SAFETY DATA SHEET

Product Name: Acetic acid 99-100%

Manufacturer or supplier’s details

Celanese (Shanghai) International Trading Co., Ltd.
Room 239, Xinmao Building
South Taizhong Road
Waigaoqiao Free Trade Zone
Shanghai, China

Celanese Pte Ltd
60 Anson Road
Maple Tree Anson #13-02
Singapore 079914

Product Information
HazCom@celanese.com

Emergency telephone number
+(65) 62656917 (Operations Room direct dial)
or fax request to +(65) 62664696 (Facsimile to Operations Room)
or email to posh.er@paccoffshore.com.sg

In China Emergency Number: 86-532-83889090 (NRCC)

Identified uses
Chemical intermediate, Agrochemicals, Cleaning agent, Process chemicals

2. Hazards identification

GHS Classification

<table>
<thead>
<tr>
<th>Hazards</th>
<th>Category</th>
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</thead>
<tbody>
<tr>
<td>Flammable liquid</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>Category 5</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 1A</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Labeling
Signal Word: Danger

Hazard Statements:
- H226 - Flammable liquid and vapor
- H303 - May be harmful if swallowed
- H314 - Causes severe skin burns and eye damage
- H318 - Causes serious eye damage

Precautionary Statements:
- P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
- P260 - Do not breathe dust/fume/gas/mist/spray/spray.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P310 - Immediately call a POISON CENTER or doctor/physician.
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

3. Composition/Information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>64-19-7</td>
<td>min 99.85</td>
</tr>
</tbody>
</table>

4. First aid measures

General Information:
Remove contaminated, soaked clothing immediately and dispose of safely. Pay attention to own protection. In any case show the physician the Safety Data Sheet.

Skin:
Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Eyes:
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Inhalation:
Move to fresh air. Keep at rest. Call a physician immediately.

Ingestion:
If conscious, drink plenty of water. If swallowed, do not induce vomiting - seek medical advice.

Notes to physician:
Observe for latent pulmonary edema.
5. Fire-fighting measures

NFPA: Health: 3 Flammability: 2 Instability: 0

Suitable extinguishing media
Foam, Dry chemical, Carbon dioxide (CO2), Water spray

Extinguishing media which must not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases
Under conditions giving incomplete combustion, hazardous gases produced may consist of
- Carbon monoxide
- Carbon dioxide (CO2)
- Nitrogen oxides (NOx)
Combustion gases of organic materials must in principle be graded as inhalation poisons

Special protective equipment for fire-fighters
Wear self-contained breathing apparatus and protective suit.

Environmental precautions
Water used to fight fire runoff can cause environmental damage. Dike and collect water used to fight fire.

Other Information
Cool containers / tanks with water spray.

6. Accidental release measures

Personal precautions
Avoid contact with the skin and the eyes. Keep away from heat and sources of ignition. Provide adequate ventilation.

Environmental precautions
Prevent further leakage or spillage. Do not discharge into the drains/surface waters/groundwater. Dike and collect water used to fight fire.

Methods for cleaning up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Dispose of in accordance with local regulations.

7. Handling and storage

Advice on safe handling
Provide sufficient air exchange and/or exhaust in work rooms.

Incompatible products
Keep away from: Bases, Amines
Protection - fire and explosion:
Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge. 
Ground and bond containers when transferring material. In case of fire, emergency cooling with water spray should be available.

Material storage
Store locked up. Keep in a dry, cool and well-ventilated place.

Incompatible products
Keep away from:, Bases, Amines

Technical measures/Storage conditions
Keep tightly closed in a dry, cool and well-ventilated place. Handle an open container with care.

8. Exposure controls / personal protection

ACGIH Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>10 PPM</td>
</tr>
</tbody>
</table>

OSHA Exposure Limits

<table>
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<tr>
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<th>TWA</th>
</tr>
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<td>Acetic acid</td>
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</tr>
</tbody>
</table>

Exposure controls

Engineering measures
General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

General advice
Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Use only in an area equipped with a safety shower. Hold eye wash fountain available.

Hygiene measures
When using, do not eat, drink or smoke.. Take off all contaminated clothing immediately.. Wash hands before breaks and immediately after handling the product..

Respiratory protection
If aerosols or vapors are present, respiratory protection is required (gas filter E).
Eye protection  
Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face. Equipment should conform to EN 166.

Skin protection  
Impervious clothing

Hand protection  
Chemicals resistant gloves

Suitable material  
Butyl-rubber

Type  
Butoject (Company KCL) or comparable article;
or refer to glove manufacturer's recommendation

