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

Product Name
Propionic anhydride

Manufacturer or supplier's details
Celanese Sales Germany GmbH
Am Unisys-Park 1
65843 Sulzbach (Taunus)
Germany

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

Product Information
Email: Info.Chemicals.CN@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

<table>
<thead>
<tr>
<th>Hazards</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquid</td>
<td>Category 4</td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td>Category 5</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
</tbody>
</table>
Signal Word

Danger

Hazard Statements

H227 - Combustible liquid
H303 - May be harmful if swallowed
H314 - Causes severe skin burns and eye damage

Precautionary Statements

P210 - Keep away from heat
P260 - Do not breathe dust/fume/gas/mist/spray/spray.
P264 - Wash hands thoroughly after handling
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician.
P363 - Wash contaminated clothing before reuse
P370 + P378 - In case of fire, use water/water spray/water jet/steam/chemical foam/chemical powder for extinction
P403 - Store in a well-ventilated place
P405 - Store locked up
P501 - Dispose of contents/container in accordance with local regulations.

3. Composition/Information on ingredients

Chemical characterization
n-Propionic anhydride

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propionic anhydride</td>
<td>123-62-6</td>
<td>min 98</td>
</tr>
<tr>
<td>Propionic acid</td>
<td>79-09-4</td>
<td>&lt; 2</td>
</tr>
</tbody>
</table>

4. First aid measures
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
If conscious, drink plenty of water. If swallowed, do not induce vomiting - seek medical advice.

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) 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 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, Alcohols, water

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, Alcohols, water

Technical measures/Storage conditions
Keep tightly closed in a dry, cool and well-ventilated place. Never allow product to get in contact with water during storage.

8. Exposure controls / personal protection

ACGIH Exposure Limits

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

OSHA Exposure Limits
No exposure limits established.

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
Avoid contact with skin and eyes. 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 A).

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
480 min

9. Physical and chemical properties

Appearance
Form
liquid
Color
colourless
Odor
pungent

Flash point
63°C
Method
EU Method A.9
Autoignition Temperature
282 °C
Method
EU A.15
Melting point/range
-43°C
Method
EU A.1
Boiling point/range
168.4°C @ 1013 hPa
Method
EU A.2
Density
1.0103 g/ml @ 20°C
Method
EU A.3
Viscosity
1.039 mPa*s @ 25°C
Method
OECD 114
Vapor pressure
1.68 hPa @ 20°C
Method
EU A.4
Water solubility
hydrolyses
Partition coefficient
0.33 (data based on propionic acid)
(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
29.42 mN/m @ 21.4°C
Method
EU A.5

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, Alcohols, water

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**: Harmful if absorbed through skin. Causes skin burns.
- **Eyes**: Causes eye burns.
- **Inhalation**: May be harmful if inhaled. Causes respiratory tract burns.
- **Ingestion**: May be harmful if swallowed. Causes digestive tract burns.

### Propionic anhydride

**Acute oral toxicity**
LD50: 3455 mg/kg  
(Reference substance: Propionic acid)

**Acute inhalation toxicity**
LC50 (4h): > 20 mg/l  
Method: Similar to OECD 403

**Skin corrosion/irritation**
Species: Corrosive  
(Reference substance: Propionic acid)

**Serious eye damage/eye irritation**
Species: Corrosive  
(Reference substance: Propionic acid)

**Carcinogenic effects**
Species: Rat male  
Study: Oral gavage lifetime study

**in vitro Mutagenicity**
Ames Test: negative - with and without metabolic activation - Method: OECD 471 (Reference substance: Propionic acid)
(Reference substance: Formic acid)

**in vivo Mutagenicity**
In vitro mammalian chromosome aberration test in Chinese hamster cells: negative - with and without metabolic activation - OECD 473 (Reference substance: Propionic acid)

**Developmental effects**
Routes of exposure: Oral gavage  
Species: Rat

**Propionic acid**

**Acute oral toxicity**
LD50: 960 - 2270 mg/kg, rat- not toxic to harmful
12. Ecological Information

**Propionic anhydride**

**Acute fish toxicity**
- LC50: > 10000 mg/l (96h)
  - Reference substance: Calcium propionate
- Species: Leuciscus idus (Golden orfe)
- Method: DIN 38412 T.15

**Acute daphnia toxicity**
- EC50: > 500 mg/l (48h)
  - Species: Daphnia magna
  - Method: EU C.2
12. Ecological Information

Toxicity to aquatic plants
Species: Desmodesmus subspicatus
Method: OECD 201
EC50: > 500 mg/l (72h)
(Reference substance: Calcium propionate)

Toxicity to bacteria
Species: Pseudomonas putida
Method: Readily biodegradable
EC50: 60 mg/l (17h)
(Reference substance: Calcium propionate)

Biodegradation
According to OECD criteria

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 2496
Proper Shipping Name: Propionic anhydride
Hazard class: 8
Packing Group: III
Emergency Resp. Guide: 156

ADR/RID
UN/ID No.: UN 2496
Proper Shipping Name: Propionic anhydride
Hazard Class: 8
Classification Code: C3
Packing group: III
Environmentally hazardous: no
Tunnel Restriction Code: (E)
Hazard Label(s): 8
Hazard Number: 80

ADN
UN/ID No.: UN 2496
Proper Shipping Name: Propionic anhydride
14. Transport information

| Hazard Class | 8 |
| Classification Code | C3 |
| Packing group | III |
| Environmentally hazardous | no |
| Hazard Labels | 8 |

ICAO/IATA

| UN-No. | UN 2496 |
| Proper Shipping Name | Propionic anhydride |
| Hazard Class | 8 |
| Packing group | III |
| Environmentally hazardous | no |
| Hazard Labels | 8 |

IMDG

| UN/ID No. | UN 2496 |
| Proper Shipping Name | Propionic anhydride |
| Hazard Class | 8 |
| Packing group | III |
| Marine pollutant | no |
| Hazard Labels | 8 |
| EmS Code | F-A, S-B |

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

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)