Safety Data Sheet
Caprolactam liquid

1. Product and Company Identification

Company
BASF CORPORATION
100 Campus Drive
Florham Park, NJ 07932, USA

24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP

Synonyms:
Caprolactam

2. Hazards Identification

Emergency overview

WARNING:
Irritating to eyes, respiratory system and skin.
Harmful by inhalation and if swallowed.
Chronic target organ effects reported
Respiratory system
Use with local exhaust ventilation.
Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator.
Wear NIOSH-certified chemical goggles.
Wear protective clothing.
Eye wash fountains and safety showers must be easily accessible.

State of matter: liquid
Colour: colourless
Odour: faint specific odour

Potential health effects

Primary routes of exposure:
Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation.
Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

Acute toxicity:
Of moderate toxicity after short-term inhalation. Of moderate toxicity after single ingestion. Virtually nontoxic after a single skin contact.

Irritation / corrosion:
Eye contact causes irritation. Skin contact causes irritation.

Sensitization:
Skin sensitizing effects were not observed in animal studies.

Chronic toxicity:
Carcinogenicity: In long-term animal studies in which the substance was given in high concentrations by feed, a carcinogenic effect was not observed.

Repeated dose toxicity: After repeated exposure the prominent effect is local irritation. The substance may cause damage to the upper respiratory tract even after repeated inhalation, as shown in animal studies.

Reproductive toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity: The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Genotoxicity: Most of the results from the available studies show no evidence of a mutagenic effect.

Potential environmental effects

Terrestrial toxicity: Study scientifically not justified.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Content (W/W)</th>
<th>Chemical name</th>
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</thead>
<tbody>
<tr>
<td>105-60-2</td>
<td>100.0 %</td>
<td>caprolactam</td>
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4. First-Aid Measures

General advice:
Immediately remove contaminated clothing. Avoid contact with the skin, eyes and clothing.

If inhaled:
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Consult a physician.

If on skin:
Wash thoroughly with soap and water. Burns caused by molten material require hospital treatment.

If in eyes:
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. If irritation develops, seek medical attention.

If swallowed:
Rinse mouth immediately and then drink plenty of water, seek medical attention.

5. Fire-Fighting Measures

Flash point: 152 °C  
Autoignition: 395 °C  
( DIN 51758)  
( DIN 51794)  
Lower explosion limit: 1.6 % (V)  
( 136 °C)  
( air)  
Upper explosion limit: 11.9 % (V)  
( 188 °C)  
( air)  
Flammability: not highly flammable  
Self-ignition temperature: 395 °C  
( DIN 51794)  
Based on its structural properties the product is not classified as self-igniting.

Suitable extinguishing media:
foam, carbon dioxide, water spray
Hazards during fire-fighting:
hydrogen cyanide, nitrogen oxides
The substances/groups of substances mentioned can be released in case of fire.

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

Impact Sensitivity:
Remarks: Substance/product is not impact sensitive at room temperature.

6. Accidental release measures

Personal precautions:
Ensure adequate ventilation. Avoid contact with skin and eyes. Use breathing apparatus if exposed to vapours/dust/aerosol. Information regarding personal protective measures see, chapter 8.

Environmental precautions:
Do not empty into drains. Retain and dispose of contaminated wash water.

Cleanup:
For large amounts: Allow to solidify and sweep/shovel up.
For residues: Rinse away with water.

7. Handling and Storage

Handling
General advice:
Ensure thorough ventilation of stores and work areas. During transportation in silo trucks the product is covered with nitrogen, do not climb in. Avoid contact with skin and eyes. Wear suitable protective clothing and eye/face protection. Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion:
Vapours may form explosive mixture with air. Take precautionary measures against static discharges.

Storage
General advice:
Keep under nitrogen.

Storage incompatibility:
General advice: Segregate from acids and bases. Segregate from oxidants.

Storage stability:
Storage temperature: 75 - 90 °C
The stated storage temperature should be noted.

8. Exposure Controls and Personal Protection

Components with workplace control parameters

caprolactam

<table>
<thead>
<tr>
<th>ACGIH</th>
<th>TWA value</th>
<th>Inhalable fraction and vapor</th>
</tr>
</thead>
</table>
Personal protective equipment

Respiratory protection:
Observe OSHA regulations for respirator use (29 CFR 1910.134). Wear a NIOSH-certified (or equivalent) respirator as necessary.

Hand protection:
Wear chemical resistant protective gloves., Consult with glove manufacturer for testing data.

Eye protection:
Tightly fitting safety goggles (chemical goggles).

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Handle in accordance with good industrial hygiene and safety practice. Take off immediately all contaminated clothing. At the end of the shift the skin should be cleaned and skin-care agents applied.

