

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

Revision: 15.07.2010

Printing date 15.07.2010

**1 Identification of substance****Product details**

Trade name

**Pyrrolidine**

Stock number:

A14852, L02741

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.

Emergency information:

Giftnotruf Universität Mainz / Poison Information Center Mainz  
www.giftinfo.uni-mainz.de Telefon:+49(0)6131/19240**2 Hazards identification**

Hazard designation:

C Corrosive  
F Highly flammable

Information pertaining to particular dangers for man and environment

R 11 Highly flammable.  
R 20/22 Harmful by inhalation and if swallowed.  
R 34 Causes burns.

GHS label elements

**Danger**

H225 - Highly flammable liquid and vapour.

**Danger**

H314 - Causes severe skin burns and eye damage.

**Warning**

H302 - Harmful if swallowed.

H332 - Harmful if inhaled.

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313 IF exposed or concerned: Get medical advice/attention.

Prevention:

Response:

**3 Composition/information on ingredients**

Chemical characterization:

Designation: (CAS#)

Pyrrolidine (CAS# 123-75-1)

Identification number(s):

EINECS Number:

204-648-7

**4 First aid measures**

General information

After inhalation

Instantly remove any clothing soiled by the product.  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.  
Seek immediate medical advice.

After skin contact

Instantly wash with water and soap and rinse thoroughly.

After eye contact

Seek immediate medical advice.

After swallowing

Rinse opened eye for several minutes under running water. Then consult doctor.

Seek immediate medical advice.

**5 Fire fighting measures**

Suitable extinguishing agents

CO2, sand, extinguishing powder. Do not use water.

For safety reasons unsuitable extinguishing agents

Water.

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 (NOx)

Protective equipment:

Possibly Hydrogen cyanide (HCN)  
Wear self-contained breathing apparatus.  
Wear full protective suit.**6 Accidental release measures**

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Measures for environmental protection:

Measures for cleaning/collecting:

Ensure adequate ventilation

Keep away from ignition sources

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

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose of contaminated material as waste according to item 13.

Ensure adequate ventilation.

Keep away from ignition sources.

Additional information:

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:

Handle under dry protective gas.

Keep containers tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation/exhaustion at the workplace.

Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

Storage

Requirements to be met by storerooms and containers:

Information about storage in one common storage facility:

Store in cool location.

Do not store together with acids.

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**Further information about storage conditions:**

Store away from oxidizing agents.  
Store away from air.  
Store under dry inert gas.  
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.  
This product is air sensitive.

**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:  
Additional information:**

Not required.  
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.  
Avoid contact with the eyes and skin.

**Breathing equipment:**

Use breathing protection with high concentrations.

**Eye protection:**

Face protection  
Safety glasses

**Body protection:**

Full face protection  
Protective work clothing.

**9 Physical and chemical properties:****General Information**

**Form:** Clear liquid  
**Colour:** Colourless  
**Smell:** Amine-like

**Change in condition**

**Melting point/Melting range:** -63°C  
**Boiling point/Boiling range:** 86-88°C  
**Sublimation temperature / start:** Not determined

**Flash point:** 2°C**Ignition temperature:** 345°C**Decomposition temperature:** Not determined**Critical values for explosion:**

**Lower:** 1.6 Vol %  
**Upper:** 10.6 Vol %

**Steam pressure at 20°C:** 65.17 hPa**Density:** Not determined**Settled apparent density at 20°C:** 2.45 kg/m<sup>3</sup>**Solubility in / Miscibility with**

**Water:** Fully miscible  
**Alcohols:** Soluble  
**Organic solvents:** Soluble in ether.  
Soluble in chloroform.

**pH-value (100 g/l) at 20°C:** 12.9**Viscosity:  
dynamic at 20°C:** 0.94 mPas**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:****Materials to be avoided:**

No decomposition if used and stored according to specifications.

Acids  
Oxidizing agents  
Acid chlorides  
Air  
Carbon dioxide

**Dangerous reactions:**

No dangerous reactions known

**Dangerous products of decomposition:**

Carbon monoxide and carbon dioxide  
Nitrogen oxides (NO<sub>x</sub>)  
Possibly Hydrogen cyanide (HCN)

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

Oral	LD50	250 mg/kg (mam)
		450 mg/kg (mouse)
		300 mg/kg (rat)
	LDLo	250 mg/kg (guinea pig)
250 mg/kg (rabbit)		
Inhalative	LC50/2H	1300 mg/m <sup>3</sup> /2H (mouse)

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

Corrosive effect on skin and mucous membranes.

**on the eye:**

Strong corrosive effect.  
No sensitizing effect known.

**Sensitization:****Additional toxicological information:**

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.  
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**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.  
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

**13 Disposal considerations**

**Product:**  
**Recommendation**

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

**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:** 3 (FC) Flammable liquids.  
**Kemler Number:** 338  
**UN-Number:** 1922  
**Packaging group:** II  
**Label:** 3+8  
**Designation of goods:** 1922 PYRROLIDINE  
**Limited quantities (LQ):** LQ4  
**Transport category:** 2  
**Tunnel restriction code:** D/E

Maritime transport IMDG/GGVSea:



**IMDG/GGVSea Class:** 3  
**UN Number:** 1922  
**Label:** 3+8  
**Packaging group:** II  
**Marine pollutant:** No  
**Segregation groups:** Alkalis  
**Correct technical name:** PYRROLIDINE

Air transport ICAO-TI and IATA-DGR:



**ICAO/IATA Class:** 3  
**UN/ID Number:** 1922  
**Label:** 3+8  
**Packaging group:** II  
**Correct technical name:** PYRROLIDINE

UN "Model Regulation":

UN1922, PYRROLIDINE, 3 (8), II

**15 Regulatory information**

Designation according to EC guidelines:

Code letter and hazard designation of product:



C Corrosive  
F Highly flammable

Risk phrases:

11 Highly flammable.  
20/22 Harmful by inhalation and if swallowed.  
34 Causes burns.

Safety phrases:

16 Keep away from sources of ignition - No smoking.  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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.

**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

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

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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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