# Safety Data Sheet

| | | |
|---|---|---|
| *Revision date: 22.07.2022* | *Version: 7.1* | *Print date: 22.07.2022* |

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

| | |
|---|---|
| Trade name/designation: | Trichloroacetic acid Ph.Eur. glacial |
| Product No.: | 20741 |
| CAS No.: | 76-03-9 |
| Other means of identification: | TCA |

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

| | |
|---|---|
| Relevant identified uses: | General chemical reagent |

### 1.3 Details of the supplier of the safety data sheet

*Singapore*

***VWR Singapore Pte Ltd.***

| | |
|---|---|
| Street | 18 Gul Drive |
| Postal code/City | Singapore 629468 |
| Telephone | +65 6505 0760 |
| Telefax | +65 6264 3780 |
| E-mail (competent person) | SDS@avantorsciences.com |

### 1.4 Emergency phone number

| | |
|---|---|
| Telephone | +65 (0) 6505 0760 (office hours: 8 am-5 pm) |

## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

| Hazard classes and hazard categories | Hazard statements |
|---|---|
| Skin corrosion, category 1A | H314 |
| Specific target organ toxicity (single exposure), category 3, Respiratory tract irritation | H335 |
| Hazardous to the aquatic environment, chronic, category 1 | H410 |

### 2.2 Label elements

**Hazard pictograms**

**Signal word:** Danger

| Hazard statements | |
|---|---|
| H314 | Causes severe skin burns and eye damage. |
| H335 | May cause respiratory irritation. |
| H410 | Very toxic to aquatic life with long lasting effects. |

| Precautionary statements | |
|---|---|
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray. |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P264 | Wash … thoroughly after handling. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |
| P301+P330+P331 | IF SWALLOWED: rinse mouth. Do NOT induce vomiting. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P363 | Wash contaminated clothing before reuse. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P310 | Immediately call a POISON CENTER/doctor/… |
| P312 | Call a POISON CENTER/doctor/…/if you feel unwell. |
| P321 | Specific treatment (see … on this label). |
| P391 | Collect spillage. |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |
| P405 | Store locked up. |
| P501 | Dispose of contents/container to … |

### 2.3 Other hazards

This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.

## SECTION 3: Composition / information on ingredients

### 3.1 Substances

| | |
|---|---|
| Substance name | Trichloroacetic acid (glacial) |
| Molecular formula | $Cl_3CCOOH$ |
| Molecular weight | 163.39 g/mol |
| CAS No. | 76-03-9 |

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General information

IF exposed: Immediately call a POISON CENTRE/doctor. If unconscious but breathing normally, place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person or a person with cramps. Change contaminated, saturated clothing. Do not leave affected person unattended.

#### After inhalation

Immediately call a POISON CENTRE/doctor. Remove casualty to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial respiration.

### In case of skin contact

After contact with skin, wash immediately with plenty of water and soap. Remove contaminated, saturated clothing immediately. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.

### After eye contact:

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye. Remove contact lenses, if present and easy to do. Continue rinsing.

### In case of ingestion

Immediately call a POISON CENTRE/doctor. Do NOT induce vomiting. Rinse mouth thoroughly with water. Give nothing to eat or drink.

### Self-protection of the first aider

First aider: Pay attention to self-protection!

## 4.2 Most important symptoms and effects, both acute and delayed

no data available

## 4.3 Indication of any immediate medical attention and special treatment needed

no data available

# SECTION 5: Firefighting measures

## 5.1 Extinguishing media

**Suitable extinguishing media**

The product itself does not burn.
Co-ordinate fire-fighting measures to the fire surroundings.

**Extinguishing media which must not be used for safety reasons**

no restriction

## 5.2 Special hazards arising from the substance or mixture

In case of fire may be liberated:
Carbon monoxide
Carbon dioxide ($CO_2$)
Hydrogen chloride (HCl)

## 5.3 Advice for firefighters

DO NOT fight fire when fire reaches explosives.
Special protective equipment for firefighters
Wear a self-contained breathing apparatus and chemical protective clothing.

### Additional information

Do not allow run-off from fire-fighting to enter drains or water courses.
Do not inhale explosion and combustion gases.
Use water spray jet to protect personnel and to cool endangered containers.
In case of fire: Evacuate area.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation.

### 6.2 Environmental precautions

Do not allow to enter into surface water or drains.

### 6.3 Methods and material for containment and cleaning up

Spilled product must never be returned to the original container for recycling. Clean contaminated articles and floor according to the environmental legislation. Collect in closed and suitable containers for disposal.

### 6.4 Additional information

Clear spills immediately.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Avoid:
Inhalation
Avoid contact with eyes and skin.
Use extractor hood (laboratory).
If handled uncovered, arrangements with local exhaust ventilation have to be used.
If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means.
Protect from moisture.

