with water after the removal of any contaminated clothing.

Suitable gloves should be used when handling equipment that may have been in contact with ethylene dichloride, and safety goggles should be worn if there is any risk of ethylene dichloride splashing into the eyes.

Ethylene dichloride is heavier than air so care should be taken to avoid concentrations of vapor in drains, pits, and at the bottom of storage vessels prior to cleaning.

In all cases of over exposure to ethylene dichloride, remove the patient into fresh air; keep him quiet and comfortable and CALL THE DOCTOR AT ONCE.

see test
in letter

OK
but add
EPA regulation
section

Storage and Handling:

CONOCO ethylene dichloride may be stored in mild-steel tanks and drums without risk of corrosion or deterioration. However, in the presence of free water hydrolysis occurs, which is slow at normal temperatures but is accelerated by heat and alkalis. Care should therefore be taken to store ethylene dichloride away from heat and possible water contamination.

Availability:

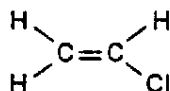
CONOCO ethylene dichloride is available in tank truck, tank car and drum quantities from Westlake, Louisiana. Contact CONOCO Petrochemicals for information regarding water shipment.

Ethylene dichloride is ~~listed~~ as a hazardous substance, ^{by the EPA} designated on the basis of carcinogenicity. ~~see (49 CFR, Part 117, reportable quantity in case of release into a navigable water is 1000 pounds. - see reference to the regulations (49 CFR 117, part 117.1) Refer to~~

The above data are based on tests and experience which Continental believes reliable and are supplied for informational purposes only. Continental disclaims any liability for damage or injury which results from the use of the above data and nothing contained therein shall constitute a guarantee, warranty or representation (including freedom from patent liability) by Continental with respect to the data, the product described or their use for any specific purpose, even if that purpose is known to Continental.

Technical data

Conoco® Vinyl Chloride



Chemical Synonyms

Vinyl Chloride Monomer, Chloroethylene, Chloroethene.

Description

Clear, colorless, sweet-smelling gas at ambient temperature and pressure . . . relatively inert chemically under non-polymerizing conditions . . . polymerizes readily in presence of air, sunlight, oxidizing agents, and free-radical catalysts, to form a hard, white resin—poly(vinyl chloride), PVC.

Physical Properties:

Molecular Weight.....	62.50
Specific Gravity, Liquid (20°C/20°C)	0.9121
Pounds Per Gallon	7.60
Boiling Point, °C	-13.8
Freezing Point, °C	-153.7
Flash Point (COC), °C	-78.0
Latent Heat of Vaporiza- tion (cal/gm @ 25°C)	71.3
Solubility (Water in VCM), %	0.11
(Soluble in Most Organic Solvents)	
Explosive Limits	
(Volume in Air), %	
Upper Limit	22.0
Lower Limit	4.0

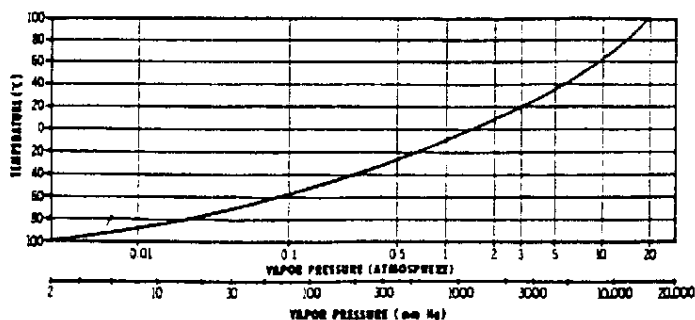
Sales Specification:

	PPM by Weight
Acetylene	2.0
Acetaldehyde	0.7
Water	200.0
Acidity (As HCl)	2.0
Sulfur	1.0
Iron	0.5
Non-Volatiles	100.0
Methyl Chloride	100.0
1,3 - Butadiene	15.0
Appearance	Colorless and Free of Suspended Matter
For Water Shipments	
Hydroquinone as Inhibitor	0-5 ppm

Vapor pressure of vinyl chloride monomer:

Temperature (°C)

	mm Hg	Atm.
100	16,617	21.9
25	2,943	3.88
0	1,293	1.70
-25	470	0.62
-50	130	0.17
-75	24.4	0.032
-100	2.5	0.0033



Conoco® Vinyl Chloride

CCR 000002521

Conoco® Vinyl Chloride

Physiological Properties and Safety Precautions

The risks of fire and explosion are the only serious problems in the general handling of vinyl chloride.

