SAFETY DATA SHEET

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

1.1 Product identifiers
   Product name: 2,4,6-Trichlorophenol for synthesis
   Product Number: 8.18469
   Catalogue No.: 818469
   Brand: Millipore
   CAS-No.: 88-06-2

1.2 Other means of identification
   No data available

1.3 Relevant identified uses of the substance or mixture and uses advised against
   Identified uses: Chemical for synthesis

1.4 Details of the supplier of the safety data sheet
   Company: Sigma-Aldrich Pte Ltd
   (Co. Registration No. 199403788W)
   2 Science Park Drive
   #05-01/12 Ascent Building
   SINGAPORE 118222
   SINGAPORE
   Telephone: +65 6890 6633
   Fax: +65 6890 6639
   E-mail address: TechnicalService@merckgroup.com

1.5 Emergency telephone
   Emergency Phone #: 1-800-262-8200

SECTION 2: Hazards identification

2.1 GHS Classification
   Acute toxicity, Oral (Category 4), H302
   Skin corrosion/irritation (Category 2), H315
   Serious eye damage/eye irritation (Category 2A), H319
   Carcinogenicity (Category 2), H351
   Short-term (acute) aquatic hazard (Category 1), H400
   Long-term (chronic) aquatic hazard (Category 1), H410
   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)
H302  Harmful if swallowed.
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H351  Suspected of causing cancer.
H410  Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
Prevention
P201  Obtain special instructions before use.
P202  Do not handle until all safety precautions have been read and understood.
P264  Wash skin thoroughly after handling.
P270  Do not eat, drink or smoke when using this product.
P273  Avoid release to the environment.
P280  Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response
P308 + P313  IF exposed or concerned: Get medical advice/ attention.
P337 + P313  If eye irritation persists: Get medical advice/ attention.
P391  Collect spillage.

Disposal
P501  Dispose of contents/ container to an approved waste disposal plant.

Reduced Labeling (<= 125 ml)
Pictogram

Signal word  none
Hazard statement(s)  none
Precautionary statement(s)  none

Refer to the Safety Data Sheet before use.

2.3 Other hazards - none

SECTION 3: Composition/information on ingredients
Substance / Mixture  :  Substance

3.1 Substances
Formula  :  C6H3Cl3O
Molecular weight  :  197.45 g/mol
CAS-No.  :  88-06-2
EC-No.  :  201-795-9
Index-No.  :  604-018-00-5

Hazardous ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4,6,-Trichlorophenol</td>
<td>Acute Tox. 4; 2; 2A; Carc. 2; Aquatic Acute 1;</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). 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
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Nature of decomposition products not known.
Combustible.
Fire may cause evolution of:
Hydrogen chloride gas
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
Development of hazardous combustion gases or vapours possible in the event of fire.
5.3 **Advice for firefighters**
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 **Further information**
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

### SECTION 6: Accidental release measures

6.1 **Personal precautions, protective equipment and emergency procedures**
Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
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**
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

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**
Work under hood. Do not inhale substance/mixture.

**Hygiene measures**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

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

**Storage conditions**
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Recommended storage temperature see product label.

**Storage class**
Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

7.3 **Specific end use(s)**
Apart from the uses mentioned in section 1.3 no other specific uses are stipulated.

### SECTION 8: Exposure controls/personal protection
8.1 Control parameters

Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

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

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

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: powder, finecrystalline |
| Color: gray   |                            |
| b) Odor       | No data available           |
c) Odor Threshold  No data available  
d) pH  No data available  
e) Melting point/freezing point  65.0 °C  
f) Initial boiling point and boiling range  246.0 °C  
g) Flash point  99 °C - closed cup - c.c.  
h) Evaporation rate  No data available  
i) Flammability (solid, gas)  No data available  
j) Upper/lower flammability or explosive limits  No data available  
k) Vapor pressure  No data available  
l) Vapor density  No data available  
m) Density  1.675 g/cm³ at 25 °C  
   Relative density  No data available  
n) Water solubility  No data available  
o) Partition coefficient: n-octanol/water  No data available  
p) Autoignition temperature  No data available  
q) Decomposition temperature  No data available  
r) Viscosity  Viscosity, kinematic: No data available  
   Viscosity, dynamic: No data available  
s) Explosive properties  No data available  
t) Oxidizing properties  none  

9.2 Other safety information  
No data available  

SECTION 10: Stability and reactivity  

10.1 Reactivity  
Forms explosive mixtures with air on intense heating.  
A range from approx. 15 Kelvin below the flash point is to be rated as critical.  
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.  

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

10.3 Possibility of hazardous reactions  
Violent reactions possible with:  
Strong oxidizing agents  

The life science business of Merck operates as MilliporeSigma in the US and Canada
10.4 **Conditions to avoid**  
Strong heating.

10.5 **Incompatible materials**  
No data available

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

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**SECTION 11: Toxicological information**

11.1 **Information on toxicological effects**

**Acute toxicity**  
LD50 Oral - Rat - 820.0 mg/kg  
Remarks: (RTECS)  
Inhalation: No data available  
Dermal: No data available

**Skin corrosion/irritation**  
Skin - Rabbit  
Result: Skin irritation - 24 h  
Remarks: (RTECS)

**Serious eye damage/eye irritation**  
Eyes - Rabbit  
Result: Severe eye irritation - 24 h  
Remarks: (RTECS)

**Respiratory or skin sensitization**  
No data available

**Germ cell mutagenicity**  
No data available

**Carcinogenicity**  
Limited evidence of carcinogenicity in animal studies

**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**  
Depending on the intensity and duration of exposure, effects may vary from mild irritation to severe destruction of tissue. Damage to the eyes. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.  
Damage to the eyes. -
SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish
LC50 - Lepomis macrochirus (Bluegill sunfish) - 0.32 mg/l - 96 h
Remarks: (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia magna (Water flea) - 2.2 mg/l - 48 h
Remarks: (ECOTOX Database)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
Bioaccumulation
Poecilia reticulata (guppy) - 36 d - 0.0005 mg/l(2,4,6,-Trichlorophenol)
Bioconcentration factor (BCF): 12,180

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
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 2020
IMDG: 2020
IATA-DGR: 2020

14.2 UN proper shipping name
ADR/RID: CHLOROPHENOLS, SOLID
IMDG: CHLOROPHENOLS, SOLID
IATA-DGR: Chlorophenols, solid

14.3 Transport hazard class(es)
ADR/RID: 6.1
IMDG: 6.1
IATA-DGR: 6.1

14.4 Packaging group
ADR/RID: III
IMDG: III
IATA-DGR: III
14.5 Environmental hazards
ADR/RID: yes        IMDG Marine pollutant: yes        IATA-DGR: no

14.6 Special precautions for user
None

14.7 Incompatible materials

Other regulations
Hazchem Code : 2X

SECTION 15: Regulatory information

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

Notification status
AICS: On the inventory, or in compliance with the inventory
DSL: None of the components of this product are on the Canadian DSL, but all are on the NDSL
ENCS: On the inventory, or in compliance with the inventory
ISHL: On the inventory, or in compliance with the inventory
KECI: On the inventory, or in compliance with the inventory
NZIoC: On the inventory, or in compliance with the inventory
PICCS: On the inventory, or in compliance with the inventory

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H351 Suspected of causing cancer.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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