



MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Perchloroethylene
PRODUCT ID: 0041
SYNONYMS: Tetrachloroethylene; Perchloroethylene; Perchlor; C₂Cl₄
ISSUE DATE: 05/09/2002
EDITION NO.: 20

PPG Industries, Inc.
One PPG Place, Pittsburgh, PA 15272, USA
24-hour Emergency Telephone Number: 1-304-843-1300
For Product Information (8am-5pm Eastern time):
1-800-243-6774 (C/A)

PREPARER: Product Safety, Chemicals

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Material/CAS Number</u>	<u>Percent</u>
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Perchloroethylene (Stabilized) >99 127-18-4	
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3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

WARNING! Keep away from food. Vapor harmful.
Do not ship lightly stabilized grades in aluminum trailers.

Precautions: Do not swallow. Swallowing may cause injury or death. Avoid contact with eyes. Will cause irritation and pain. Avoid prolonged, repeated, or excessive contact with skin. May cause irritation and dermatitis. Do not breathe vapors. High vapor concentrations can cause dizziness, unconsciousness, central nervous system depression or death. Long-term overexposure may cause liver/kidney injury. Do not use in poorly ventilated or confined spaces without proper respiratory protection. Use only with adequate ventilation. Ventilation must be sufficient to limit employee exposure to this product below permissible exposure limits. Wash thoroughly every day after work. Do not eat, drink or smoke in work area. Eye irritation, dizziness and/or drunkenness are signs of overexposure.

4. FIRST AID MEASURES

INHALATION: Remove from area to fresh air. If symptomatic, contact a poison control center, emergency room or physician for treatment information.

EYE/SKIN CONTACT: **EYE:** Remove contact lens and pour a gentle stream of warm water through the affected eye for at least 15 minutes. If irritation persists, contact a poison control center, emergency room, or physician as further treatment may be necessary. **SKIN:** Run a gentle stream of water over the affected area for 15 minutes. A mild soap may be used if available. If any symptoms persist, contact a poison control center, emergency room, or physician as further treatment may be necessary.

INGESTION: Gently wipe or rinse the inside of the mouth with water. Sips of water may be given if person is fully conscious. Never give anything by mouth to an unconscious or convulsing person. Do Not induce vomiting. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

NOTES TO PHYSICIAN:

Only administer adrenaline after careful consideration following overexposure. Increased sensitivity of the heart to adrenaline may be caused by overexposure to this product.

5. FIRE FIGHTING MEASURES

FLASH POINT: None (by DOT test method).

FLAMMABLE LIMITS IN AIR - LOWER (%): None

FLAMMABLE LIMITS IN AIR - UPPER (%): None

EXTINGUISHING MEDIA: Carbon dioxide. Dry chemical. Water.

SPECIAL FIREFIGHTING PROCEDURES: Emits toxic fumes under fire conditions. When this product is involved in fires, it can decompose to toxic, corrosive hydrogen chloride and possible traces of phosgene. Fire-fighters must wear NIOSH approved pressure demand, self-contained breathing apparatus and full protective clothing when fighting chemical fires.

6. ACCIDENTAL RELEASE MEASURES**ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

Immediately evacuate the area. Provide maximum ventilation. Unprotected personnel should move upwind of spill. Only personnel equipped with proper respiratory and eye/skin protection should be permitted in the area. Dike area to contain spill. Take precautions as necessary to prevent contamination of ground and surface waters. Recover spilled material on adsorbents, such as sawdust or vermiculite, and sweep into closed containers for disposal. After all visible traces, including ignitable vapors, have been removed, thoroughly wet vacuum the area. Do not flush to sewer. If area of spill is porous, remove as much earth and gravel, etc. as necessary and place in

closed containers for disposal.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORAGE:

Vapors are heavier than air and will collect in low areas. Keep container closed when not in use. Store only in closed, properly labeled containers. This material or its vapors when in contact with flames, hot glowing surfaces or electric arcs can decompose to form hydrogen chloride gas and possible traces of phosgene. Avoid contamination of water supplies. Handling, storage and use procedures must be carefully monitored to avoid spills or leaks. Any spill or leak has the potential to cause underground water contamination which may, if sufficiently severe, render a drinking water source unfit for human consumption. Contamination that does occur cannot be easily corrected. A chlorinated solvent used as a flashpoint suppressant must be added in sufficient quantity or the resultant mixture may have a flashpoint lower than the flammable component. Do not use cutting or welding torches on drums that contained this product unless properly purged and cleaned. Do not ship lightly stabilized grades (Type 209) in aluminum trailers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

8-hour Time Weighted Average (TWA); 15-minute Short-Term Exposure Limit (STEL)

OSHA: 25 ppm TWA.