The presently accepted Health Hazard upper limit value is 500 ppm. In concentrations above 1,000 ppm, vinyl chloride exhibits anesthetic properties.

The following safety factors should be observed:

- Persons showing evidence of vinyl chloride poisoning must be moved immediately into fresh air. If breathing has stopped, artificial respiration should be administered.
- Uninhibited vinyl chloride irritates the skin.
- Prolonged contact results in freezing due to rapid evaporation.
- Inhibited vinyl chloride in contact with the skin can also cause local burns due to the presence of phenol inhibitor.
- Wash eyes or skin contacted by vinyl chloride with copious quantities of water. Remove contaminated clothing and shoes immediately.
- Avoid open flames, local hot-spots, friction, static electricity, and any spark-producing equipment when handling vinyl chloride monomer.

In all cases of over-exposure to vinyl chloride, move the patient into fresh air; keep him quiet and comfortable and CALL THE DOCTOR AT ONCE.

Storage and Handling

Store CONOCO vinyl chloride monomer in steel tanks, either under refrigeration or under pressure at atmospheric temperatures. Do not use vessels or fittings made of copper or aluminum or their alloys. Blanket your tanks with inert gas or vinyl chloride vapor. Never allow air to enter the tanks. In the presence of water, vinyl chloride accelerates corrosion of iron or steel.

Availability

Uninhibited or inhibited grades of CONOCO vinyl chloride shipped as liquid in pressurized tank cars from Westlake, Louisiana. Contact Conoco Chemicals for information regarding water shipment.

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*Review in
safety section
of the
manual
- attached
on next
page*

Vinyl Chloride Monomer

<u>Tank Car Type</u>	<u>Maximum Filling Density (%)</u>
DOT 106 500X	84
DOT 105 200W	87
DOT 105 300W	87
DOT 112A 340W	86

(Note: Filling density is defined as the percent ratio of the weight of the chemical in the tank to the weight of water the tank or cylinder will hold.)

Tank cars built to specifications 112 and 114 will be required to have thermal and tank head protection according to new DOT regulations 179.105 issued September 15, 1977.

Tank Trucks: Same as for tank cars.

Drums: Shipping of VCM in 55-gallon drums is not approved. Special pressurized sample cylinders may be transported with applicable safety relief valves under D.O.T. Hazardous Materials Regulations, Tariff No. 25, or latest revision.

Labelling: Tank car containers must conform to D.O.T. regulations and be placarded under compressed gas label (red label for flammable gases) and Dangerous placard for flammable gases. Empty containers should be indicated by an "Empty" label over the old labels/placards.

Motor vehicles must conform to D.O.T. regulations and be marked on both sides and at the front and rear with letters at least 4" high, with words "Flammable Gas" or "Flammable Compressed Gas." In addition, the name "Vinyl Chloride" must be displayed in letters at least 2" high. The words "Flammable Gas" must be displayed on motor vehicles transporting 1,000 lbs or more gross weight. Empty motor vehicles shall be indicated by the same means above.

Each container must also be labeled "Cancer Suspect Agent" to comply with OSHA regulations.

Freight Classification: Vinyl Chloride Monomer - Compressed Gas; Flammable Gas.

Toxicity: Permissible exposure limit according to CFR 29, Part 1910.1017 is: no greater than 1 ppm for an 8-hour average; no greater than 5 ppm for 15-minute average. Excessive VCM exposure may produce cancer. When inhaled, it acts as an anesthetic. Odor is pleasant to most individuals, and, therefore, acutely dangerous levels may easily be tolerated; the lowest concentration levels at which VCM can be smelled is 260 ppm. The above regulations should be referred to for handling in the work place.

Flammability: Extremely.

Corrosion: Noncorrosive at normal atmospheric temperatures when dry; the presence of water and/or acid accelerates corrosion of iron or steel.

Stability: Polymerizes slowly in presence of air, sunlight, and oxygen; polymerizes readily in presence of peroxides; generates considerable heat during polymerization.

Read

Thomas G. Grumbles

CONOCO

To *Dr. [illegible]*

Date *1/20/80*

If the procedure outlined in my letter is according to your understanding, please forward to HEI.

Also; reminders for next week:

① Call Debernardi at UCM to tell him of procedure - At late Charles we need to ~~also~~ determine the methodologies used by the local medical facility and then call Garza line to see if they're compatible for computerization

② Please finalize the exam format for 6-month generalists first

CCR 000002524