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

1.1 Product identifiers

Product name: 1,1,1-Trichloroethane
Product Number: 402877
Brand: Sigma-Aldrich
Index-No.: 602-013-00-2
CAS-No.: 71-55-6

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

Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES
Telephone: +1 314 771-5765
Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Inhalation (Category 4), H332
Skin irritation (Category 2), H315

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word: Warning
Hazard statement(s)
H315 Causes skin irritation.
H332 Harmful if inhaled.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 Call a POISON CENTER/ doctor if you feel unwell.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms:
- 'Chlorothene'
- Methylchloroform

Formula: C₂H₃Cl₃
Molecular weight: 133.40 g/mol
CAS-No.: 71-55-6
EC-No.: 200-756-3
Index-No.: 602-013-00-2

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>Acute Tox. 4; Aquatic Acute 3; Ozone 1; H332, H402, H420</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. For precautions see section 2.2.

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

**Storage conditions**
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

**Storage class**
Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

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**

<table>
<thead>
<tr>
<th>Ingredients with workplace control parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>1,1,1-Trichloroethane</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>STEL</td>
</tr>
<tr>
<td>Not classifiable as a human carcinogen</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

**Appropriate engineering controls**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection**
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Parameters</th>
<th>Value</th>
<th>Biological specimen</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>71-55-6</td>
<td>Methyl chloroform</td>
<td>20 parts per million</td>
<td>In end-exhaled air</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methyl chloroform</td>
<td></td>
<td></td>
<td>700 µg/l</td>
<td>Urine</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
<tr>
<td>End of shift</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 60 min
Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Do not let product enter drains.

---

**SECTION 9: Physical and chemical properties**

9.1 **Information on basic physical and chemical properties**

a) **Appearance**
   - Form: liquid, clear
   - Color: colorless
b) **Odor**
   - No data available
c) **Odor Threshold**
   - No data available
d) **pH**
   - No data available
e) **Melting point/freezing point**
   - -35.0 °C (-31.0 °F)
f) **Initial boiling point and boiling range**
   - 72.0 - 75.0 °C 161.6 - 167.0 °F
g) **Flash point**
   - () No data available
h) **Evaporation rate**
   - No data available
i) **Flammability (solid, gas)**
   - No data available
j) **Upper/lower flammability or explosive limits**
   - Upper explosion limit: 15 %(V)
   - Lower explosion limit: 7.5 %(V)
k) **Vapor pressure**
   - 133.3 hPa at 20.0 °C (68.0 °F)
l) Vapor density: No data available
m) Density: 1.34 g/cm³
   Relative density: No data available
n) Water solubility: 1.25 g/l at 23 °C (73 °F)
o) Partition coefficient: log Pow: 2.49
p) Autoignition temperature: 537.0 °C (998.6 °F)
q) Decomposition temperature: No data available
r) Viscosity: No data available
s) Explosive properties: No data available
t) Oxidizing properties: No data available

9.2 Other safety information
   No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
   No data available

10.2 Chemical stability
   Stable under recommended storage conditions.
   Contains the following stabilizer(s):
   Low alkyl epoxide (≤0.05 %)

10.3 Possibility of hazardous reactions
   No data available

10.4 Conditions to avoid
   No data available

10.5 Incompatible materials
   Strong oxidizing agents, Potassium, Magnesium, Sodium/sodium oxides, Zinc, Strong bases

10.6 Hazardous decomposition products
   In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

   Acute toxicity
   LD50 Oral - Rat - 9,600 mg/kg
   Symptoms: Nausea, Vomiting, Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.
   Remarks: (RTECS)
   Acute toxicity estimate Inhalation - 4 h - 19 mg/l - vapor(Calculation method)
Inhalation: absorption  
Dermal: absorption  

**Skin corrosion/irritation**  
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.  

**Serious eye damage/eye irritation**  
No data available  

**Respiratory or skin sensitization**  
Maximization Test - Guinea pig  
Result: negative  
(OECD Test Guideline 406)  

**Germ cell mutagenicity**  
Test Type: Ames test  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  

**Carcinogenicity**  
IARC: 2A - Group 2A: Probably carcinogenic to humans (1,1,1-Trichloroethane)  
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.  
OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.  

**Reproductive toxicity**  
No data available  

**Specific target organ toxicity - single exposure**  
No data available  

**Specific target organ toxicity - repeated exposure**  
No data available  

**Aspiration hazard**  
No data available  

**11.2 Additional Information**  

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Exposure to and/or consumption of alcohol may increase toxic effects., prolonged or repeated exposure can cause:, narcosis, Liver injury may occur., Kidney injury may occur.  
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.  
Systemic effects:  

After absorption:  

Headache  
Dizziness  
Tiredness  
narcosis  
drop in blood pressure
Unconsciousness

After uptake of large quantities:

- depressed respiration
- cardiovascular disorders

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**SECTION 12: Ecological information**

**12.1 Toxicity**

- **Toxicity to fish**  
  static test LC50 - *Pimephales promelas* (fathead minnow) - 52.8 mg/l - 96 h  
  (US-EPA)

- **Toxicity to daphnia and other aquatic invertebrates**  
  static test EC50 - *Daphnia magna* (Water flea) - > 530 mg/l - 48 h  
  (US-EPA)

- **Toxicity to algae**  
  static test EC50 - *Pseudokirchneriella subcapitata* (algae) - 41 mg/l - 72 h  
  (OECD Test Guideline 201)  
  static test NOEC - *Pseudokirchneriella subcapitata* (green algae) - 7.8 mg/l - 72 h  
  (OECD Test Guideline 201)  
  IC50 - *Scenedesmus capricornutum* (fresh water algae) - > 670 mg/l - 96 h  
  Remarks: (Lit.)

- **Toxicity to bacteria**  
  EC50 - Sewage sludge - 360 mg/l - 30 min  
  (OECD Test Guideline 209)

**12.2 Persistence and degradability**

- **Biodegradability**  
  Result: 0 % - Not readily biodegradable.  
  (OECD Test Guideline 301C)

**12.3 Bioaccumulative potential**

No data available

**12.4 Mobility in soil**

No data available

**12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

**12.6 Endocrine disrupting properties**

No data available

**12.7 Other adverse effects**

- Biological effects:  
  Hazard for drinking water supplies.  
  Further information on ecology
Substance which may present a danger to the structure and/or the functioning of the stratospheric ozone layer according to EC Regulation No 2037/2000 (listed in Annex I, Group V).
Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
 Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2831 Class: 6.1 Packing group: III
Proper shipping name: 1,1,1-Trichloroethane
Reportable Quantity (RQ): 1000 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 2831 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: 1,1,1-TRICHLOROETHANE

IATA
UN number: 2831 Class: 6.1 Packing group: III
Proper shipping name: 1,1,1-Trichloroethane

SECTION 15: Regulatory information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>71-55-6</td>
<td>2020-07-14</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazards
Acute Health Hazard

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>71-55-6</td>
<td>2020-07-14</td>
</tr>
</tbody>
</table>
Pennsylvania Right To Know Components
1,1,1-Trichloroethane  CAS-No.  Revision Date
71-55-6  2020-07-14

New Jersey Right To Know Components
1,1,1-Trichloroethane  CAS-No.  Revision Date
71-55-6  2020-07-14

California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16: Other information

Further information
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