

1,1,2-TRICHLOROETHANE

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifiers

- Product name	:	1,1,2-TRICHLOROETHANE
- Chemical Name	:	1,1,2-Trichloroethane
- Synonyms	:	Vinyl trichloride, T112
- Molecular formula	:	C ₂ H ₃ Cl ₃
- Structural formula	:	CH ₂ Cl-CHCl ₂
- REACH Registration Number	:	01-2119458770-34
- Type of product	:	Substance

1.2. Identified uses / Uses advised against

- Identified uses	:	- Chemical intermediate
		- Plastic industry

1.3. Manufacturer or supplier's details

- Company	:	
- Address	:	-
- Telephone	:	
- Fax	:	
- E-mail address	:	sdstracking@solvay.com

1.4. Emergency telephone number

- Emergency telephone number	+44(0)1235 239 670 [CareChem 24] (Europe)
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2. HAZARDS IDENTIFICATION

2.1. GHS Classification

2.1.1. European regulation (EC) 1272/2008, as amended

Classified as hazardous according to the European regulation (EC) 1272/2008, as amended

Hazard class	Hazard category	Route of exposure	H Phrases
Carcinogenicity	Category 2		H351
Acute toxicity	Category 2	Dermal	H310
Acute toxicity	Category 3	Inhalation	H331
Acute toxicity	Category 4	Oral	H302
Chronic aquatic toxicity	Category 3		H412

2.1.2. European Directive 67/548/EEC or 1999/45/EC, as amended

Classified as hazardous according to European Directive 67/548/EEC or 1999/45/EC, as amended

Hazard class / Hazard category	R-phrases(s)
Carc.Cat.3	R40
T+	R27
T	R23
Xn	R22
	R66
	R52/53



2.2. EC Label - According to Regulation (EC) 1272/2008, as amended**2.2.1. Name(s) on label**

Hazardous components : 1,1,2-Trichloroethane

2.2.2. Signal word

Danger

2.2.3. Hazard symbols**2.2.4. Hazard statements**

H351	- Suspected of causing cancer.
H310	- Fatal in contact with skin.
H331	- Toxic if inhaled.
H302	- Harmful if swallowed.
H412	- Harmful to aquatic life with long lasting effects.
EUH066	- Repeated exposure may cause skin dryness or cracking.

2.2.5. Precautionary statements

Prevention	P201	- Obtain special instructions before use.
	P262	- Do not get in eyes, on skin, or on clothing.
	P271	- Use only outdoors or in a well-ventilated area.
	P273	- Avoid release to the environment.
	P280	- Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response	P302 + P350	- IF ON SKIN: Gently wash with plenty of soap and water.
	P309 + P311	- IF exposed or if you feel unwell: Call a POISON CENTER or doctor/ physician.

3. COMPOSITION/INFORMATION ON INGREDIENTS**3.1. Concentration**

Substance name:	Concentration
1,1,2-Trichloroethane CAS-No.: 79-00-5 / EC-No.: 201-166-9 / Index-No.: 602-014-00-8	ca. 96 %
1,1-Dichloroethane CAS-No.: 75-34-3 / EC-No.: 200-863-5 / Index-No.: 602-011-00-1	ca. 1.5 %
1,1,1,2-tetrachloroethane CAS-No.: 79-34-5 / EC-No.: 201-197-8 / Index-No.: 602-015-00-3	ca. 2.5 %

3.2. Hazardous components - According to Regulation (EC) 1272/2008, as amended

Substance name	Hazard class	Hazard category	Route of exposure	H Phrases
1,1,2-Trichloroethane	Carcinogenicity	Category 2		H351
	Acute toxicity	Category 4	Inhalation	H332
	Acute toxicity	Category 4	Dermal	H312
	Acute toxicity	Category 4	Oral	H302
1,1-Dichloroethane	Flammable liquids	Category 2		H225
	Acute toxicity	Category 4	Oral	H302
	Serious eye damage/eye irritation	Category 2		H319
	Specific target organ toxicity - single exposure	Category 3		H335
	Chronic aquatic hazard	Category 3		H412
1,1,2,2-tetrachloroethane	Acute toxicity	Category 2	Inhalation	H330
	Acute toxicity	Category 1	Dermal	H310
	Chronic aquatic hazard	Category 2		H411

