01. Identification of the substance / preparation and company

Trade name: CHLOROBUTANOL x ½ H₂O

Chemical name: 1,1,1-Trichlor-2-methyl-2-propanol

Use of the Substance: Active substance, excipient in the pharmaceutical and cosmetic industry

Information of manufacturer / supplier:
athenstaedt GmbH & Co KG
Am Beerberg 1
D-35088 Battenberg (Eder)
Telefon: +49 6452 92 942-0
Telefax: +49 6452 92 942-15

Information provided by:
http://www.chlorobutanol.com

Emergency telephone:
+49 171 244 2812

Advice on Safety Data Sheet:
customer-services@athenstaedt.de

02. Hazards identification

02.1. Classification:
H 302 Harmful if swallowed.

02.2. Identification / Marking

Hazard symbols:

Warning

P-phrases:
P 264 Wash hands after use thoroughly.
P 270 Do not eat, drink or smoke when using this product.
P 301 + If swallowed: Call a poison center or doctor/
P 312 physician if you feel unwell.
P 330 Rinse mouth.

02.3. Particular information pertaining specific risk for human / environment:
Antibacterial and fungicidal effect.
03. **Composition / information on ingredients**

03.1. Substance

Chemical characterization: substance
Synonym: Alcohol Trichlorisobutyllicus, 1,1,1-Trichloro-2-methyl-2-propanol, Hemihydrate
CAS- and EG-No
Molecular weight: 186.48
Formula: C₄H₇Cl₃Ox1/2 H₂O

03.2. Chemical mixture

Substance with prescribed EC limit: Not applicable.

04. **First aid measures**

04.01. Description of first aid measures

General information: Remove contaminated clothing and shoes immediately.
After inhalation: Rest, fresh air and medical help.
After skin contact: When in contact with the skin, clean with soap and water.
After eye contact: Separate eyelids, wash the eyes thoroughly with water (15 min). Uninjured eye protection, remove contact lenses.
After ingestion: Induce vomiting, rinse mouth thoroughly with water and drink plenty of water, seek medical attention.

04.2. Important and delayed symptoms and effects

Disorder of the central nervous system after oral uptake. Gastric lavage, administer artificial respiration.

04.3. Indication of immediate medical attention and special treatment

No relevant information available.

05. **Fire-fighting measures**

05.1. Extinguishing media

Suitable extinguishing media: Carbon dioxide; extinguishing powder. Cool endangered containers with water spray jet.
Extinguishing media that must not be used for safety reasons: Full water jet.
05.2. Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases:

In case of fire can be formed: Hydrogen chloride (HCl).

05.3. Special protective equipment for fire-fighters:

Use self-contained breathing apparatus. Wear protective clothing. Do not inhale explosion gases or combustion gases.

05.4. Other Informations

Keep firefighting water and dispose in accordance with Chapter 13.

06. Accidental release measures*

06.1. Personal precautions:

Refer to protective measures listed in sections 7 and 8. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing, wear prescribed protective clothing, keep people away and stay on the upwind side. Change contaminated clothing.

06.2. Environmental precautions:

Do not discharge into the drains/surface waters / groundwater. Retain and dispose of contaminated wash water.

06.3. Methods of cleaning up / taking up:

Pick up mechanically. Avoid dust formation. When picked up, treat material as prescribed under heading "Disposal considerations". Clean contaminated surfaces thoroughly.

06.4. Reference to other chapters:

Refer to protective measures listed in sections 7, 8 and 13.

07. Handling and storage*

07.1. Precautions for safe handling

Advice on safe handling: Exhaust ventilation at the object is necessary.
General protective and hygienic measures: Observe the usual precautions when handling chemicals. Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Wash hands before breaks and after work. Clean skin thoroughly after work; apply skin cream. Avoid contact with eyes and skin. Remove soiled or soaked clothing immediately. Separate storage of work clothing.

Fire and explosion protection: Keep away from ignition sources and provide for good ventilation.
07.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels: Keep in original packaging, tightly closed.

Further information about storage conditions: Keep container tightly closed and dry in a cool, well-ventilated place. Protect from heat and direct sunlight. Protect from atmospheric moisture and water.

Storage class according to Technical Rule 510: 10-13 (Non-combustible solids).

07.3. Specific final applications

Use in the pharmaceutical industry.

08. Exposure controls / personal protection

08.1. Exposure limit values: None

08.2. Environmental exposure controls / Personal protective equipment:

Appropriate engineering controls
Technical measures and appropriate working operations should have priority over the use of personal protective equipment. Refer to Section 7.1

Personal protective equipment:

Respiratory protection: If it is necessary respirator as risk assessment: gas filter ABEK with dust filter FFP2.

