1 Identification

Product identifier

Product name: Chloroacetone

Stock number: A11922, L05799

CAS Number: 78-95-5

EC number: 201-161-1

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

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

<table>
<thead>
<tr>
<th>GHS label elements</th>
<th>GHS02 Flame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flam. Liq. 3</td>
<td>H226 Flammable liquid and vapour.</td>
</tr>
<tr>
<td>GHS06 Skull and crossbones</td>
<td></td>
</tr>
<tr>
<td>Acute Tox. 3</td>
<td>H301 Toxic if swallowed.</td>
</tr>
<tr>
<td>Acute Tox. 2</td>
<td>H310 Fatal in contact with skin.</td>
</tr>
<tr>
<td>Acute Tox. 2</td>
<td>H330 Fatal if inhaled.</td>
</tr>
<tr>
<td>GHS05 Corrosion</td>
<td></td>
</tr>
<tr>
<td>Skin Corr. 1C</td>
<td>H314 Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td>H318 Causes serious eye damage.</td>
</tr>
</tbody>
</table>

Hazards not otherwise classified Lachrymator

Label elements

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS02 GHS05 GHS06

Signal word Danger

Hazard statements

H226 Flammable liquid and vapour.

H301 Toxic if swallowed.

H310+H330 Fatal in contact with skin or if inhaled.

H314 Causes severe skin burns and eye damage.

Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P273 Avoid release to the environment.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P309 IF exposed or if you feel unwell: ... Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

B3 - Combustible liquid

D1A - Very toxic material causing immediate and serious toxic effects

D2B - Toxic material causing other toxic effects

E - Corrosive material

Classification system

WHMIS ratings (scale 0-4)

<table>
<thead>
<tr>
<th>Hazardous Materials Identification System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health (acute effects) = 3</td>
</tr>
<tr>
<td>Flammability = 2</td>
</tr>
<tr>
<td>Physical Hazard = 1</td>
</tr>
</tbody>
</table>

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.
3 Composition/information on ingredients

Chemical characterization: Substances
CAS® Description:
78-95-5 Chloroacetone
Identification number(s):
EC number: 201-161-1
Impurities and stabilizing additives: Chloroacetone can be stabilized with up to 0.1% H2O or 1.0% CaCO3

4 First-aid measures

General information
Immediately remove any clothing soiled by the product.
In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.

After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing
Do not induce vomiting; immediately call for medical help.

Information for doctor

Causes severe skin burns.
Causes serious eye damage.

5 Fire-fighting measures

Suitable extinguishing media
CO2, sand, extinguishing powder. Do not use water.

Special hazards arising from the substance or mixture
Carbon monoxide and carbon dioxide
Hydrogen chloride (HCl)
Phosgene gas

Advice for firefighters
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.

Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.

Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.

Prevention of secondary hazards: Keep away from ignition sources.

Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Precautions for safe handling
Keep container tightly sealed.
Ensure good ventilation at the workplace.
Open and handle container with care.

Information about protection against explosions and fires:
During heating or in case of fire poisonous gases are produced.
Protect against electrostatic charges.
Fumes can combine with air to form an explosive mixture.

Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles: Refrigerate
Information about storage in one common storage facility:
Do not store together with strongly basic or oxidizing materials.

Requirements for storage:
Keep container tightly sealed.
Refrigerate

Specific end use(s)

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

Chloroacetone (CAS® 78-95-5)

ACGIH TLV 1-CEILING (skin)
Components with limit values that require monitoring at the workplace:

78-95-5 Chloroacetone (100.0%)

Control parameters

Denmark TWA: 1 (skin)
Ireland TWA: 1; 1-STEL (skin)
Netherlands TWA: 1 (skin)

Control parameters

TLV (USA)

Ceiling limit value: 3.8 mg/m³, 1 ppm
Skin
EL (Canada)
Short-term value: 1 ppm
Skin

Additional information:

No data

Exposure controls

General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Store protective clothing separately.

Avoid contact with the eyes and skin.

Breathing equipment:

Use self-contained respiratory protective device in emergency situations.