3.3. Hazardous components - European Directive 67/548/EEC or 1999/45/EC, as amended

Substance name	Classification	Hazard category	R-phrases(s)
1,1,2-Trichloroethane	Carc.Cat.3		R40
	Xn	Harmful	R20/21/22
			R66
1,1-Dichloroethane	F	Highly flammable	R11
	Xn	Harmful	R22
	Xi	Irritant	R36/37
			R52
			R53
1,1,2,2-tetrachloroethane	T+	Very toxic	R26/27
	N	Dangerous for the environment	R51
			R53

4. FIRST AID MEASURES**4.1. Description of necessary first-aid measures****4.1.1. If inhaled**

- In case of accident by inhalation: remove casualty to fresh air and keep at rest.
- Victim to lie down in the recovery position, cover and keep him warm.
- Oxygen or artificial respiration if needed.
- If symptoms persist, call a physician.

4.1.2. In case of eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- Immediate medical attention is required.

4.1.3. In case of skin contact

- Remove and wash contaminated clothing before re-use.
- Wash off with soap and water.
- If symptoms persist, call a physician.

4.1.4. If swallowed

- If swallowed, rinse mouth with water (only if the person is conscious).
- Artificial respiration and/or oxygen may be necessary.
- Take victim immediately to hospital.



4.2. Most important symptoms/effects, acute and delayed

4.2.1. Inhalation

- Irritating to mucous membranes
- irritation of the upper respiratory tract
- In case of higher concentrations: Cough, Breathing difficulties, Feelings of intoxication, restlessness, dizziness, nausea, vomiting, drowsiness., May cause cardiac arrhythmia.

4.2.2. Skin contact

- The product may be absorbed through the skin.
- Repeated exposure may cause skin dryness or cracking.

4.2.3. Eye contact

- Risk of temporary eye lesions.
- Symptoms: Lachrymation

4.2.4. Ingestion

- Feelings of intoxication, restlessness, dizziness and drowsiness.
- Risk of convulsions, loss of consciousness, deep coma and cardiopulmonary arrest.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Suitable extinguishing media

- powder
- Foam
- Carbon dioxide (CO₂)
- Water
- Water spray

5.1.2. Unsuitable extinguishing media

- None.

5.2. Specific hazards arising from the chemical

- In use, may form flammable/explosive vapour-air mixture.
- Vapours are heavier than air and may spread along floors.
- Hazardous decomposition products formed under fire conditions.

5.3. Special protective actions for fire-fighters

- Wear self-contained breathing apparatus and protective suit.
- Full protective flameproof clothing

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. Advice for non-emergency personnel

- Prevent further leakage or spillage if safe to do so.
- Keep away from Incompatible products.
- Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.
- Ventilate the area.

6.1.2. Advice for emergency responders

- Evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.
- Wear self-contained breathing apparatus and protective suit.
- Cover the spreading liquid with foam in order to slow down the evaporation.
- Ventilate the area.

6.2. Environmental precautions

- Should not be released into the environment.
- If the product contaminates rivers and lakes or drains inform respective authorities.



6.3. Methods and materials for containment and cleaning up

- Dam up.
- Soak up with inert absorbent material.
- Prevent product from entering drains.
- Keep in properly labelled containers.
- Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

- Used in closed system
- Use only in well-ventilated areas.
- Keep away from heat and sources of ignition.
- Preferably transfer by pump or gravity.
- Keep away from Incompatible products.

7.2. Conditions for storage, including incompatibilities

7.2.1. Storage

- Store in original container.
- Keep container closed.
- Keep in a well-ventilated place.
- Keep in a banded area.
- Keep away from Incompatible products.

7.2.2. Packaging material

7.2.2.1. Suitable material

- Steel drum

7.2.2.2. Unsuitable material

- no data available

7.3. Specific use(s)

- For further information, please contact: Supplier

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Exposure Limit Values

1,1,2-Trichloroethane

- US. ACGIH Threshold Limit Values 2009
time weighted average = 10 ppm
- US. ACGIH Threshold Limit Values 2009
Remarks: Can be absorbed through skin.

