



M S D S

Section 1 - Chemical Product

MSDS Name:

Piperidine

Synonyms:

Hexahydropyridine; Azacyclohexane; Cyclopentimine; Hexazine

section 2 - Composition, Information on Ingredients

CAS#: 110-89-4
Chemical Name: Piperidine
%: > 99
EINECS#: 203-813-0

Hazard Symbols:

T F C

Risk Phrases:

11 34

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Highly flammable. Causes burns.

Potential Health Effects

Eye:

Contact with liquid or vapor causes severe burns and possible irreversible eye damage. Contact may cause ulceration of the conjunctiva and cornea. Eye damage may be delayed. May

cause

conjunctivitis. May cause blindness.

Skin:

Harmful if absorbed through the skin. May be absorbed through

the

skin. If absorbed, causes symptoms similar to those of

ingestion.

Penetration may continue for several days. Causes severe skin irritation and burns.

Ingestion:

Harmful if swallowed. May cause severe and permanent damage

to the

digestive tract. Causes gastrointestinal tract burns. Can

cause

nervous system damage. May cause tremors and convulsions.

Inhalation:

May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the respiratory tract. May cause effects similar to those described for ingestion. Damage may be delayed. May cause bronchial pneumonia.

Chronic:

Repeated inhalation may cause chronic bronchitis. Prolonged or repeated contact may cause skin necrosis and/or ulceration of the skin. May cause chronic cough.

Section 4 - First Aid Measures

Eyes:

Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Gently lift eyelids and flush continuously with water.

Extensive irrigation with water is required (at least 30 minutes).

Skin:

Get medical aid immediately. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Discard contaminated clothing in a manner which limits further exposure. Destroy contaminated shoes.

Ingestion:

Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information:

As in any fire, wear a self-contained breathing apparatus in full pressure-demand, MSHA/NIOSH (approved or equivalent), and

protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Vapor may explode if ignited in a confined area. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May polymerize explosively when involved in a fire. Containers may explode when heated.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Do NOT get water inside containers. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

Section 6 - Accidental Release Measures

General Information:

Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Cover with sand, dry lime or soda ash and place in a closed container for disposal. Remove all sources of ignition. Provide ventilation.

Section 7 - Handling and Storage

Handling:

Wash thoroughly after handling. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid

and/or vapor), and can be dangerous. Do not ingest or inhale.
Use only in a chemical fume hood. Discard contaminated shoes. Do not
not pressurize, cut, weld, braze, solder, drill, grind, or expose
empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Store in a cool, dry,
away well-ventilated area away from incompatible substances. Keep
from strong acids. Flammables-area. Corrosives area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:

Facilities storing or utilizing this material should be
equipped with an eyewash facility and a safety shower. Ventilation
fans and other electrical service must be non-sparking and have an
explosion-proof design.

Exposure Limits

CAS# 110-89-4:

United Kingdom, WEL - TWA: 1 ppm TWA; 3.5 mg/m³ TWA

United Kingdom, WEL - STEL: 3 ppm STEL; 10.5 mg/m³ STEL

Personal Protective Equipment

Eyes:

Wear appropriate protective eyeglasses or
chemical safety goggles as described by OSHA's eye and
face protection regulations in 29 CFR 1910.133 or
European Standard EN166.

Skin:

Wear appropriate protective gloves and clothing
to prevent skin exposure.

Clothing:

Wear appropriate protective clothing to minimize
contact with skin.

Respirators:

Follow the OSHA respirator regulations found in
29 CFR 1910.134 or European Standard EN 149. Use a
NIOSH/MSHA or European Standard EN 149 approved
respirator if exposure limits are exceeded or if
irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Color: clear or slight yellow
Odor: pepper-like odor
pH: 12.6
Vapor Pressure: 40 mm Hg @29.9
Viscosity: 1.46 mPa s 20 C
Boiling Point: 106 deg C (222.80°F)

Freezing/Melting Point: -13 deg C (8.60°F)
Autoignition Temperature: 320 deg C (608.00 deg F)
Flash Point: 16 deg C (60.80 deg F)
Explosion Limits: Lower:Not available
Explosion Limits: Upper:Not available
Decomposition Temperature:
Solubility in water: Completely miscible in water
Specific Gravity/Density: 0.8622 at 20°C
Molecular Formula: C5H11N
Molecular Weight: 85.0837

Section 10 - Stability and Reactivity

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, ignition sources, excess heat.

Incompatibilities with Other Materials

Not available

Hazardous Decomposition Products

Nitrogen oxides, carbon monoxide, carbon dioxide, nitrogen gas.

Hazardous Polymerization

Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 110-89-4: TM3500000

LD50/LC50:

RTECS: CAS# 110-89-4: Draize test, rabbit, eye: 250 ug/24H

Severe; Draize test, rabbit, skin: 5 mg/24H Severe;

Inhalation, mouse: LC50 = 6000 mg/m³/2H; Oral, mouse: LD50 = 30

mg/kg; Oral, rabbit: LD50 = 145 mg/kg; Oral, rat: LD50 = 400

mg/kg; Skin, rabbit: LD50 = 276 mg/kg;.

Carcinogenicity:

Piperidine -

Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other:

See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

IATA

Shipping Name: PIPERIDINE

Hazard Class: 8 (3)

UN Number: 2401

Packing Group: I

IMO

Shipping Name: PIPERIDINE

Hazard Class: 8 (8)

UN Number: 2401

Packing Group: I

RID/ADR

Shipping Name: PIPERIDINE
Hazard Class: 8
UN Number: 2401
Packing Group: I

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T F C

Risk Phrases:

R 11 Highly flammable.
R 34 Causes burns.

Safety Phrases:

S 16 Keep away from sources of ignition - No
smoking.
S 26 In case of contact with eyes, rinse

immediately

with plenty of water and seek medical advice.
S 27 Take off immediately all contaminated

clothing.

S 45 In case of accident or if you feel unwell,
seek
medical advice immediately (show the label where
possible).

WGK (Water Danger/Protection)

CAS# 110-89-4: 1

Canada

CAS# 110-89-4 is listed on Canada's DSL List

US Federal

TSCA

CAS# 110-89-4 is listed on the TSCA Inventory.

Section 16 - Other Information

Revisions were made in Sections:

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The information above is believed to be accurate and represents
the

best information currently available to us. However, we make no
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