### 7.2 Conditions for safe storage, including any incompatibilities

Recommended storage temperature: 15-25°C
Storage class: 8B
Keep container tightly closed and in a well-ventilated place. Store product under (gas): Nitrogen Do not allow contact with air.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Does not contain substances above concentration limits fixing an occupational exposure limit.

### 8.2 Exposure controls

#### 8.2.1 Appropriate engineering controls

no data available

**8.2.2 Personal protection equipment**

no data available

*Eye/face protection*

no data available

Recommendation: no data available

*Skin protection*

no data available

By short-term hand contact

| | |
|---|---|
| Suitable material: | NBR (Nitrile rubber) |
| Thickness of the glove material: | 0,12 mm |
| Breakthrough time:: | > 480 min |
| Recommended glove articles: | VWR 112-0998 |

By long-term hand contact

| | |
|---|---|
| Suitable material: | NBR (Nitrile rubber) |
| Thickness of the glove material: | 0,38 mm |
| Breakthrough time:: | > 480 min |
| Recommended glove articles: | VWR 112-3717 / 112-1381 |

*Respiratory protection*

no data available

| | |
|---|---|
| Suitable respiratory protection apparatus: | no data available |
| Recommendation: | no data available |
| Suitable material: | no data available |
| Recommendation: | no data available |

*Additional information*

no data available

**8.2.3** *Environmental exposure controls*

no data available

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| (a) Appearance | |
| Physical state: | solid |
| Colour: | colourless |
| (b) Odour: | no data available |
| (c) Odour threshold: | no data available |

### Safety relevant basic data

| | |
|---|---|
| (d) pH: | < 1 (50 g/l; H2O; 20 °C) |
| (e) Melting point/freezing point: | 54-56 °C |
| (f) Initial boiling point and boiling range: | 196 °C (1013 hPa) |
| (g) Flash point: | 113 °C (closed cup) |
| (h) Evaporation rate: | no data available |
| (i) Flammability (solid, gas): | not applicable |
| (j) Flammability or explosive limits | |
| Lower explosion limit: | no data available |
| Upper explosion limit: | no data available |
| (k) Vapour pressure: | 1.2 hPa (50 °C) |
| (l) Vapour density: | no data available |
| (m) Density: | 1.63 g/cm³ (20 °C) |
| (n) Solubility(ies) | |
| Water solubility: | 1,300 g/l (20 °C) |
| (o) Partition coefficient: n-octanol/water: | 1.33 (20 °C) |
| (p) Auto-ignition temperature: | 711 °C |
| (q) Decomposition temperature: | not applicable |
| (r) Viscosity | |
| Kinematic viscosity: | no data available |
| Dynamic viscosity: | no data available |
| (s) Explosive properties: | not applicable |
| (t) Oxidising properties: | not applicable |
| (u) Particle characteristics: | not applicable - no nanoform/not combustible |

### 9.2 Other information

| | |
|---|---|
| Bulk density: | no data available |
| Refraction index: | 1.4775 (589 nm; 20 °C) |
| Dissociation constant: | no data available |
| Surface tension: | no data available |
| Henry's Law Constant: | no data available |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

### 10.3 Possibility of hazardous reactions

no data available

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

no data available

### 10.6 Hazardous decomposition products

no data available

### 10.7 Additional information

no data available

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

**Acute effects**

*Acute oral toxicity*:
LD50: > 3320 mg/kg - Rat - (IUCLID)

*Acute dermal toxicity*:
no data available

*Acute inhalation toxicity*:
no data available

**Irritant and corrosive effects**

*Primary irritation to the skin:*
Causes severe skin burns and eye damage.

*Irritation to eyes:*
Causes serious eye damage.

*Irritation to respiratory tract:*
May cause respiratory irritation.

**Respiratory or skin sensitisation**
In case of skin contact: not sensitising
After inhalation: not sensitising

**STOT-single exposure**
May cause respiratory irritation.

**STOT-repeated exposure**
not applicable

**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
**Carcinogenicity**
No indication of human carcinogenicity.

**Germ cell mutagenicity**
No indications of human germ cell mutagenicity exist.

**Reproductive toxicity**
No indications of human reproductive toxicity exist.

**Aspiration hazard**
not applicable

**Other adverse effects**
no data available

**Additional information**
no data available

## SECTION 12: Ecological information

### 12.1 Ecotoxicity

**Fish toxicity:**
LC50: 2500 mg/l (96 h)

LC50: 2500 mg/l (96 h) - Knapek, R., and S. Lakota 1974. Biological Testing to Determine Toxic Effects of Pesticides in Water. (Einige Biotestszur Untersuchung der Toxischen Wirkung von Pestiziden im Wasser). Tagungsber.Akad.Landwirtschaftswiss.D.D.R. 126:105-109 (GER)

**Daphnia toxicity**:
EC50: 2000 mg/l (48 h)

EC50: 2000 mg/l (48 h) - U.S.Army Med.Bioeng.Res.Dev.Lab., Tech.Rep.No.7904, Fort Detrick, MD :40 p. (NTIS/AD-AO81 098/6)

**Algae toxicity:**
no data available

**Bacteria toxicity:**
no data available

### 12.2 Persistence and degradability

no data available

### 12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water: 1.33 (20 °C)

### 12.4 Mobility in soil:

no data available

### 12.5 Results of PBT/vPvB assessment

not applicable

### 12.6 Other adverse effects

no data available

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

**Appropriate disposal / Product**

Dispose according to local legislation. Consult the appropriate local waste disposal expert about waste disposal.

