

# Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: 02/23/2015 Version: 1.0

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form : Substance
Trade name : PIPERIDINE
CAS No : 110-89-4
Product code : AB02304
Formula : C5H11N

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Chemical raw material

#### 1.3. Details of the supplier of the safety data sheet

AmericanBio, Inc. 15 Erie Dr.

Natick, MA 01760 - USA

T 800.443.0600 - F 508.655.2754

info@americanbio.com - www.americanbio.com

### 1.4. Emergency telephone number

Emergency number : 855.835.2572 (U.S.) :: 760.602.8703 (Outside U.S.)

### **SECTION 2: Hazards identification**

#### 2.1. Classification of the substance or mixture

#### **Classification (GHS-US)**

Flam. Liq. 2 H225 Acute Tox. 3 (Dermal) H311 Acute Tox. 3 (Inhalation:dust,mist) H331 Skin Corr. 1A H314

## 2.2. Label elements

## **GHS-US labeling**

Hazard pictograms (GHS-US)





GHS02

GHS05

GHS06

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H225 - Highly flammable liquid and vapor

H311+H331 - Toxic in contact with skin or if inhaled H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS-US) : P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P233 - Keep container tightly closed

P240 - Ground/bond container and receiving equipment P241 - Use explosion-proof production equipment

P242 - Use only non-sparking tools

P243 - Take precautionary measures against static discharge P260 - Do not breathe fume, gas, mist, spray, vapors P261 - Avoid breathing fume, gas, mist, spray, vapors P264 - Wash hands, forearms, face thoroughly after handling

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

P280 - Wear eye protection, face protection, protective clothing, protective gloves P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting

P302+P352 - IF ON SKIN: Wash with plenty of soap and water

P303+P361+P353 - IF ON SKIN (or hair): Řemove/Take off immediately all contaminated

clothing. Rinse skin with water/shower

P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position 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

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P310 - Immediately call a POISON CENTER or doctor/physician

P311 - Call a POISON CENTER or doctor/physician

P312 - Call a POISON CENTER/doctor/physician if you feel unwell

P321 - Specific treatment (see SECTION 4 on this label)

P361 - Remove/Take off immediately all contaminated clothing

P363 - Wash contaminated clothing before reuse

P370+P378 - In case of fire: Use water spray, sand, foam for extinction 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 local/Federal regulations

#### 2.3. Other hazards

No additional information available

#### 2.4. Unknown acute toxicity (GHS-US)

No data available

## **SECTION 3: Composition/information on ingredients**

#### 3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
PIPERIDINE (Main constituent)	(CAS No) 110-89-4	100	Flam. Liq. 2, H225 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation:dust,mist), H331 Skin Corr. 1A, H314

Full text of H-phrases: see section 16

#### 3.2. Mixture

Not applicable

### **SECTION 4: First aid measures**

#### 4.1. Description of first aid measures

First-aid measures general

: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation

: Remove the victim into fresh air. Immediately consult a doctor/medical service. Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. Specific treatment (see If you feel unwell, seek medical advice. on this label).

First-aid measures after skin contact

Wash immediately with lots of water (15 minutes)/shower. Wash immediately with PE-glycol 400. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital. Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Immediately call a POISON CENTER or doctor/physician. Wash with plenty of soap and water. Specific measures (see Consult a doctor/medical service on this label). Wash contaminated clothing before reuse.

First-aid measures after eye contact

Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after ingestion

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Do not give activated charcoal. Immediately consult a doctor/medical service. Call Poison Information Centre (www.big.be/antigif.htm). Take the container/vomit to the doctor/hospital. Ingestion of large quantities: immediately to hospital. Do not give chemical antidote. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Causes severe skin burns and eye damage

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Symptoms/injuries after inhalation	<ul> <li>Dry/sore throat. Coughing. Nausea. EXPOSURE TO HIGH CONCENTRATIONS: Corrosion of the upper respiratory tract. Feeling of weakness. Dizziness. Headache. Vomiting. Accelerated</li> </ul>
	heart action. High arterial pressure. Possible laryngeal spasm/oedema. Disturbances of consciousness. Respiratory difficulties. Respiratory collapse. FOLLOWING SYMPTOMS MAY
	APPEAR LATER: Risk of lung oedema. Risk of pneumonia. Toxic if inhaled. Danger of serious damage to health by prolonged exposure through inhalation.

Symptoms/injuries after skin contact : Blisters. Caustic burns/corrosion of the skin. Destruction of tissue. Symptoms similar to those listed under inhalation. Repeated exposure to this material can result in absorption through skin

causing significant health hazard. Toxic in contact with skin.

Symptoms/injuries after eye contact : Corrosion of the eye tissue.

Symptoms/injuries after ingestion : Risk of aspiration pneumonia. Burns to the gastric/intestinal mucosa. Difficulty in swallowing. Symptoms similar to those listed under inhalation.

