SAFETY DATA SHEET

Product Name | Acetic anhydride
MSDS number | 80005
Revision Number | 11.01

1. Identification of the substance/preparation and the company/undertaking

Product Name
Acetic anhydride

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

2. Hazards identification

GHS Classification
Hazard | Category
--- | ---
Flammable liquid | Category 3
Acute oral toxicity | Category 4
Acute inhalation toxicity | Category 2
Skin corrosion/irritation | Category 1B

Labeling
3. Composition/Information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic anhydride</td>
<td>108-24-7</td>
<td>min 99.5</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
Keep at rest. Move to fresh air. Call a physician immediately.

Ingestion
Rinse with plenty of water. 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: 1

Suitable extinguishing media
Foam, Dry powder, Carbon dioxide (CO2)

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)
Combustion gases of organic materials must in principle be graded as inhalation poisons

Special protective equipment for fire-fighters
Self-contained breathing apparatus (EN 133).

Environmental precautions
Water run-off and vapor cloud may be corrosive. Dike and collect water used to fight fire.

Other Information
In the event of fire, cool tanks with water spray. Reacts violently with water.

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.

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
Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Store in a place accessible by authorized persons only.

Incompatible products
Keep away from: Bases, Amines, water

Protection - fire and explosion:
Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge. 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, water

Technical measures/Storage conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Take measures to prevent the build up of electrostatic charge.

8. Exposure controls / personal protection

ACGIH Exposure Limits

<table>
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<tr>
<th>Components</th>
<th>TWA</th>
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<td>5 PPM</td>
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OSHA Exposure Limits

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</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.
Personal protective equipment

General advice
Use only in an area equipped with a safety shower. Avoid contact with skin and eyes. Do not breathe vapors or spray mist.

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.

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, of vinegar

Odor Threshold
0.13 ppm (gas in air)
Flash point
49°C
Method
closed cup
Ignition temperature
330°C
Method
DIN 51794
Lower explosion limit
~2.0 Vol. %
Upper explosion limit
~10.2 Vol. %
Melting point/range
-73°C
Boiling point/range
140°C @ 1013 hPa
Density
1.08 g/ml @ 20°C
Viscosity
0.843 mPa*s @ 25°C
Vapor pressure
5 hPa @ 20°C
29 hPa @ 50°C
Vapor density
3.5 (Air=1)
Evaporation Rate
0.46 (n-Butyl acetate = 1)
Water solubility
hydrolyses
Partition coefficient
-0.58 (calculated)

10. Stability and reactivity
10. Stability and reactivity

Reactivity
May react with evolution of heat and/or toxic gases on contact with water.

Conditions to avoid
Keep away from heat, sparks and flame. Avoid any source of ignition.

Incompatible Materials
Keep away from: water, steam, Alcohols, Aqueous solution of alkali salts, Acids, Peroxides, Amines, Strong oxidizing agents

Hazardous Combustion or Decomposition Products:
Thermal decomposition products may include oxides of carbon.
Potential health effects

Routes of exposure

Skin, eyes, inhalation, ingestion.

Immediate effects

**Skin**
Causes skin burns. Symptoms of overexposure include: Redness or discoloration, swelling, itching, burning or blistering of skin.

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

**Inhalation**
Causes respiratory tract irritation. Harmful if inhaled. 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. May be harmful if swallowed. Symptoms of exposure may include: Inflammation of mouth, throat, esophagus and/or stomach. Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea.

Medical conditions which may be aggravated by exposure:
Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:
Respiratory Tract
Skin
Eyes

Acetic anhydride

**Acute oral toxicity**
LD50: 630 mg/kg- harmful- Not toxic

**Acute inhalation toxicity**
LC100 (6h): 400 ppm - harmful

**Method**
Similar to OECD 412

**Skin corrosion/irritation**
corrosive

**Species**
Humans

**Skin Sensitization**
nonsensitizer

**Serious eye damage/eye irritation**
irritant

**Species**
rat

**Method**
OECD 413

**Carcinogenic effects**
No evidence of carcinogenicity

**in vitro Mutagenicity**

**in vivo Mutagenicity**
Did not cause chromosomal damage in rat bone marrow

Method: EU B.12
12. Ecological Information

Acetic anhydride

Acute fish toxicity  
Species: Oncorhynchus mykiss (rainbow trout)  
Method: SOP E257

Acute daphnia toxicity  
Species: Daphnia magna  
Method: OECD 202

Toxicity to aquatic plants  
Species: Skeletonema costatum  
Method: ISO 10253

Toxicity to bacteria  
Species: Pseudomonas putida  
Method: Readily biodegradable

Biodegradation  
Species: Pseudomonas putida  
Method: BOD Standard Method

Other potential hazards  
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
UN/NA Number: UN 1715
Proper Shipping Name: Acetic anhydride
Hazard class: 8
Subsidiary hazard: 3
## 14. Transport information

| Packing Group | II |
| Reportable Quantity (RQ) | 5000 lb/2270kg |
| Emergency Resp. Guide | 137 |

### ADR/RID

- **UN/ID No.**: UN 1715
- **Proper Shipping Name**: Acetic anhydride
- **Hazard Class**: 8
- **Subsidiary Risk**: 3
- **Classification Code**: CF1
- **Packing group**: II
- **Environmentally hazardous**: no
- **Tunnel Restriction Code**: (D/E)
- **Hazard Label(s)**: 8 + 3
- **Hazard Number**: 83

### ADN

- **UN/ID No.**: UN 1715
- **Proper Shipping Name**: Acetic anhydride
- **Hazard Class**: 8
- **Subsidiary Risk**: 3
- **Classification Code**: CF1
- **Packing group**: II
- **Environmentally hazardous**: no
- **Hazard Labels**: 8 + 3

### ICAO/IATA

- **UN-No.**: UN 1715
- **Proper Shipping Name**: Acetic anhydride
- **Hazard Class**: 8
- **Subsidiary Risk**: 3
- **Packing group**: II
- **Environmentally hazardous**: no
- **Hazard Labels**: 8 + 3

### IMDG

- **UN/ID No.**: UN 1715
- **Proper Shipping Name**: Acetic anhydride
- **Hazard Class**: 8
- **Subsidiary Risk**: 3
- **Packing group**: II
- **Marine pollutant**: no
- **Hazard Labels**: 8 + 3
- **EmS Code**: F-E, S-C
15. Regulatory information

International Chemical Inventory
Listed on the chemical inventories of the following countries or qualifies for an exemption:

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: 1

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)