Hand protection: Recommended are as protection from splashes gloves made of nitril Cat III, layer thickness (mm): 0.4; Breakthrough time (min):> 120.

Eye protection: Tightly fitting safety glasses (EN 166).

Skin Protection: Clothing as usual in the chemical industry ( Cat II).

Additional information on the PSA: Protective clothing should be selected specifically for the workplace in their working place, depending on concentration and quantity. The resistance should be ascertained with the respective supplier.

Delimitation and monitoring of the environmental exposition: See sections 6 and 7.
09. **Physical and chemical properties***

09.1. Information on basic physical and chemical properties

General information:
- Form: crystalline
- Colour: colourless to white
- Odour: camphor-like

Data relevant to safety
- Flash point: >110 °C closed cup
- Ignition temperature: no data available
- Vapour pressure: no data available
- Density: no data available
- Boiling point: 76-81 °C
- Melting range: 1013 mbar 167 °C
- Solubility in water: 20 °C 7,7g/l
- Soluble in organic solvent (20 °C): Ethanol, Ether, Chloroform, Glycerol (85%)
- Ph value: 20 °C 4,5-6
- Concentration: 7,7g/l

Other information:
- The product is highly hygroscopic.

09.2. Other information

Other physical and chemical data have not been determined.

10. **Stability and reactivity**

10.1. Reactivity:
- no data available

10.2. Chemical stability:
- no data available

10.3. Possibility of Hazardous Reactions:
- Oxidizing agents; Acids; Alcalis.

10.4. Conditions to avoid:
- None under normal use.

10.5. Materials to avoid:
- In case of fire the following can be released: Hydrogen chloride (HCl).
11. Toxicological information

11.1. Acute Toxicity:

<table>
<thead>
<tr>
<th>Type</th>
<th>In mg/kg</th>
<th>Form of administration</th>
<th>Spezies:</th>
<th>Source:</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50</td>
<td>510 mg/kg</td>
<td>oral</td>
<td>rat</td>
<td>DIMDI:RTECS (RT00)©</td>
</tr>
<tr>
<td>LD50</td>
<td>&gt;2000 mg/kg</td>
<td>dermal</td>
<td>rabbit</td>
<td>foreign source</td>
</tr>
</tbody>
</table>

Irritant / corrosive effects:
- Irritant effect on skin: non-irritant during 24 h after exposure (rabbit).
- Irritant effect on eyes: non-irritant (rabbit).
- Possible ingestion of large quantities: depression, lethargy, slowed breathing.

Be handled with the usual method for dealing with chemicals.

12. Ecological information

12.1. Toxicity:

Toxicity to fish:
- LC50 fish (96h): 135 mg/l
- Source: IFA GESTIS Material database

12.2 Persistence and degradability:

No data available.

12.3. Bioaccumulation potential:

Log P o/w = 2.03 There is no appreciable bioaccumulation potential.

12.4. Mobility in soil:

No data available.

12.5. Results of PBT and vPvB assessment:

Inapplicable.

12.6. Other harmful effects:

No data available.

12.7. General information:

Not discharge into the drains or waters or storing on public depositories. Do not discharge product into the environment.
13. Disposal considerations

13.1. Waste treatment methods

Remove solid dry, gather in tightly sealed containers and dispose of as hazardous waste. Disposal as hazardous waste in accordance with the regulations of AbfG. Recommended AVV-No. 0705.

14. Transport information

Land transport and inland navigation / ADR / RID:
The product is not defined under national/international road, rail, sea and air transport regulations as a hazardous material.

15. Regulatory information

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

Self-assessment: Not applicable ...
Observe employment restrictions for expectant and nursing mothers.
Observe employment restrictions for young people.
Note BGI 5151 "Safe working in the pharmaceutical industry."

Reference to Technical Rules for Hazardous Substances (TRGS)
Water hazard class: Technical Rule 400 - Risk assessment
Classification according to TA air: Storage class according to Technical Rule 510: 10-13
Water hazard class: 3 - very hazardous, Identification No.: 855.
Classification according to TA air: Total dust: Maximum allowable emission:
Mass flow> 0.2 kg / h: 20 mg / m³,
Mass flow rate <= 0.2 kg / h: 0.15 g / m³

15.2. Chemical Safety Assessment

Not performed.

16. Other information*

Further informations:
Department issuing data sheet: Quality assurance.
This information is based on our present knowledge and experience. The material safety data sheet describes products with reference to safety requirements. the information, however, shall not constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

Replaces issue of 07th February 2018.

Reason for change:
General update
Updated chapters are marked with *. 