9. Physical and Chemical Properties

Form: melt
Odour: faint specific odour
Colour: colourless
pH value: 7 - 8.5 (333 g/l, 20 °C)
solidification temperature: 69.3 °C
boiling temperature: 270.8 °C (1,013 mbar)
Vapour pressure: 0.0013 hPa (20 °C)
0.089 hPa (60 °C)
Density: 1.014 g/cm³ (80 °C) (OECD Guideline 109)
Relative density: 1.105 (20 °C) (OECD Guideline 107)
Vapour density: No data available.
Partitioning coefficient n-octanol/water (log Pow): 0.12 (25 °C) (OECD Guideline 107)
Viscosity, dynamic: 8.52 mPa.s (80 °C)
Viscosity, kinematic: Study scientifically not justified.
Solubility in water: 866.89 g/l (22 °C) Literature data.
Molar mass: 113.16 g/mol

10. Stability and Reactivity

Substances to avoid:
oxidizing agents

Hazardous reactions:
Reacts with oxidizing agents. Polymerization coupled with heat formation.

Thermal decomposition:
No decomposition if correctly stored and handled.

Corrosion to metals:
No corrosive effect on metal.

Oxidizing properties:
Based on its structural properties the product is not classified as oxidizing.

11. Toxicological information
Acute toxicity

Oral:
Type of value: LD50
Species: rat (female)
Value: 1,475 mg/kg (Directive 84/449/EEC, B.1)

Inhalation:
Type of value: LC50
Species: rat (male/female)
Value: approx. 8.16 mg/l (BASF-Test)
Exposure time: 4 h
An aerosol with respiratory particles was tested.

Dermal:
Type of value: LD50
Species: rat (male/female)
Value: > 2,000 mg/kg (Directive 92/69/EEC, B.3)

Irritation / corrosion

Skin:
Species: human
Result: Irritant.

Eye:
Species: human
Result: Irritant.

Sensitization:
modified Buehler test
Species: guinea pig
Result: Non-sensitizing.
Method: OECD Guideline 406

Aspiration Hazard:
No aspiration hazard expected.

Experiences in humans:
The symptoms/diagnosis/findings mentioned can occur in higher concentrations.

Other Information:
Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

12. Ecological Information

Fish

Acute:
OECD Guideline 203 semistatic
Oryzias latipes/LC0 (96 h): 100 mg/l
OECD 203; ISO 7346; 84/449/EEC, C.1 static
Salmo gairdneri, syn. O. mykiss/LC50 (96 h): 707.1 mg/l

Chronic:
Study scientifically not justified.

Aquatic invertebrates
Acute:
OECD Guideline 202, part 1 static
Daphnia magna/EC50 (48 h): > 1,000 mg/l

Chronic:
OECD Guideline 211 semistatic Daphnia magna (NOEC) 21 d 100 mg/l

Aquatic plants
Toxicity to aquatic plants:
OECD Guideline 201 static
green algae/EC50 (72 h): > 1,000 mg/l

OECD Guideline 201 static
green algae/EC50 (72 h): > 1,000 mg/l

Microorganisms
Toxicity to microorganisms:
other aquatic bacterium/EC50 (17 h): 4,240 mg/l

Degradability / Persistence
Biological / Abiological Degradation
Test method: OECD 301C; ISO 9408; 92/69/EEC, C.4-F (aerobic), activated sludge
Method of analysis: BOD of the ThOD
Degree of elimination: 82 % (14 d)
Evaluation: Readily biodegradable (according to OECD criteria).

Bioaccumulation
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.
measured

Other adverse effects:
Do not release untreated into natural waters.

13. Disposal considerations

Waste disposal of substance:
Dispose of in accordance with national, state and local regulations.

Container disposal:
Uncleaned empties should be disposed of in the same manner as the contents.

14. Transport Information

Land transport
USDOT
Not classified as a dangerous good under transport regulations

Sea transport
IMDG
Air transport
IATA/ICAO

15. Regulatory Information

Federal Regulations
Registration status:
Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories):
Acute; Chronic

State regulations

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16. Other Information

Recommended use: initial product for chemical syntheses for the production of homopolymerisates and copolymerisates

NFPA Hazard codes:
Health: 2 Fire: 1 Reactivity: 0 Special:

HMIS III rating
Health: 2 Flammability: 1 Physical hazard: 0

NFPA and HMIS use a numbering scale ranging from 0 to 4 to indicate the degree of hazard. A value of zero means that the substance possesses essentially no hazard; a rating of four indicates extreme danger. Although similar, the two rating systems are intended for different purposes, and use different criteria. The NFPA system was developed to provide an on-the-spot alert to the hazards of a material, and their severity, to emergency responders. The HMIS system was designed to communicate workplace hazard information to employees who handle hazardous chemicals.

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

MSDS Prepared by:
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MSDS Prepared on: 2011/12/07

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