ACGIH: 25 ppm TWA. 100 ppm STEL.

RESPIRATORY PROTECTION: Airborne concentrations should be maintained below the exposure limits. When respiratory protection is required for certain operations (<10x exposure limit), use an air purifying respirator. The effectiveness of an air purifying respirator is limited. Use only for a single short-term exposure. Use self-contained breathing apparatus (SCBA) or full facepiece airline respirator with auxiliary SCBA operated in the pressure demand mode for emergencies and for all work performed in storage vessels, poorly ventilated rooms, and other confined areas. Respirators must be approved by NIOSH. The respiratory use limitations made by NIOSH or the manufacturer must be observed. Respiratory protection programs must be in accordance with 29 CFR 1910.134.

VENTILATION: Use local exhaust or general room/dilution ventilation sufficient to maintain employee exposure below permissible exposure limits.

EYE AND FACE PROTECTION: Splashproof goggles.

PROTECTIVE GLOVES: Viton®. Silver Shield®. Polyvinyl alcohol (degrades in water). Nitrile for incidental non-immersion contact only.

OTHER PROTECTIVE EQUIPMENT: Boots, aprons, or chemical suits should be used when necessary to prevent skin contact. Personal protective clothing and use of equipment must be in accordance with 29 CFR 1910.132 (general requirements), .133 (eye and face protection), and .138 (hand protection).

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:	121 C (249.8 F)
VAPOR DENSITY (Air=1):	5.83
SPECIFIC GRAVITY (Water=1):	1.6 @ 20/20 C
pH:	6.8 to 8.4
FREEZING/MELTING POINT:	-22.3 C (-8 F)
SOLUBILITY (wt.% in water):	0.015% @ 25 C
BULK DENSITY:	13.6 lbs/gal @ 20 C
VOLUME % VOLATILE:	100
VAPOR PRESSURE:	14.2 mm Hg @ 20 C
EVAPORATION RATE:	0.09 (ethyl ether=1)
HEAT OF SOLUTION:	NA
PHYSICAL STATE:	Liquid
ODOR:	Ether-like
COLOR:	Clear/Colorless

10. STABILITY AND REACTIVITY

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITY (CONDITIONS/MATERIALS TO AVOID):

Open flames, hot glowing surfaces or electric arcs. Liquid oxygen or other strong oxidants can form explosive mixtures of perchloroethylene.

HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS:

Hydrogen chloride gas. Possible traces of phosgene.

11. TOXICOLOGICAL INFORMATION

ACUTE INHALATION LC50:	(rat) 5040 ppm (8 hours). Moderate toxicity.
ACUTE DERMAL LD50:	(rabbit) >3228 mg/kg. Slight to very low toxicity.
SKIN IRRITATION:	Mildly irritating.
EYE IRRITATION:	Mildly irritating.
ACUTE ORAL LD50:	(rat) 2629 mg/kg. Moderate toxicity.

CHRONIC EFFECTS/CARCINOGENICITY: This product is listed as a carcinogen or potential carcinogen by NTP, IARC, and OSHA. This product is listed under IARC as a 2A.

MEDICAL CONDITIONS AGGRAVATED: Prolonged exposure above the OSHA permissible exposure limit may complicate existing liver and kidney diseases.

EFFECTS OF OVEREXPOSURE:

ACUTE:

Inhalation: This product is primarily a central nervous system depressant. Inhalation can cause irritation of the respiratory tract, dizziness, nausea, headache, loss of coordination and equilibrium, unconsciousness and even death in confined or poorly ventilated areas. Fatalities following severe acute exposure to various chlorinated solvents have been attributed to ventricular fibrillation.

Eye/Skin: Liquid splashed in the eye can result in discomfort, pain and irritation. Prolonged or repeated contact with liquid on the skin can cause irritation and dermatitis. The problem may be accentuated by liquid becoming trapped against the skin by contaminated clothing and shoes. Skin absorption is not expected to be of toxicologic significance under normal industrial use.

Ingestion: Swallowing of this material may result in irritation of the mouth and GI tract along with other effects as listed above for inhalation. Vomiting and subsequent aspiration into the lungs may lead to chemical pneumonia and pulmonary edema which is a potentially fatal condition.