Evaluation  
according to EN 374: level 6

Material thickness  
Approx. 0.3 mm

Break through time  
approx. 480 min

9. Physical and chemical properties

Appearance
Form  
liquid
Color  
colourless
Odor  
pungent

Odor Threshold  
24.3 ppm (gas in air)
Molecular Weight  
60.05 g/mol
Flash point  
39°C
Method  
closed cup
Ignition temperature  
463°C
Decomposition  
Not determined
Temperature
Lower explosion limit  
4.0 Vol. %
Upper explosion limit  
19.9 Vol. %
Flammability (solids)  
not applicable
Melting point/range  
17°C
Boiling point/range  
118°C
Density  
1.045 g/ml @ 25°C
pH  
2.4 @ 60 g/l
Viscosity  
1.056 mPa*s @ 25°C
Vapor pressure  
21 hPa @ 25°C
77 hPa @ 50°C
Vapor density  
2.07 (Air=1)
Evaporation Rate  
0.97 (n-Butyl acetate = 1)
Water solubility  
miscible
Solubility in other solvents  
miscible with, Ethanol, Diethyl ether, Acetone, Benzene, soluble in, Chloroform
Partition coefficient  
-0.17 (measured)
(n-octanol/water)
Explosive Properties  
not applicable based on consideration of the structure
Oxidizing Properties  
not applicable based on consideration of the structure
Surface Tension  
27.10 mN/m @ 25°C
Dissociation constant  
4.76 @ 25°C

10. Stability and reactivity
10. Stability and reactivity

Reactivity
Stable under normal conditions of handling, use and transportation.

Conditions to avoid
Avoid any source of ignition. Avoid contact with heat, sparks, open flame, and static discharge.

Incompatible Materials
Keep away from: Amines, Bases

Hazardous Combustion or Decomposition Products:
Thermal decomposition products may include oxides of carbon.
11. Toxicological information

Potential health effects

**Routes of exposure**

Skin, eyes, inhalation, ingestion.

**Immediate effects**

**Skin**

Causes skin burns. May be harmful if absorbed through skin. Symptoms of overexposure include: Redness or discoloration, swelling, itching, burning or blistering of skin.

**Eyes**

Exposure to vapors and liquid Causes severe eye burns, damage irreversible. Symptoms of exposure may include: Eye irritation, burning sensation, pain, watering, and/or change of vision.

**Inhalation**

Causes respiratory tract irritation. Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty. Accumulation of fluid in the lungs (pulmonary edema); symptoms can be delayed for several hours.

**Ingestion**

Causes digestive tract burns. Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea. Inflammation of mouth, throat, esophagus and/or stomach.

**Target organ effects**

Overexposure (prolonged or repeated exposure) may cause:

- Injury to the eyes
- Digestive tract damage
- Respiratory tract damage
- Skin damage.

**Medical conditions which may be aggravated by exposure:**

Respiratory Tract

Skin

Eyes

**Acetic acid**

**Acute oral toxicity**

LD50: 3310 mg/kg

**Acute inhalation toxicity**

LC50 (4h): > 40000 mg/m³

**Skin corrosion/irritation**

Species: rabbit

Method: OECD 404

**Skin Sensitization**

nonsensitizer

**Serious eye damage/eye irritation**

Species: rabbit eye

Method: OECD 405

**Carcinogenic effects**

No evidence of carcinogenicity
<table>
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<tr>
<th>Product Name</th>
<th>Acetic acid 99-100%</th>
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<tbody>
<tr>
<td>MSDS number</td>
<td>80002</td>
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<tr>
<td>Revision Number</td>
<td>11</td>
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<td>Dec.13.2016</td>
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### 12. Ecological Information

**Acetic acid**

- **Acute fish toxicity**
  - Species: Oncorhynchus mykiss (rainbow trout)
  - Method: OECD 203
  - LC50: > 300.82 mg/l (96h)

- **Acute daphnia toxicity**
  - Species: Daphnia magna
  - Method: OECD 202
  - EC50: > 300.82 mg/l (48h)

- **Toxicity to aquatic plants**
  - Species: Skeletonema costatum
  - Method: ISO 10253
  - EC50: > 300.82 mg/l (72h)

- **Toxicity to bacteria**
  - Species: Pseudomonas putida
  - Method: Readily biodegradable
  - EC3 (16h): 850 mg/l

- **Biodegradation**
  - Method: OECD 301 C
  - The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII

### 13. Disposal considerations

**Product information**

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

**Uncleaned empty packaging**

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

### 14. Transport information

**US Department of Transportation**
14. Transport information

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<tr>
<th>Description</th>
<th>Value</th>
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15. Regulatory information

INTERNATIONAL REGULATIONS
This substance is classified as dangerous according to Chinese legislation

International Inventories
Listed on the chemical inventories of the following countries or qualifies for an exemption:
- Australia (AICS)
- Canada (DSL)
- China (IECSC)
- Europe (EINECS)
- Japan (ENCS)
- Japan (ISHL)
- Korea (KECI)
- New Zealand (NZIoC)
- Philippines (PICCS)
- United States (TSCA)

16. Other information

| HMIS: | Health: 3 | Flammability: 2 | Physical Hazard: 0 |

Prepared By
Product Stewardship Department
Celanese

Other Information:
Observe national and local legal requirements.

Changes against the previous version are marked by ***

Sources of key data used to compile the datasheet
Information contained in this safety data sheet is based on Celanese owned data and public sources deemed valid or acceptable. The absence of data elements required by ANSI or 1907/2006/EC indicates that no data meeting these requirements is available.

Further information
This information is based on our present state of knowledge. It shall describe our products regarding safety requirements and shall not be construed as a guarantee or statement of condition and/or quality. For more information, other material safety data sheets or technical data sheets please consult the Celanese homepage (www.celanese.com)