Protection of hands:

Impervious gloves
Check protective gloves prior to each use for their proper condition.
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Penetration time of glove material (in minutes)

Not determined

Eye protection:

Tightly sealed goggles
Full face protection

Body protection:

Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form: Liquid
Color: Colorless
Odor: Pungent
Odor threshold: Not determined.

pH-value (124 g/l) at 20 °C (68 °F): 4.3

Change in condition

Melting point/Melting range: -45 °C (-49 °F)
Boiling point/Boiling range: 118-120 °C (244-248 °F)
Sublimation temperature / start: Not determined

Flash point:

40 °C (104 °F)
Flammability (solid, gaseous)
Not applicable.
Ignition temperature:

610 °C (1130 °F)
Decomposition temperature:

Not determined
Auto igniting:

Not determined.

Danger of explosion:

Risk of explosive polymerization upon loss of stabilizer from long periods of time at ambient temperature.

Explosion limits:

Lower: 3.4 Vol %
Upper: Not determined

Vapor pressure at 20 °C (68 °F):

16 hPa (12 mm Hg)
Density at 20 °C (68 °F):

1.161 g/cm³ (9.689 lbs/gal)
Relative density:

Not determined.
Vapor density:

Not determined.
Evaporation rate:

Not determined.
Solubility in / Miscibility with

Water at 20 °C (68 °F):

124 g/l
Alcohols:

Fully miscible
Organic solvents:

Soluble in ether.
Soluble in chloroform.
Partition coefficient (n-octanol/water):

Not determined.

Viscosity:

dynamic at 20 °C (68 °F): 1.11 mPas
kinematic:

Not determined.

Other information

No further relevant information available.

Additional information:

Turns dark and resin-like upon long exposure to light.

10 Stability and reactivity

Reactivity

No information known.

Chemical stability

Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided

Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions

Spontaneous polymerization can be caused in unstabilized product e.g. by ambient heat

Conditions to avoid

No further relevant information available.

Incompatible materials:

Oxidizing agents
Bases
Heat

Hazardous decomposition products:

Carbon monoxide and carbon dioxide
Hydrogen chloride (HCl)

Additional information:

Chloroacetone is used in tear gas, insecticides, color photography, enzyme inactivation, perfumes, and polymerization of vinyl monomers.

(Contd. on page 4)
11 Toxicological information

Information on toxicological effects

Acute toxicity:
Fatal if inhaled.
Fatal in contact with skin.
Toxic if swallowed.
Danger through skin absorption.
Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>Mode of Exposure</th>
<th>LD(50) / LC(50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>100 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>141 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>262 mg/m3/4H (rat)</td>
</tr>
</tbody>
</table>

Skin irritation or corrosion: Causes severe skin burns.

Eye irritation or corrosion:
This product is a lachrymator.
Causes serious eye damage.

Sensitization: No sensitizing effects known.

Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

Reproductive toxicity: No effects known.

Specific target organ system toxicity - repeated exposure: No effects known.

Specific target organ system toxicity - single exposure: No effects known.

Aspiration hazard: No effects known.

Subacute to chronic toxicity:
Chloroacetone is used in tear gas as a strong irritant to the eyes, skin, and lungs. It is also toxic by ingestion, inhalation, or skin contact, causing somnolence, hair, and ataxia. Chronic exposure may cause weight loss, gastritis, and changes to the salivary glands. Injection causes altered sleep time, tremors, and convulsions.

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information

Toxicity
Acute toxicity: No further relevant information available.

Aquatic toxicity:
No further relevant information available.

Persistence and degradability:
No further relevant information available.

Bioaccumulative potential:
No further relevant information available.

Mobility in soil:
No further relevant information available.

Ecotoxicity:
Remark: Very toxic for aquatic organisms.

Additional ecological information:

General notes:
Do not allow product to reach ground water, water course or sewage system.
Do not allow material to be released to the environment without proper governmental permits.
Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
May cause long lasting harmful effects to aquatic life.

Avoid transfer into the environment.

Very toxic for aquatic organisms.

Results of PBT and vPvB assessment:

PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects:
No further relevant information available.

