

VersaTRANS[®] Solvent

(Trans 1,2-Dichloroethylene)



PPG Industries produces VersaTRANS[®] solvent (Trans 1,2-Dichloroethylene) (CAS No. 156-60-5) at its Lake Charles, La., production facility.

Properties & Characteristics

VersaTRANS solvent is a specialty chemical product with unique solvency characteristics and a favorable toxicological profile (reference Comparative Properties chart on page 2). VersaTRANS solvent has negligible global warming potential and is not regulated as an Ozone Depleting Chemical in the USA. It is not listed as a Hazardous Air Pollutant, not regulated as a Prop 65 chemical, and not classified as a carcinogen or suspected carcinogen in the USA. VersaTRANS solvent is flammable in its neat form.

General Applications

VersaTRANS solvent may be used neat or as a co-solvent in a variety of azeotropic or non-azeotropic* blends. VersaTRANS solvent enhances the functionality and economics of a wide array of solvent formulations. VersaTRANS solvent enables customized blends based upon end-use requirements. VersaTRANS solvent increases the solvency power of many fluoro-fluids. Applications include: precision cleaning in the electronics and computer components industries, aerosol cleaning (high-end precision parts), foam blowing products, material deposition, in-situ-manufacturing, and vapor degreasing.

*Users should review patent information that may cover blends.

Product Grades

VersaTRANS solvent is available in a variety of grades to meet the requirements of the above-mentioned applications. Contact your PPG representative regarding specialty applications and stabilizer packages available.

Government Specifications

VersaTRANS solvent is an EPA SNAP approved solvent in aerosol, electronic, metal and precision cleaning applications. It has also received EPA SNAP approval in some foam blowing formulations. Although there are no

Typical Properties

Chemical Names	1,2 DCE; trans-1,2 DCE; 1,2 dichloroethene, trans-1,2 dichloroethylene	
Chemical Formula	$\text{Cl}-\text{C}=\text{C}-\text{Cl}$ $\text{H} \quad \quad \quad \text{H}$	CCLHCCLH
Molecular Weight		96.95
Boiling Point		118 °F 48 °C
Freezing Point		-56.9 °F -49.4 °C
Specific Gravity @ 25°C		1.27
Pounds per Gallon at 68 °F (20°C)		10.53
Vapor Pressure (mm Hg @ 25°C)		336
(mm Hg @ 87°F)		400
Solubility at 25°C, g trans/100g water		0.063
Flash Point, °F (C)		36 (2.2)
Evaporation Rate @ 77°F (ether = 1.00)		0.63
Kauri-Butanol Value		117
Flammability Limits in Air, % by vol.		LEL: 6.7% UEL: 18%
Autoignition Temperature °C		460
Partition Coefficient (log octanol/water)		2.09

Specification and Typical Analysis

Appearance	Clear, free of suspended matter
Color (pt-co no. max)	15
Free Chlorine	None
Moisture, ppm max.	100
pH	6.5-7.2

known government approved applications, VersaTRANS solvent may be used as a co-solvent in a variety of military applications.

Health Hazards

Since the major hazard in the use of VersaTRANS solvent results from inhalation of vapor, good ventilation is essential when using this product. The primary effect upon inhalation is depression of the central nervous system. Principal symptoms of overexposure to VersaTRANS solvent vapor include irritation of the respiratory tract, dizziness, nausea, headache, loss of coordination, unconsciousness and in poorly ventilated areas, possibly even death. Some fatalities following severe acute exposure to various chlorinated solvents have been attributed to ventricular fibrillation. Animal studies have shown that cardiac sensitization can occur at high concentrations of VersaTRANS solvent.

Ingestion of VersaTRANS solvent may result in irritation of the mouth and GI tract along with central nervous system depressant effects. If vomiting and subsequent aspiration into the lungs occurs following ingestion, chemical pneumonia and pulmonary edema may result. VersaTRANS solvent splashed in the eye may result in pain and irritation. Prolonged or repeated contact with VersaTRANS solvent on the skin may cause irritation and dermatitis.

