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

1.1 Product identifiers
Product name: Crotonaldehyde
CAS-No.: 123-73-9

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Laboratory chemicals, Industrial & for professional use only.

1.3 Details of the supplier of the safety data sheet
Company: Central Drug House (P) Ltd
7/28 Vardaan House
New Delhi-10002
INDIA
Telephone: +91 11 49404040
Email: care@cdhfinechemical.com

1.4 Emergency telephone number
Emergency Phone #: +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 1), H330
Acute toxicity, Dermal (Category 3), H311
Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318
Germ cell mutagenicity (Category 2), H341
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Specific target organ toxicity - repeated exposure (Category 2), H373
Acute aquatic toxicity (Category 1), H400

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

2.2 Label elements
Labelling according Regulation (EC) No 1272/2008
Pictogram
Signal word: Danger

Hazard statement(s)
H225: Highly flammable liquid and vapour.
H301 + H311: Toxic if swallowed or in contact with skin
H315: Causes skin irritation.
H318: Causes serious eye damage.
H330: Fatal if inhaled.
H335: May cause respiratory irritation.
H341: Suspected of causing genetic defects.
H373: May cause damage to organs through prolonged or repeated exposure.
H400: Very toxic to aquatic life.

Precautionary statement(s)
P201: Obtain special instructions before use.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260: Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280: Wear protective gloves/ protective clothing.
P304 + P340 + P310: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Supplemental Hazard Statements: none

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Lachrymator.

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula: CuH6O
Molecular weight: 70.09 g/mol
CAS-No.: 123-73-9

Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crotonaldehyde, predominantly trans</td>
<td>Flam. Liq. 2; Acute Tox. 3;</td>
<td>&lt;= 100 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>123-73-9</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>204-647-1</td>
<td></td>
</tr>
<tr>
<td>Index-No.</td>
<td>605-009-00-9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute Tox. 1; Acute Tox. 3;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin Irrit. 2; Eye Dam. 1; Muta. 2; STOT SE 3; STOT RE 2; Aquatic Acute 1; H225, H301, H330, H311, H315, H318, H341, H335, H373, H400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M-Factor - Aquatic Acute: 10</td>
<td></td>
</tr>
</tbody>
</table>

| 2,6-di-tert-Butyl-p-cresol               | Aquatic Acute 1; Aquatic         | >= 0.1 - < 0.25    |
| CAS-No.                                  | 128-37-0                         |                   |
| EC-No.                                   | 204-881-4                        | Chronic 1; H400, H410 | %                  |
|                                          | M-Factor - Aquatic Acute: 1      |                   |

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 safety data sheet to the doctor in attendance.

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. Take victim immediately to hospital. 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
Do NOT induce vomiting. 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

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

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. 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.

Recommended storage temperature 2 - 8 °C
Storage class (TRGS 510): Flammable liquids

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

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). 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.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., 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 (US) or type ABEK (EN 14387) respirator cartridges as a backup to enginee 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
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance Form: liquid
    Colour: colourless
b) Odour pungent
c) Odour Threshold No data available
d) pH No data available
e) Melting point/freezing point Melting point/range: -76 °C - lit.
f) Initial boiling point and boiling range 104 °C - lit.
g) Flash point 9 °C - closed cup
h) Evaporation rate
   No data available
i) Flammability (solid, gas)
   No data available
j) Upper/lower
   flammability or
   explosive limits
   Upper explosion limit: 19.5 % (V)
   Lower explosion limit: 2.15 % (V)
k) Vapour pressure
   32 mmHg at 20 °C
   145 mmHg at 55 °C
l) Vapour density
   2.42 - (Air = 1.0)
m) Relative density
   0.846 g/mL at 25 °C
n) Water solubility
   425.4 g/l at 20 °C
o) Partition coefficient: n
   octanol/water
   No data available
p) Auto-ignition
   temperature
   No data available
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

Relative vapour density
   2.42 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
   No data available

10.2 Chemical stability
   Stable under recommended storage conditions.
   Contains the following stabiliser(s):
   (1 %)
   (> = 0.1 - < = 0.2 %)

10.3 Possibility of hazardous reactions
   No data available

10.4 Conditions to avoid
   Heat, flames and sparks.

10.5 Incompatible materials
   Oxidizing agents

10.6 Hazardous decomposition products
   Hazardous decomposition products formed under fire conditions.
   - Carbon oxides
   Other decomposition products - No data available
   In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
   LD50 Oral - Mouse - 240 mg/kg (Crotonaldehyde, predominantly trans)
   LC50 Inhalation - Rat - 4 h - 0.3 mg/l (Crotonaldehyde, predominantly trans)
   Dermal: No data available (Crotonaldehyde, predominantly trans)
   LD50 Subcutaneous - Rat - 140 mg/kg (Crotonaldehyde, predominantly trans)
**Skin corrosion/irritation**  
No data available (Crotonaldehyde, predominantly trans)

**Serious eye damage/eye irritation**  
No data available (Crotonaldehyde, predominantly trans)

**Respiratory or skin sensitisation**  
No data available (Crotonaldehyde, predominantly trans)

**Germ cell mutagenicity**

In vitro tests showed mutagenic effects (Crotonaldehyde, predominantly trans)

**Carcinogenicity**

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (2,6-di-tert-Butyl-p-cresol)

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Crotonaldehyde, predominantly trans)

**Reproductive toxicity**

No data available (Crotonaldehyde, predominantly trans)

**Specific target organ toxicity - single exposure**

No data available (Crotonaldehyde, predominantly trans)

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available (Crotonaldehyde, predominantly trans)

**Additional Information**

RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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**SECTION 12: Ecological information**

**12.1 Toxicity**

No data available

**12.2 Persistence and degradability**

No data available

**12.3 Bioaccumulative potential**

No data available

**12.4 Mobility in soil**

No data available (Crotonaldehyde, predominantly trans)

**12.5 Results of PBT and vPvB assessment**

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.6 Other adverse effects**

Very toxic to aquatic life.

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**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

**Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber b highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1143  IMGD: 1143  IATA: 1143

14.2 UN proper shipping name
ADR/RID: CROTONALDEHYDE, STABILIZED
IMGD: CROTONALDEHYDE, STABILIZED
IATA: Crotonaldehyde
Passenger Aircraft: Not permitted for transport
Cargo Aircraft: Not permitted for transport

14.3 Transport hazard class(es)
ADR/RID: 6.1 (3)  IMGD: 6.1 (3)  IATA: 6.1 (3)

14.4 Packaging group
ADR/RID: I  IMGD: I  IATA: -

14.5 Environmental hazards
ADR/RID: no  IMGD Marine pollutant: yes  IATA: no

14.6 Special precautions for user
No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

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

H225  Highly flammable liquid and vapour.
H301  Toxic if swallowed.
H301 + H311  Toxic if swallowed or in contact with skin
H311  Toxic in contact with skin.
H315  Causes skin irritation.
H318  Causes serious eye damage.
H330  Fatal if inhaled.
H335  May cause respiratory irritation.
H341  Suspected of causing genetic defects.
H373  May cause damage to organs through prolonged or repeated exposure.
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. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.