CHRONIC: Prolonged exposure above the OSHA permissible exposure limits may result in liver and kidney damage. In a National Toxicology Program study, mice exposed to 400 ppm for 13 weeks were observed to have lesions in the liver including necrosis. Dose-related kidney lesions were observed in rats exposed at 200 or 400 ppm and in mice exposed at 100 or 200 ppm for 6 hours/day, 5 days/week for 103 weeks. Prudent handling practices should be followed to minimize human exposure.

CARCINOGENICITY: In a National Toxicology Program study rats were exposed to 0, 200, or 400 ppm and mice to 0, 100, or 200 ppm 6 hours/day, 5 days/week for 103 weeks. Significant increases in mononuclear cell leukemia was observed for rats and an increased incidence of hepatocellular (liver) carcinomas was observed for mice. Additionally, significant increases in renal (kidney) tubular cell tumors was found for male rats. An EPA Scientific Advisory Board which reviewed the available data urged caution in concluding from the animal studies that perchloroethylene poses a risk of human cancer due to a substantial background incidence of at least one type of these tumors and possible differences in species specific responses.

MUTAGENESIS: Perchloroethylene has been shown to have no or weak mutagenic activity in most test systems.

REPRODUCTIVE/DEVELOPMENTAL: Inhalation exposure of rats at 70, 230, or 470 ppm perchloroethylene for 8 hours/day for 27 weeks resulted in no adverse effects on reproductive performance. Developmental studies on perchloroethylene have failed to show teratogenic effects in rats, rabbits or mice.

EPIDEMIOLOGY: Limited epidemiology studies have been inconsistent or negative in regard to cancer.

12. ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL INFORMATION:**

Toxic to aquatic life. 100-10 ppm (fish) 96-hour TLM LC50

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:

Waste material must be disposed of in accordance with federal, state, provincial, and local environmental control regulations. Empty containers should be recycled or disposed of through an approved waste management facility.

14. TRANSPORT INFORMATION

Proper Shipping Name: Tetrachloroethylene
Hazard Class: 6.1 (Toxic)
UN Number: UN1897
Packing Group: III
USA-RQ, Hazardous Substance and Quantity: 100 lbs./45.4 kg.
Marine Pollutant: Listed as a Marine Pollutant.

15. REGULATORY INFORMATION

USA TSCA: All components of this product are listed on the TSCA Inventory.

EUROPE EINECS: All components in this product are listed on EINECS.

CANADA DSL: This product and/or all of its components are listed on the Canadian DSL.

AUSTRALIA AICS: All components of this product are listed on AICS.

KOREA ECL: All components in this product are listed on the Korean Existing Chemicals Inventory (KECI).

JAPAN MITI (ENCS): All components of this product are listed on MITI.

PHILIPPINES PICCS: All of the components in this product are listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS).

SARA TITLE III:

SARA (311, 312) Hazard Class:

Acute Health Hazard. Chronic Health Hazard.

SARA (313) Chemicals:

Listed.

SARA Extremely Hazardous Substance:

Not listed.

CERCLA Hazardous Substance:

The following materials are listed as CERCLA Hazardous Substances in Table 302.4 of 40 CFR Part 302: Perchloroethylene (127-18-4) RQ = 100 lbs./45.4 kg. Releases to air, land or water which exceed the RQ must be reported to the National Response Center, 800-424-8802.

RCRA:

Waste perchloroethylene and contaminated soils/materials from spill cleanup are U210 hazardous waste as per 40 CFR 261.33 and must be disposed of accordingly under RCRA.

CALIFORNIA PROPOSITION 65: Warning: This product contains a chemical known to the State

of California to cause cancer.

NJ RIGHT-TO-KNOW LIST: Greater than 99% pure, no component information required.

CANADA REGULATIONS (WHMIS): Class D1B - Toxic Materials. Sensitization to product: None known. Odor threshold: Approx. 50 ppm. Product use: dry cleaning solvent.

HAZARD RATING SYSTEM (HMIS/NFPA):

Health 2, Flammability 0, Reactivity 0

16. OTHER INFORMATION

The following has been revised since the last issue of this MSDS:

Date. Edition. Section 4 has been updated. Section 8 has been updated. Section 9 has been updated. Section 10 has been updated. Section 11 has been updated. Section 13 has been updated. Section 14 has been updated. Section 15 has been updated.

Previous revision date: 10/16/1997

Previous edition number: 019

NA = Not Available