

Safety Data Sheet
according to 1907/2006/EC, Article 31

Revision: 20.08.2010

Printing date 20.08.2010

1 Identification of substance**Product details**

Trade name

epsilon-Caprolactam

Stock number:

L06999

Manufacturer/Supplier:

Alfa Aesar GmbH & Co.KG
Benzstrasse 3
D-76185 Karlsruhe / GermanyE-mail: gcat@matthey.com
www.alfa-chemcat.com

Informing department:

Product safety department.
Giftnotruf Universität Mainz / Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telefon:+49(0)6131/19240

Emergency information:

2 Hazards identification

Hazard designation:



Xn Harmful

Information pertaining to particular dangers for man and environment

R 20/22 Harmful by inhalation and if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.

GHS label elements

**Warning**H302 - Harmful if swallowed.
H332 - Harmful if inhaled.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.
P280 Wear protective gloves/clothing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Prevention:

Response:

3 Composition/information on ingredients

Chemical characterization:

epsilon-Caprolactam (CAS# 105-60-2)

Designation: (CAS#)

Identification number(s):

203-313-2
613-069-00-2

EINECS Number:

Index number:

4 First aid measures

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact

Seek immediate medical advice.
Instantly wash with water and soap and rinse thoroughly.

After eye contact

Seek immediate medical advice.
Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing

Seek immediate medical advice.

5 Fire fighting measures

Suitable extinguishing agents

CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

Special hazards caused by the material, its products of combustion or flue gases:

Can be released in case of fire:
Carbon monoxide and carbon dioxide
Nitrogen oxides (NO_x)
Possibly Hydrogen cyanide (HCN)
Wear self-contained breathing apparatus.
Wear full protective suit.

Protective equipment:

6 Accidental release measures

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Measures for environmental protection:

Ensure adequate ventilation

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

Measures for cleaning/collecting:

Dispose of contaminated material as waste according to item 13.

Additional information:

Ensure adequate ventilation.
See Section 7 for information on safe handling
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.**7 Handling and storage**

Handling

Information for safe handling:

Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.
Open and handle container with care.

Information about protection against explosions and fires:

No special measures required.

Storage Requirements to be met by storerooms and containers:

No special requirements.

Information about storage in one common storage facility:

Store away from oxidizing agents.

Further information about storage conditions:

This product is hygroscopic.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store in a locked cabinet or with access restricted to technical experts or their assistants.**8 Exposure controls and 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 critical values that require monitoring at the workplace:

Caprolactam; vapor, dust, aerosols
mg/m³
ACGIH TLV 1 A4; 3-STEL A4 (dust)

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23 A4; 46-STEL A4 (aerosol & vapor)
Belgium TWA 1; 3-STEL (dust)
20; 40-STEL
Denmark TWA 1
25 (dust)
25 (vapor)
Finland TWA 1; 3-STEL (dust)
20; 46-STEL (vapor)
France TWA 1 (dust)
20 (vapor)
Germany TWA 25 (dust or vapor)
Hungary TWA 1; 2-STEL (dust)
Ireland TWA 1; 3-STEL (dust)
20; 40-STEL (vapor)
Netherlands TWA 20 (vapor)
1 (dust)
Poland TWA 10 (dust)
Russia TWA 10 (dust)
Sweden TWA 5; 10-STEL
Switzerland TWA 20 (vapor)
United Kingdom TWA 1; 3-STEL (particulate)
23; 47-STEL (vapor)

Components with critical values that require monitoring at the workplace:**Additional information:**

No data

Personal protective equipment**General protective and hygienic measures**

The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
Use breathing protection with high concentrations.
Safety glasses
Face protection
Protective work clothing.

Breathing equipment:**Eye protection:****Body protection:****9 Physical and chemical properties:****General Information**

Form: Crystalline
Colour: White
Smell: weak

Change in condition

Melting point/Melting range: 69-72°C
Boiling point/Boiling range: 270°C
Sublimation temperature / start: Not determined

Flash point: 152°C**Ignition temperature:** 395°C**Decomposition temperature:** Not determined**Danger of explosion:** Product is not explosive.**Critical values for explosion:**

Lower: 1.6 Vol %
Upper: 11.9 Vol %

Steam pressure at 20°C: 0.0013 hPa**Density at 20°C:** 1.01 g/cm³**Solubility in / Miscibility with**

Water at 20°C: 4650 g/l
Alcohols: Soluble
Organic solvents: Soluble in ether.
Chlorinated hydrocarbons: Soluble

pH-value (330 g/l) at 20°C: 7-8.5**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

Materials to be avoided:

Oxidizing agents

Dangerous reactions:

No dangerous reactions known

Dangerous products of decomposition:

Carbon monoxide and carbon dioxide
Nitrogen oxides (NO_x)
Possibly Hydrogen cyanide (HCN)

11 Toxicological information**Acute toxicity:****LD/LC50 values that are relevant for classification:**

| | | |
|--------------------|----------|---|
| Oral | LD50 | 930 mg/kg (mouse) (RTECS) 1210 mg/kg (rat) (RTECS) |
| Dermal | LD50 | >2 gm/kg (rat) (RTECS) |
| Inhalative | LC50/2H | 300 mg/m ³ /2H (rat) (RTECS) |
| | LC50/4H | 8160 mg/m ³ /4H (rat) (external SDS) |
| Irritation of skin | mild | 500 mg/24H (rabbit) (RTECS) |
| | moderate | unknown mg (rabbit) (external SDS) |
| Irritation of eyes | moderate | 20 mg/24H (rabbit) (RTECS) |

Primary irritant effect:**on the skin:**

Irritant for skin and mucous membranes.

on the eye:

Irritant effect.

Sensitization:

No sensitizing effect known.

Additional toxicological information:

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

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IARC-4: Probably not carcinogenic to humans.
ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.

12 Ecological information:

Additional ecological information:
General notes:

Water hazard class 1 (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

Product:
Recommendation:

Consult state, local or national regulations for proper disposal.
Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.

Uncleaned packagings:
Recommendation:
Recommended cleaning agent:

Disposal must be made according to official regulations.
Water, if necessary with cleaning agent.

14 Transport information

Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)
ADR/RID-GGVS/E Class:

None

Maritime transport IMDG/GGVSea:
IMDG/GGVSea Class:
Marine pollutant:

None
No

Air transport ICAO-TI and IATA-DGR:
ICAO/IATA Class:

None

Transport/Additional information:

Not dangerous according to the above specifications.

15 Regulatory information**Designation according to EC guidelines:**

Code letter and hazard designation of product:



Xn Harmful

Risk phrases:

20/22 Harmful by inhalation and if swallowed.
36/37/38 Irritating to eyes, respiratory system and skin.

National regulations**Information about limitation of use:**

Employment restrictions concerning young persons must be observed.
For use only by technically qualified individuals.

Water hazard class:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

Other regulations, limitations and prohibitive regulations

Although this chemical may sometimes be used as a food or drug or cosmetic, our products are not approved or suitable for such use or for human consumption.

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 data specification sheet: Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

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