Waste code product: 060106

**Appropriate disposal / Package**

Dispose according to local legislation. Handle contaminated packages in the same way as the substance itself.

**Additional information**

no data available

## SECTION 14: Transport information

### Land transport (ADR/RID)

| | | |
|---|---|---|
| 14.1 | UN-No.: | 1839 |
| 14.2 | Proper Shipping Name: | TRICHLOROACETIC ACID |
| 14.3 | Class(es): | 8 |
| | Classification code: | C4 |
| | Hazard label(s): | 8 |
| 14.4 | Packing group: | II |
| 14.5 | Environmental hazards: | Dangerous for the environment |
| 14.6 | Special precautions for user: | |
| | Hazard identification number (Kemler No.): | 80 |
| | tunnel restriction code: | E<br>(Passage forbidden through tunnels of category E.) |

### Sea transport (IMDG)

| | | |
|---|---|---|
| 14.1 | UN-No.: | 1839 |

| | | |
|---|---|---|
| 14.2 | Proper Shipping Name: | TRICHLOROACETIC ACID, SOLID |
| 14.3 | Class(es): | 8 |
| | Classification code: | |
| | Hazard label(s): | 8 |
| 14.4 | Packing group: | II |
| 14.5 | Environmental hazards: | Dangerous for the environment |
| | Marine pollutant: | Yes (P) |
| 14.6 | Special precautions for user: | |
| | Segregation group: | 1 |
| | EmS-No. | F-A S-B |

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
not relevant

## Air transport (ICAO-TI / IATA-DGR)

| | | |
|---|---|---|
| 14.1 | UN-No.: | 1839 |
| 14.2 | Proper Shipping Name: | TRICHLOROACETIC ACID, SOLID |
| 14.3 | Class(es): | 8 |
| | Classification code: | |
| | Hazard label(s): | 8 |
| 14.4 | Packing group: | II |
| 14.5 | Special precautions for user: | |

## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**National regulations**

- Workplace Safety and Health Act
- Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order
- Environmental Protection and Management Act (EPMA) - Second Schedule, Part 1, Control of Hazardous Substances
- Maritime and Port Authority of Singapore (MPA) - Dangerous Goods, Petroleum and Explosives Regulations

## SECTION 16: Other information

**Abbreviations and acronyms**

ACGIH - American Conference of Governmental Industrial Hygiensts
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
AGS - Committee on Hazardous Substances (Ausschuss für Gefahrstoffe)
CLP - Regulation on Classification, Labelling and Packaging of Substances and Mixtures
DFG - German Research Foundation (Deutsche Forschungsgemeinschaft)
DNEL - Derived No Effect Level
Gestis - Information system on hazardous substances of the German Social Accident Insurance (Gefahrstoffinformationssystem der Deutschen Gesetzlichen Unfallversicherung)
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations
ICAO-TI - International Civil Aviation Organization-Technical Instructions
IMDG - International Maritime Code for Dangerous Goods
KOSHA - Korea Occupational Safety and Health Agency
LTV - Long Term Value
NIOSH - National Institute for Occupational Safety and Health
OSHA - Occupational Safety & Health Administration
PBT - Persistent, Bioaccumulative and Toxic
PNEC - Predicted No Effect Concentration
RID - Regulation concerning the International Carriage of Dangerous Goods by Rail
STV - Short Term Value
SVHC - Substances of Very High Concern
vPvB - very Persistent, very Bioaccumulative

**Key literature references and sources for data**

This Safety Data Sheet has been prepared based on information available for public as TOXNET information, European Chemicals Agency (ECHA) substance dossier, papers from international cancer research institutes (IARC Monographs), U.S. National Toxicology Program data, U.S. Agency for Toxic Substances and Disease Control (ATSDR), PubChem websites and SDS from our raw material manufacturers.

| Revision date | Version | Print date |
|---|---|---|
| 22.07.2022 | 7.1 | 22.07.2022 |

**Additional information**

| | |
|---|---|
| Indication of changes | Section 7.1: Introduction of general occupation hygenie measures<br>Section 8: Update of NOEL data<br>Section 9: Introduction of particle characteristics<br>Section 16: Introduction of safety training advice<br>Section 16: Introduction of key literature references and sources of data<br><br>If you need an explanation of the change, contact the supplier (SDS@avantorsciences.com). |

*The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.*