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▶ Comparative Properties

PRODUCT	VersaTRANS [®] SOLVENT	141b	nPB	TRICHLOR	Novec [®] HFE 7100	Vertrel [®] HFC 4310
BOILING POINT °C	47.8	32	71	87	60	54
SPECIFIC GRAVITY @25°C	1.27	1.23	1.35	1.46	1.52	1.58
SURFACE TENSION @25°C dyne/cm ³	27.5	18.4	25.3	28.7	13.6	14.1
KAURI-BUTANOL VALUE	117	56	125	129	10	9
FLASH POINT °C	2.2	NONE	NONE	NONE	NONE	NONE
SNAP APPROVAL ¹	YES	YES	NO	YES	YES	YES
EXPOSURE Limit TWA ³ ppm	200 ²	500 ²	10 ^{2,4}	50 ²	600 ²	200 ²
ODP ⁵	N/R ⁶	0.11	0.02 – 0.03	N/R ⁶	N/R ⁶	N/R ⁶

- ¹ SNAP approved for metal cleaning, electronic and precision cleaning and aerosol application
- ² Exposure limits are ACGIH TLV's and/or NIOSH RELS
- ³ TWA = time-weighted average
- ⁴ EPA has proposed in its most recent SNAP proposal 25 ppm as an eight hour exposure level.
- ⁵ ODP = Ozone Depletion Potential
- ⁶ Not regulated as an ODP by the EPA or the Montreal Protocol

NOVEC[®] is a registered trademark of 3M
Vertrel[®] is a registered trademark of DuPont

Studies evaluating the effects of repeated exposure to *VersaTRANS solvent* have been performed by different routes of exposure (i.e., inhalation, dosed feed, drinking water). Few adverse effects and no histopathological changes were noted in these studies conducted at relatively high doses. For example, in a 90-day inhalation study, no adverse effects were observed in rats exposed to 4000 ppm, the highest concentration tested in the study.

Genotoxicity studies used to evaluate the potential of a chemical to be a carcinogen have been negative. Exposure of pregnant animals to *VersaTRANS solvent* did not produce any adverse effects on the fetus.

Additional information is contained in the Material Safety Data Sheet. Contact your PPG representative, our customer service department at 800-243-6774 or visit www.ppg-versatrans.com for more details.

In Case of Emergency

In case of an emergency, call the PPG Industries Emergency Response Center at (412) 434-4515. In Canada, call Canutec at 613-966-6666.

Handling and Storage

VersaTRANS solvent is a flammable liquid and all appropriate precautions need to be taken when handling or using this material. *VersaTRANS solvent* liquid or vapor can decompose to form toxic and corrosive acid fumes.

Packaging and Shipping

VersaTRANS solvent is shipped as a flammable liquid according to DOT requirements. Package sizes available include 55 gallon drums, 5 and 3.5 gallon pails. Bulk shipments are available in tank trucks, tank cars and iso-containers. All product is shipped from the Lake Charles, La. plant.

Customer Service

Samples of *VersaTRANS solvent* are available on request. PPG's technical and product safety staff is available to provide additional information on technical issues, applications, handling and storage, and health and safety concerns.

For more information, contact your PPG representative, our customer service department at 800-243-6774 or visit www.ppg-versatrans.com for more details.



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If not properly used, the products mentioned herein can be hazardous. All purchasers of these products should communicate all the health and safety information contained herein to their customers or employees, as the case may be. PPG Industries recommends that before anyone uses or handles the products mentioned herein, he or she read and understand the precautionary and other information on the product label, as well as in the Material Safety Data Sheet and Product Bulletin.

Although the products mentioned herein are intended for industrial and manufacturing uses, they are potentially hazardous materials and must be kept out of the reach of children.

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