1,1-Dichloroethane

- UK. EH40 Workplace Exposure Limits (WELs) 2007
time weighted average = 100 ppm
- UK. EH40 Workplace Exposure Limits (WELs) 2007
Remarks: Can be absorbed through skin.
- US. ACGIH Threshold Limit Values 2009
time weighted average = 100 ppm
- EU. Indicative Exposure and Directives relating to the protection of risks related to work exposure to chemical, physical, and biological agents. 12 2009
time weighted average = 100 ppm
time weighted average = 412 mg/m³
Remarks: Indicative
- EU. Indicative Exposure and Directives relating to the protection of risks related to work exposure to chemical, physical, and biological agents. 02 2006
Remarks: Can be absorbed through skin.

1,1,2,2-tetrachloroethane



- US. ACGIH Threshold Limit Values 2009
time weighted average = 1 ppm
- US. ACGIH Threshold Limit Values 2009
Remarks: Can be absorbed through skin.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Ensure adequate ventilation.
- Provide appropriate exhaust ventilation at machinery.
- Refer to protective measures listed in sections 7 and 8.
- Apply technical measures to comply with the occupational exposure limits.
- Take care to avoid waste and spillage when weighing, loading and mixing the product.
- Use adequate ventilation and/or engineering controls in high temperature processing to prevent exposure to vapors.
- Prevent further leakage or spillage.

8.2.2. Individual protection measures

8.2.2.1. *Respiratory protection*

- Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/ national standards.
- Recommended Filter type: A

8.2.2.2. *Hand protection*

- Wear suitable gloves.
- Suitable material: Copolymer VF2-HFP (fluoroelastomer)
- Unsuitable material: PVC, Natural Rubber, Nitrile rubber, butyl-rubber, Polyethylene

8.2.2.3. *Eye protection*

- If splashes are likely to occur, wear:
- Chemical resistant goggles must be worn.

8.2.2.4. *Skin and body protection*

- Wear suitable protective clothing.

8.2.2.5. *Hygiene measures*

- Eye wash bottles or eye wash stations in compliance with applicable standards.
- When using do not eat, drink or smoke.
- High standards of skin care and personal hygiene should be exercised at all times.
- Handle in accordance with good industrial hygiene and safety practice.

8.2.3. Environmental exposure controls

- Should not be released into the environment.
- The organic ingredients can be incinerated in a suitable installation when in accordance with local regulations.
- Dispose of rinse water in accordance with local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Physical and chemical properties

9.1.1. General Information

- | | |
|---------------------------|-------------|
| ■ Appearance | liquid |
| ■ Colour | colourless |
| ■ Odour | Chloroform |
| ■ Molecular Weight | 133.4 g/mol |

9.1.2. Important health safety and environmental information

- | | |
|--------------------------------------|----------------|
| ■ pH | not applicable |
| ■ pKa | No data |
| ■ Melting/freezing point | -36 °C |
| ■ Boiling point/boiling range | = 114 °C |
| ■ Flash point | > 75 °C |
| ■ Evaporation rate | No data |

- | | |
|---|--|
| ■ Flammability (solid, gas) | not applicable |
| ■ Flammability | not applicable |
| ■ Explosive properties | Vapours may form explosive mixture with air., With certain materials (see section 10). |
| - Upper explosion limit | 28 %(V) |
| - Lower explosion limit | 6 %(V) |
| ■ Vapour pressure | = 23 hPa, at 20 °C |
| ■ Vapour density | = 4.6 |
| ■ Relative density | = 1.44, at 20 °C |
| ■ Bulk density | No data |
| ■ Solubility | = 4.5 g/l, pH 7, at 20 °C, Water |
| ■ Solubility/qualitative | Soluble in:, organic solvent, Greases, Ethanol, Diethylether |
| ■ Partition coefficient: n-octanol/water | log Pow: 2.05 - 2.49, 20 °C |
| ■ Autoignition temperature | 460 °C |
| ■ Decomposition temperature | >= 100 °C |
| ■ Viscosity | Viscosity : = 1.2 mPa.s, at 20 °C |
| ■ Oxidizing properties | not applicable |

10. STABILITY AND REACTIVITY

10.1. Reactivity

- May decompose on long exposure to light.
- Decomposes when moist.

10.2. Chemical stability

- Stable under recommended storage conditions.
- Product is sensitive to light and moisture.

