



PIPERIDINE (D11, 98%)

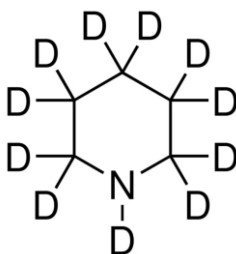
Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 2/22/2011 Revision date: 9/3/2024 Supersedes: 10/26/2016 Version: 3.0

SECTION 1: Identification

1.1. Identification

Product form : Substance
Substance name : PIPERIDINE (D11, 98%)
Chemical name : PIPERIDINE (D11, 98%)
CAS-No. : 143317-90-2
Product code : DLM-1058
Formula : C5ND11
Chemical structure :



Synonyms : 1,2,2,3,3,4,4,5,5,6,6-Undecadeuteriopiperidine; Azacyclohexane; Hexahydropyridine

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Laboratory chemicals
Scientific research and development
Recommended use : Laboratory chemicals, Scientific research and development

1.3. Supplier

Cambridge Isotope Laboratories, Inc.
50 Frontage Rd
01810
ANDOVER, MA, 01810
USA
T 1-800-322-1174
cilsales@isotope.com - www.isotope.com

1.4. Emergency telephone number

Emergency number : 1-703-741-5970
Chemtrec 1-800-424-9300 24 hours

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable liquids Category 2	H225	Highly flammable liquid and vapor
Acute toxicity (oral) Category 4	H302	Harmful if swallowed
Acute toxicity (dermal) Category 3	H311	Toxic in contact with skin
Acute toxicity (inhalation) Category 3	H331	Toxic if inhaled
Skin corrosion/irritation Category 1A	H314	Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage
Hazardous to the aquatic environment – Acute Hazard Category 3	H402	Harmful to aquatic life
Hazardous to the aquatic environment – Chronic Hazard Category 3	H412	Harmful to aquatic life with long lasting effects

Full text of H statements : see section 16

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2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US)



Signal word (GHS US)

: Danger

Hazard statements (GHS US)

: H225 - Highly flammable liquid and vapor

H302 - Harmful if swallowed

H311+H331 - Toxic in contact with skin or if inhaled

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

H402 - Harmful to aquatic life

H412 - Harmful to aquatic life with long lasting effects

Precautionary statements (GHS US)

: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. heat, hot surfaces, open flames, sparks

P233 - Keep container tightly closed.

P240 - Ground/Bond container and receiving equipment.

P241 - Use explosion-proof electrical, lighting, ventilating equipment.

P242 - Use only non-sparking tools.

P243 - Take precautionary measures against static discharge.

P260 - Do not breathe dust, fume, gas, mist, spray, vapors.

P261 - Avoid breathing dust, fume, gas, mist, spray, vapors.

P264 - Wash Both hands thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

P273 - Avoid release to the environment.

P280 - Wear protective clothing, protective gloves.

P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell.

P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting.

P302+P352 - If on skin: Wash with plenty of water.

P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 - If inhaled: Remove person to fresh air and keep 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.

P311 - Call a poison center or doctor.

P312 - Call a poison center or doctor if you feel unwell.

P321 - Specific treatment (see Hazard pictograms (CLP) on this label).

P330 - Rinse mouth.

P361 - Take off immediately all contaminated clothing.

P363 - Wash contaminated clothing before reuse.

P370+P378 - In case of fire: Use Alcohol resistant foam, Carbon dioxide, Dry powder. to extinguish.

P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

P403+P235 - Store in a well-ventilated place. Keep cool.

P405 - Store locked up.

P501 - Dispose of contents/container to Dispose in a safe manner in accordance with local/national regulations.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	GHS US classification
PIPERIDINE (D11, 98%) (Main constituent)	CAS-No.: 143317-90-2	100	Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation), H331 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 3, H402 Aquatic Chronic 3, H412

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: Move out of dangerous area. Consult a physician and show this safety data sheet.
First-aid measures after inhalation	: If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.
First-aid measures after skin contact	: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
First-aid measures after eye contact	: Continue rinsing eyes during transport to hospital. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
First-aid measures after ingestion	: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms	: Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Cough, Shortness of breath, Headache, Nausea. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Symptoms/effects	: Inhalation. Harmful in contact with skin. Causes severe skin burns and eye damage.
Symptoms/effects after inhalation	: Harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness.
Symptoms/effects after skin contact	: Toxic if absorbed through the skin. Causes skin burns.
Symptoms/effects after eye contact	: Causes eye burns. Causes serious eye damage.
Symptoms/effects after ingestion	: Harmful if swallowed.

4.3. Immediate medical attention and special treatment, if necessary

If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Carbon dioxide. Dry powder. Foam.

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5.2. Specific hazards arising from the chemical

Fire hazard : Combustible.
Hazardous decomposition products in case of fire : Carbon oxides (CO, CO₂). Nitrogen oxides.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Wear self contained breathing apparatus for fire fighting if necessary.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid all eye and skin contact and do not breathe vapor and mist. Avoid contact with skin and eyes.

