

SAFETY DATA SHEET

14/2/05

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

DOW CHEMICAL COMPANY LTD
2 HEATHROW BOULEVARD
284 BATH ROAD
WEST DRAYTON
MIDDLESEX
UB7 0DQ

24 HOUR EMERGENCY RESPONSE NUMBER : +44-1553-761-251

For product information: +44-0208-917-5000

Product Name: ISOFORM* Isomerization Grade Perchloroethylene
LV70: 36904 Issue Date: April 94 Ref: 00715
Revised: March 04 (Section(s) 8)

Use of the substance/preparation
For industrial use only.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Dangerous components (see section 16 for complete R-phrases):

| | | | CAS | EC No |
|--|---------|---------------------|-------------|-----------|
| Tetrachloroethylene (perchloroethylene) | >99.0 % | Xn,N; R40- 51/53 | 000127-18-4 | 204-825-9 |

Stabilizers Balance

3. HAZARDS IDENTIFICATION

Limited evidence of a carcinogenic effect.
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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4. FIRST-AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Inhalation

Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin Contact

Wash skin with plenty of water.

Eye Contact

Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion

Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

Note to Physician

Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician.

If lavage is performed, suggest endotracheal and/or oesophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.

If burn is present, treat as any thermal burn, after decontamination. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Water fog or fine spray.

Hazardous Combustion Products

Exposed to the heat of a fire this product may decompose releasing hydrogen chloride and small amounts of chlorine and phosgene.

Protection of Firefighters

Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves).

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6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Evacuate area.

Only trained and properly protected personnel should be involved in cleanup operations.

Environmental Precautions

Contain liquid to prevent contamination of soil, surface water or ground water.

Methods of Cleaning Up

Small spills: Cover and soak up with a suitable absorbent material. Collect in suitable and properly labelled containers. Dispose of according to applicable regulations, see Section 13, DISPOSAL CONSIDERATIONS.

Large spills: Evacuate area. Contain with dike. Pump into properly labelled closed metal containers.

7. HANDLING AND STORAGE

Handling

Exercise reasonable care and caution.

Avoid breathing vapours.

Vapours of this product are heavier than air and will collect in low areas such as pits, storage tanks, and other confined areas.

Do not enter areas where vapours of this product are suspected unless special breathing apparatus is used and an observer is present for assistance.

Storage

Store in cool, dry well ventilated area away from sources of ignition and heat.

Do not use aluminium as material of construction for equipment (tanks, pumps, gaskets etc.).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Perchloroethylene: The UK Health and Safety Executive have established an Occupational Exposure Standard(OES) of 50ppm 8-hour TWA, 100ppm 15-min STEL.

Engineering Controls

Control airborne concentrations below the exposure guideline.

Use only with adequate ventilation.

Local exhaust ventilation may be necessary for some operations.

Lethal concentrations may exist in areas with poor ventilation.

Personal Protective Equipment

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- Respiratory Protection

Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. Use a CE approved air-purifying respirator with cartridge/filter for: Organic vapours, type A (boiling point >65 deg.C).

In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

- Skin Protection

For brief contact, no precautions other than clean body-covering clothing should be needed.

When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full body-suit will depend on operation.

Use chemical resistant gloves classified under standard EN 374:

Protective gloves against chemicals and micro-organisms.

Examples of preferred glove barrier materials include: Chlorinated polyethylene. Nitrile/butadiene rubber ("nitrile" or "NBR").

Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Viton.

Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Polyvinyl chloride ("PVC" or "vinyl"). Butyl rubber.

When prolonged or frequently repeated contact may occur, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as the instructions/specifications provided by the glove supplier.

- Eye/Face Protection

Use safety glasses. Where contact with this material is likely, chemical goggles are recommended because eye contact may cause discomfort even though it is unlikely to cause injury.