10.3. Possibility of hazardous reactions

- Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.

10.4. Conditions to avoid

- To avoid thermal decomposition, do not overheat.
- Keep away from direct sunlight.
- Exposure to moisture.

10.5. Materials to avoid

- Oxidizing agents, Polyethylene, PVC, Light metals, Zinc, Aluminium, Powdered metal salts

10.6. Hazardous decomposition products

- Hydrogen chloride gas, Phosgene, Carbon monoxide

11. TOXICOLOGICAL INFORMATION

11.1. Acute toxicity

11.1.1. Acute oral toxicity

- LD50, rat, 837 mg/kg

11.1.2. Acute inhalation toxicity

- LC50, 6 h, rat , 9 g/m³



11.1.3. Acute dermal toxicity

- no data available

11.2. Skin corrosion/irritation

- no data available

11.3. Serious eye damage/eye irritation

- no data available

11.4. Respiratory or skin sensitization

- no data available

11.5. Mutagenicity

- In vivo tests did not show mutagenic effects

11.6. Carcinogenicity

- Oral, mouse, Target Organs: Liver, adrenal glands, 150 mg/kg, carcinogenic effects

11.7. Toxicity for reproduction

- no data available

11.8. Repeated dose toxicity

- Inhalation, Repeated exposure , rat, 83 mg/l, no observed effect, ,
- Oral, Repeated exposure , mice, 300 mg/kg, NOAEL

11.9. Other information

- no data available

12. ECOLOGICAL INFORMATION

12.1. Toxicity

- Fishes, *Lepomis macrochirus*, LC50, 96 h, 40 mg/l, fresh water
- Fishes, *Pleuronectes platessa*, LC50, 48 h, 34 mg/l, Marine water
- Crustaceans, *Daphnia magna*, EC50, 48 h, 18 mg/l
- Fishes, *Jordanella floridae*, NOEC, 10 d, 18.16 mg/l
fresh water
- Fishes, *Pleuronectes platessa*, NOEC, 8 Weeks, 3 mg/l
Marine water
- Crustaceans, *Daphnia magna*, EC50, 21 Days, 18 mg/l,
- Slipper limpet (*Crepidula fornicata*), EC50, 7 Days, 170 mg/l,
- Algae, *Chlamydomonas reinhardtii*, EC50, 72 h, 57 mg/l, fresh water
- Algae, *Scenedesmus subspicatus*, EC50, 72 h, 200 mg/l
- Algae, *Phaeodactylum tricornutum*, EC50, 96 h, 60 mg/l

12.2. Persistence and degradability

12.2.1. Abiotic degradation

- Air, indirect photo-oxidation, $t_{1/2} = 50 - 87$ d
Result: non-significant photolysis
Conditions: sensitizer: OH radicals
- Water, $t_{1/2} > 1$ y, pH = 9
Result: non-significant hydrolysis and photolysis
- Water, $t_{1/2}$ ca. 170 y
Result: non-significant hydrolysis and photolysis
Conditions: neutral
- Soil
Result: no data available

12.2.2. Biodegradation

- aerobic, Tested according to: ready biodegradability/MITI, , 5 % after 28 d
Result: Not readily biodegradable.

12.3. Bioaccumulative potential

- $\log Pow < 4$,
Result: Does not bioaccumulate.
- Bioconcentration factor (BCF) = 0.7 - 6.7,

12.4. Mobility

- Water, Evaporates., t_{1/2}: from 0.5 - 8 h
t_{1/2}, Conditions: Concentration: 1 ppm
- Water, Evaporates., t_{1/2}: ca. 2 d
t_{1/2}, Conditions: Concentration: 1 ppb - 1 ppm
- Soil/sediments, log KOC:1.64 - 1.78
significant evaporation and percolation
- Air, Henry's law constant (H), 0.000102 - 0.00427 hPa.m³/mol , 25 °C
Very volatile.

12.5. Other adverse effects

- no data available

13. DISPOSAL CONSIDERATIONS**13.1. Waste disposal methods**

- Refer to manufacturer/supplier for information on recovery/recycling.
- The organic ingredients can be incinerated in a suitable installation when in accordance with local regulations.
- In accordance with local and national regulations.