6.1.1. For non-emergency personnel

Protective equipment : Use appropriate personal protection equipment (PPE). Safety glasses. Remove all sources of ignition.
Emergency procedures : Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.1.2. For emergency responders

Protective equipment : Avoid inhalation of vapor and spray mist. Breathing apparatus. Do not attempt to take action without suitable protective equipment. Protective gloves. Safety glasses. Self-contained breathing apparatus.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

For containment : Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Do not flush with water. Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
Precautions for safe handling : combustible material. Avoid all eye and skin contact and do not breathe vapor and mist. Avoid contact with skin and eyes. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.
Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Keep container tightly closed in a cool, dry and well-ventilated place.
Storage conditions : Store at room temperature away from light and moisture.

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Heat-ignition : heat sources. ignition sources.
Storage area : Keep container in a well-ventilated place. Store in a well-ventilated place. Store in a dry place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

PIPERIDINE (D11, 98%) (143317-90-2)

USA - ACGIH - Occupational Exposure Limits

ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
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USA - OSHA - Occupational Exposure Limits

OSHA PEL TWA [2]	1 ppm
Remark (OSHA)	Piperidine CAS NO. 110-89-4 TWA 1.0 ppm Remarks: Skin USA. Workplace Environmental Exposure Levels (WEEL)

8.2. Appropriate engineering controls

Appropriate engineering controls : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Environmental exposure controls : Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.

Materials for protective clothing:

Wear suitable protective clothing and gloves

Hand protection:

Wear suitable protective clothing and gloves

Eye protection:

Wear safety glasses with side shields (or goggles) and a face shield.

Skin and body protection:

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection:

When appropriate, use NIOSH/CEN approved respirator.

Personal protective equipment symbol(s):



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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear, Liquid.
Color	: Colorless
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Melting point	: -13 °C (9 °F) - lit.
Freezing point	: No data available
Boiling point	: 106 °C (223 °F) - lit.
Flash point	: 16 °C (61 °F) - closed cup
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 53 hPa (40 mmHg) at 29.2 °C (84.6 °F); 31 hPa (23 mmHg) at 20 °C (68 °F); 84.8 hPa (63.6 mmHg) at 37.8 °C (100 °F)
Relative vapor density at 20°C	: 2.94 - (Air = 1.0)
Relative density	: No data available
Density	: 0.862 g/ml at 20 °C (68 °F)
Molecular mass	: 96.11 g/mol (Labeled)
Solubility	: Water: %
Partition coefficient n-octanol/water (Log Pow)	: 0.67
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Corrosive vapors. Dry chemical powder, alcohol-resistant foam, carbon dioxide (CO₂). Extremely flammable liquid and vapor.

10.2. Chemical stability

Stable if stored under recommended conditions.

10.3. Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4. Conditions to avoid

Heat, flames and sparks.

10.5. Incompatible materials

Strong oxidizing agents, Dicyanofurazan, N-nitrosoacetanilide. N-perchlorylpiperazine. Nitrates. Strong oxidizing agents.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO₂). Nitrogen oxides.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Toxic in contact with skin.
Acute toxicity (inhalation) : Toxic if inhaled.

PIPERIDINE (D11, 98%) (143317-90-2)	
LD50 oral rat	400 mg/kg
LD50 dermal rabbit	276 mg/kg
ATE US (oral)	400 mg/kg body weight
ATE US (dermal)	276 mg/kg body weight
ATE US (gases)	700 ppmV/4h
ATE US (vapors)	3 mg/l/4h
ATE US (dust, mist)	0.5 mg/l/4h
Additional data	LC50 Inhalation - Mouse - 6,000 mg/m3 - 2 h

Skin corrosion/irritation : Causes severe skin burns.
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

PIPERIDINE (D11, 98%) (143317-90-2)	
National Toxicology Program (NTP) Status	No component of this product present at levels greater than or equal to 0.1 % is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified
Viscosity, kinematic : No data available
Likely routes of exposure : Skin and eye contact. Inhalation. Ingestion.
Potential Adverse human health effects and symptoms : Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Cough, Shortness of breath, Headache, Nausea. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Symptoms/effects : Inhalation. Harmful in contact with skin. Causes severe skin burns and eye damage.
Symptoms/effects after inhalation : Harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness.
Symptoms/effects after skin contact : Toxic if absorbed through the skin. Causes skin burns.
Symptoms/effects after eye contact : Causes eye burns. Causes serious eye damage.
Symptoms/effects after ingestion : Harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Harmful to aquatic life.