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9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|-----------------------------|------------------------|
| Appearance | : liquid |
| Colour | : colourless |
| Odour | : characteristic |
| Rel. density (water=1) | : 1.619 |
| Rel. vapour density (air=1) | : 5.76 |
| Vapour pressure | : 13 mmHg/20 deg.C |
| Freezing point/range | : -22 deg.C |
| Boiling point/range | : 121 deg.C |
| Water solubility | : 0.015 %wt (20 deg.C) |
| LogP (octanol/water) | : 3.40 |
| pH | : not applicable |
| Flash point | : none (TCC) |
| Auto-ignition temp. | : none |
| Flammability-LFL | : none |
| Flammability-UFL | : none |

10. STABILITY AND REACTIVITY

Conditions to Avoid

Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition.

Materials to Avoid

Strong oxidising agents. Strong bases.

Sodium. Potassium.

Avoid prolonged contact with aluminium powder, zinc powder and magnesium powder.

Hazardous Decomposition Products

Thermal decomposition products may include hydrogen chloride and small amounts of chlorine and phosgene.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

- Ingestion

The oral LD50 for rats is >5000 mg/kg.

Very low toxicity if swallowed.

Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury.

If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

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- Skin Contact

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

The LD50 for skin absorption in rabbits is >10000 mg/kg.

- Inhalation

In confined and poorly ventilated areas, vapours can readily accumulate and can cause unconsciousness and death due to displacement of oxygen (simple asphyxia).

Dizziness may occur at 200 ppm perchloroethylene; progressively higher levels may also cause nasal irritation, nausea, incoordination, drunkenness, and over 1,000ppm, unconsciousness and death.

A single brief (minutes) inhalation exposure to levels above 6 000 ppm perchloroethylene may be immediately fatal.

Alcohol consumed before or after exposure may increase adverse effects. Based on structural analogy and/or equivocal data in animals, excessive exposure may potentially increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats).

Irritation**- Skin**

Brief contact is essentially nonirritating to the skin.

Prolonged or repeated exposure may cause skin irritation, even a burn.

Repeated contact may cause drying or flaking of skin.

- Eyes

May cause pain disproportionate to the level of irritation to eye tissues.

May cause slight temporary eye irritation.

Vapours may irritate eyes at about 100 ppm perchloroethylene.

Developmental/Reproductive Effects

Birth defects are unlikely. Exposures having no effects on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

Mutagenicity

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Carcinogenicity

Perchloroethylene has been shown to increase the incidence of tumours in certain strains of rats and mice. Other long-term inhalation studies in rats failed to show tumourigenic response.

Human data are limited and have not established an association between perchloroethylene exposure and cancer. Perchloroethylene is not believed to pose a measurable carcinogenic risk to man when handled as recommended.

This substance is classified as a category 3 carcinogen in the EC.

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Other Information

Signs and symptoms of excessive exposure may be central nervous system effects.

Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

Repeated exposure to high levels have caused liver or kidney effects in laboratory animals.

12. ECOLOGICAL INFORMATION**Mobility and Bioaccumulation Potential**

Measured log octanol/water partition coefficient (log Pow) is 3.40.

The experimentally determined bioconcentration factor (BCF) in fish is 30-50.

Potential for mobility in soil is medium (Koc between 150 and 500).

Degradation

Biodegradation under aerobic laboratory conditions is below detectable limits.

Biodegradation may occur under anaerobic conditions (in the absence of oxygen).

Degradation is expected in the atmospheric environment.

In the atmospheric environment the material is estimated to have a tropospheric half-life of 140-150 days.

Aquatic Toxicity

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in most sensitive species).

Acute LC50s for fish are in the range of 4.8-52.2 mg/L.

Acute LC50 for water flea Daphnia magna is 3.2-123 mg/L.

13. DISPOSAL CONSIDERATIONS

Any disposal practice must be in compliance with all local and national laws and regulations.

Do not dump into any sewers, on the ground, or into any body of water.

The preferred options are to send to licensed reclaimer or to permitted incinerators.

14. TRANSPORT INFORMATION**Road & Rail**

Proper shipping name: 1897 TETRACHLOROETHYLENE

Truck/Rail ADR/RID : 6.1 Label :< >

Classification Code : T1

Packing Group : III

Kemler Code : 60 UN Number : 1897

Tremcard Nr. CEFIC : 61GT1-III