13.2. Contaminated packaging

- If recycling is not practicable, dispose of in compliance with local regulations.
- Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1. UN-Number 2810

14.2. Transport hazard class(es) / Packaging group**- IATA-DGR**

Class	6.1
Packing group	II
ICAO-Labels	Toxic
Proper shipping name	TOXIC LIQUID, ORGANIC, N.O.S. (1,1,2-TRICHLOROETHANE)

- IMDG

Class	6.1
Packing group	II
IMDG-Labels	toxic
HI/UN No.	2810
EmS:	F-A, S-A
Proper shipping name	TOXIC LIQUID, ORGANIC, N.O.S. (1,1,2-TRICHLOROETHANE)

- ADR

Class	6.1
Packing group	II
ADR/RID-Labels	6.1
HI/UN No.	60/2810
Proper shipping name	TOXIC LIQUID, ORGANIC, N.O.S. (1,1,2-TRICHLOROETHANE)

- RID

Class	6.1
Packing group	II
ADR/RID-Labels	6.1
HI/UN No.	60/2810
Proper shipping name	TOXIC LIQUID, ORGANIC, N.O.S. (1,1,2-TRICHLOROETHANE)

- ADN

Class	6.1
Packing group	II
ADR/RID-Labels	6.1
Proper shipping name	TOXIC LIQUID, ORGANIC, N.O.S. (1,1,2-TRICHLOROETHANE)

15. REGULATORY INFORMATION**15.1. Applicable Laws or Regulations**

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended
- Commission Regulation (EC) No 552/2009 of 22 June 2009 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards Annex XVII
- Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances, as amended
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended
- Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work, as amended.
- Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste

15.2. Notification status

Inventory Information	Status
Toxic Substance Control Act list (TSCA)	- In compliance with inventory
Australian Inventory of Chemical Substances (AICS)	- In compliance with inventory
Canadian Domestic Substances List (DSL)	- In compliance with inventory
Inventory of Existing Chemical Substances (China) (IECS)	- In compliance with inventory
EU list of existing chemical substances (EINECS)	- In compliance with inventory
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	- In compliance with inventory
Korean Existing Chemicals List (ECL)	- In compliance with inventory
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	- In compliance with inventory
New Zealand Inventory of Chemicals (NZIOC)	- In compliance with inventory

16. OTHER INFORMATION**16.1. Full text of H-Statements referred to under section 3**

- | | |
|------|--|
| H225 | - Highly flammable liquid and vapour. |
| H302 | - Harmful if swallowed. |
| H310 | - Fatal in contact with skin. |
| H312 | - Harmful in contact with skin. |
| H319 | - Causes serious eye irritation. |
| H330 | - Fatal if inhaled. |
| H332 | - Harmful if inhaled. |
| H335 | - May cause respiratory irritation. |
| H351 | - Suspected of causing cancer. |
| H411 | - Toxic to aquatic life with long lasting effects. |
| H412 | - Harmful to aquatic life with long lasting effects. |
| | - |

16.2. Full text of R-phrases referred to under sections 2 and 3**16.2.1. Full text of R-phrases referred to under section 2**

- | | |
|-----|---|
| R40 | - Limited evidence of a carcinogenic effect. |
| R27 | - Very toxic in contact with skin. |
| R23 | - Toxic by inhalation. |
| R22 | - Harmful if swallowed. |
| R66 | - Repeated exposure may cause skin dryness or cracking. |



- R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

16.2.2. Full text of R-phrases referred to under section 3

- R11 - Highly flammable.
R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.
R22 - Harmful if swallowed.
R26/27 - Very toxic by inhalation and in contact with skin.
R36/37 - Irritating to eyes and respiratory system.
R40 - Limited evidence of a carcinogenic effect.
R51 - Toxic to aquatic organisms.
R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53 - May cause long-term adverse effects in the aquatic environment.
R66 - Repeated exposure may cause skin dryness or cracking.

16.3. Other information

- New (MSDS)
- Distribute new edition to clients

This SDS is only intended for the indicated country to which it is applicable. The European SDS format compliant with the applicable European legislation is not intended for use nor distribution in countries outside the European Union with the exception of Norway and Switzerland. Safety datasheets applicable in other countries/regions are available upon request. The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.

Print Date: 25.08.2010