PIPERIDINE (D11, 98%) (143317-90-2)	
LC50 - Fish [1]	68.12 (46 – 100) mg/l <i>Leuciscus idus</i> (Golden orfe) - 96 h
LC50 - Other aquatic organisms [1]	19 mg/l <i>Daphnia magna</i> (Water flea)

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PIPERIDINE (D11, 98%) (143317-90-2)	
EC50 - Other aquatic organisms [2]	> 1000 mg/l toxicity to bacteria -0.5 h
ErC50 algae	106 mg/l <i>Desnidesmus subspicatus</i> (green algae) 72 h
NOEC (chronic)	-3.8 mg/l <i>Daphnia magna</i> (Water flea) - 21 d

12.2. Persistence and degradability

PIPERIDINE (D11, 98%) (143317-90-2)	
Persistence and degradability	Not available.

12.3. Bioaccumulative potential

PIPERIDINE (D11, 98%) (143317-90-2)	
Partition coefficient n-octanol/water (Log Pow)	0.67
Bioaccumulative potential	Not available.

12.4. Mobility in soil

PIPERIDINE (D11, 98%) (143317-90-2)	
Ecology - soil	Not available.

12.5. Other adverse effects

Other adverse effects : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and local environmental control regulations.

Product/Packaging disposal recommendations : Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Ecology - waste materials : Dispose of as unused product.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

DOT NA No : UN2401
UN-No. (TDG) : UN2401
UN-No. (IMDG) : 2401
UN-No. (IATA) : 2401

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Piperidine
Proper Shipping Name (TDG) : PIPERIDINE
Proper Shipping Name (IMDG) : PIPERIDINE
Proper Shipping Name (IATA) : Piperidine

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14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : 8 (3)
Hazard labels (DOT) : 8, 3



TDG

Transport hazard class(es) (TDG) : 8 (3)
Hazard labels (TDG) : 8, 3



IMDG

Transport hazard class(es) (IMDG) : 8 (3)
Hazard labels (IMDG) : 8, 3



IATA

Transport hazard class(es) (IATA) : 8 (3)
Hazard labels (IATA) : 8, 3



14.4. Packing group

Packing group (DOT) : I
Packing group (TDG) : I
Packing group (IMDG) : I
Packing group (IATA) : I

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

DOT

UN-No.(DOT) : UN2401

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DOT Special Provisions (49 CFR 172.102)	: A10 - When aluminum or aluminum alloy construction materials are used, they must be resistant to corrosion. T10 - 4 6 mm Prohibited 178.275(g)(3). TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 201
DOT Packaging Bulk (49 CFR 173.xxx)	: 243
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 0.5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 2.5 L
DOT Vessel Stowage Location	: B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
DOT Vessel Stowage Other	: 52 - Stow "separated from" acids

TDG

UN-No. (TDG)	: UN2401
ERAP Index	: 3000
Explosive Limit and Limited Quantity Index	: 0
Excepted quantities (TDG)	: E0
Passenger Carrying Ship Index	: Forbidden
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: 0.5 L
Emergency Response Guide (ERG) Number	: 132

IMDG

Limited quantities (IMDG)	: 0
Excepted quantities (IMDG)	: E0
Packing instructions (IMDG)	: P001
Tank instructions (IMDG)	: T10
Tank special provisions (IMDG)	: TP2
EmS-No. (Fire)	: F-E - FIRE SCHEDULE Echo - NON-WATER-REACTIVE FLAMMABLE LIQUIDS
EmS-No. (Spillage)	: S-C - SPILLAGE SCHEDULE Charlie - FLAMMABLE CORROSIVE LIQUIDS
Stowage category (IMDG)	: D
Segregation (IMDG)	: SGG18, SG35
Flash point (IMDG)	: '
Properties and observations (IMDG)	: Colourless liquid with a fish-like odour. Miscible with water. Reacts violently with acids. Solution in water is a strong alkali and is corrosive. When involved in fire evolves toxic nitrous fumes.
MFAG-No	: 132

IATA

PCA Excepted quantities (IATA)	: E0
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: 850
PCA max net quantity (IATA)	: 0.5L
CAO packing instructions (IATA)	: 854
CAO max net quantity (IATA)	: 2.5L
ERG code (IATA)	: 8F

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14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

PIPERIDINE (D11, 98%) (143317-90-2)

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard
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Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
PIPERIDINE (D11, 98%)	143317-90-2	Not present	-	

15.2. International regulations

CANADA

PIPERIDINE (D11, 98%) (143317-90-2)

Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)

EU-Regulations

No additional information available

National regulations

PIPERIDINE (D11, 98%) (143317-90-2)

Listed on TECI (Thailand Existing Chemicals Inventory)

15.3. US State regulations

No additional information available

SECTION 16: Other information

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Revision date : 09/03/2024

Other information : This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Full text of H-phrases	
H225	Highly flammable liquid and vapor
H302	Harmful if swallowed
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H331	Toxic if inhaled

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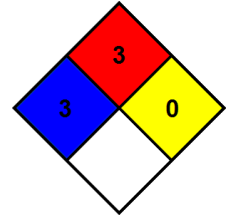
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Full text of H-phrases	
H402	Harmful to aquatic life
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 3 - Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating
Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 3 Serious Hazard - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well as liquids with flash points between 73 F and 100 F. (Classes IB IC)

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.