13 Disposal considerations

Waste treatment methods:
Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Disposal must be made according to official regulations.

14 Transport information

UN-Number
DOT, IMDG, IATA
UN1695

UN proper shipping name
DOT
Chloroacetone, stabilized
IMDG
CHLOROACETONE, STABILIZED, MARINE POLLUTANT
IATA
CHLOROACETONE, STABILIZED

Transport hazard class(es)

DOT

<table>
<thead>
<tr>
<th>Class</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Toxic substances.</td>
</tr>
<tr>
<td>6.1+3+8</td>
<td></td>
</tr>
</tbody>
</table>

IMDG

<table>
<thead>
<tr>
<th>Class</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Toxic substances.</td>
</tr>
<tr>
<td>6.1+3+8</td>
<td></td>
</tr>
</tbody>
</table>

USA
**Product name: Chloroacetone**

### IATA

<table>
<thead>
<tr>
<th>Class Label</th>
<th>6.1 Toxic substances. 6.1+3+8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing group</td>
<td>DOT, IMDG, IATA</td>
</tr>
<tr>
<td></td>
<td>I</td>
</tr>
</tbody>
</table>

### Environmental hazards:

<table>
<thead>
<tr>
<th>Marine pollutant (IMDG):</th>
<th>Environmentally hazardous substance, liquid; Marine Pollutant (P) Symbol (fish and tree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special precautions for user</td>
<td>Yes (P) Warming: Toxic substances</td>
</tr>
</tbody>
</table>

### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

### Transport/Additional information:

<table>
<thead>
<tr>
<th>DOT</th>
<th>Marine Pollutant (DOT):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (P)</td>
</tr>
<tr>
<td>Remarks:</td>
<td>This material is poisonous by inhalation in Hazard Zone B. Special marking with the symbol (fish and tree).</td>
</tr>
</tbody>
</table>

### UN "Model Regulation":

UN1695, Chloroacetone, stabilized, 6.1 (3+8), I

### 15 Regulatory information

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

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

**Hazard pictograms**

<table>
<thead>
<tr>
<th>GHS02</th>
<th>GHS05</th>
<th>GHS06</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Danger</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hazard statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>H226</td>
</tr>
<tr>
<td>H301</td>
</tr>
<tr>
<td>H310+H330</td>
</tr>
<tr>
<td>H314</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Precautionary statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>P280</td>
</tr>
<tr>
<td>P273</td>
</tr>
<tr>
<td>P305+P351+P338</td>
</tr>
<tr>
<td>P309</td>
</tr>
<tr>
<td>P310</td>
</tr>
<tr>
<td>P501</td>
</tr>
</tbody>
</table>

### National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory. All components of this product are listed on the Canadian Domestic Substances List (DSL).

### SARA Section 313 (specific toxic chemical listings)

Substance is not listed.

### California Proposition 65

**Prop 65 - Chemicals known to cause cancer** Substance is not listed.

**Prop 65 - Developmental toxicity** Substance is not listed.

**Prop 65 - Developmental toxicity, female** Substance is not listed.

**Prop 65 - Developmental toxicity, male** Substance is not listed.

**Information about limitation of use:** For use only by technically qualified individuals.

### Other regulations, limitations and prohibitive regulations

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006** Substance is not listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

### 16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department

**Date of preparation / last revision** 11/23/2015 / -

**Abbreviations and acronyms:**

- RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
- ICAO: International Civil Aviation Organization
- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- DOT: US Department of Transportation
- IATA: International Air Transport Association
- P: Marine Pollutant
- EINECS: European Inventory of Existing Commercial Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- HMIS: Hazardous Materials Identification System (USA)
- WHMIS: Workplace Hazardous Materials Information System (Canada)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- vPvB: very Persistent and very Bioaccumulative
- ACS: American Conference of Governmental Industrial Hygienists (USA)
- OSHA: Occupational Safety and Health Administration (USA)
- NTP: National Toxicology Program (USA)
- IARC: International Agency for Research on Cancer
- EPA: Environmental Protection Agency (USA)

USA