#### 4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

## **SECTION 5: Firefighting measures**

## 5.1. Extinguishing media

suitable extinguishing media : Water spray. Alcohol-resistant foam. BC powder. Foam. Dry powder. Carbon dioxide. Water

spray. Sand.

Unsuitable extinguishing media : Solid water jet ineffective as extinguishing medium. Do not use a heavy water stream.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Highly flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks. Gas/vapour spreads at floor level:

ignition hazard. Highly flammable liquid and vapor.

Explosion hazard : DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks. May form flammable/explosive

vapor-air mixture.

Reactivity : On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Aqueous solution reacts violently with (some) acids. Reacts violently with (strong) oxidizers: release of toxic and corrosive gases/vapours (nitrous vapours). Thermal

decomposition generates : Corrosive vapors.

#### 5.3. Advice for firefighters

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water

moderately and if possible collect or contain it. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Avoid (reject) fire-fighting water to

enter environment.

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 : Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.

#### 6.1.1. For non-emergency personnel

Protective equipment : Gas-tight suit. Corrosion-proof suit. See "Material-Handling" to select protective clothing.

Emergency procedures : Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks.

Spark- and explosionproof appliances and lighting equipment. Keep containers closed. Wash contaminated clothes. Evacuate unnecessary personnel.

#### 6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area.

## 6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

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#### 6.3. Methods and material for containment and cleaning up

For containment

: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute combustible/toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.

Methods for cleaning up

Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite kieselguhr, powdered limestone. Do not take up in combustible material such as: saw dust. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

#### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

## **SECTION 7: Handling and storage**

#### 7.1. Precautions for safe handling

Additional hazards when processed Precautions for safe handling

- : Handle empty containers with care because residual vapors are flammable.
- : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe strict hygiene. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No naked lights. No smoking. Use only non-sparking tools. Use only outdoors or in a well-ventilated area. Avoid breathing fume/gas/mist/vapours/spray. Do not breathe fume/gas/mist/vapours/spray. Avoid contact during pregnancy/while nursing.

Hygiene measures

Wash hands, forearms, face thoroughly after handling.

## 7.2. Conditions for safe storage, including any incompatibilities

Technical measures

: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof production equipment. Comply with applicable regulations.

Storage conditions

: Keep only in the original container in a cool, well ventilated place away from : Direct sunlight., Heat sources. Keep in fireproof place. Keep container tightly closed.

Incompatible products

: Strong bases. strong acids.

Incompatible materials

: Sources of ignition. Direct sunlight. Heat sources.

Heat-ignition

: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Prohibitions on mixed storage

: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids.

Storage area

: Store at room temperature. Keep out of direct sunlight. Store in a dry area. Ventilation at floor level. Fireproof storeroom. Keep locked up. Provide for a tub to collect spills. Provide the tank with earthing. Unauthorized persons are not admitted. Under a shelter/in the open. May be stored under nitrogen. Meet the legal requirements.

Special rules on packaging

: SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials

: SUITABLE MATERIAL: glass. MATERIAL TO AVOID: aluminium. zinc.

#### 7.3. Specific end use(s)

No additional information available

#### **SECTION 8: Exposure controls/personal protection**

# 8.1. Control parameters

No additional information available

#### 8.2. Exposure controls

Personal protective equipment

: Avoid all unnecessary exposure.

Materials for protective clothing

: GIVE EXCELLENT RESISTANCE: butyl rubber. GIVE GOOD RESISTANCE: nitrile rubber.

GIVE POOR RESISTANCE: natural rubber. PVC. neoprene.

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Hand protection : Gloves. Wear protective gloves.

Eye protection : Chemical goggles or face shield. Safety glasses.

Skin and body protection : Head/neck protection. Corrosion-proof clothing. Wear suitable protective clothing.

Respiratory protection : Gas mask with filter type A. High vapour/gas concentration: self-contained respirator. Wear

approved mask.

Other information : When using, do not eat, drink or smoke.

#### **SECTION 9: Physical and chemical properties**

#### 9.1. Information on basic physical and chemical properties

Physical state : Liquid
Appearance : Liquid.
Molecular mass : 85.15 g/mol
Color : Colourless.

Odor : Irritating/pungent odour. Ammonia odour.

Odor threshold : < 2 ppm

< 7.1 mg/m<sup>3</sup>

pH : 12.6

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : -10 °C

Freezing point : No data available

Boiling point :  $106 \, ^{\circ}\text{C}$  Flash point :  $16 \, ^{\circ}\text{C}$  Self ignition temperature :  $320 \, ^{\circ}\text{C}$  Decomposition temperature :  $> 100 \, ^{\circ}\text{C}$ 

Flammability (solid, gas) : No data available

Vapor pressure : 34 hPa
Vapor pressure at 50 °C : 140 hPa
Relative vapor density at 20 °C : 3.0
Relative density : 0.86
Relative density of saturated gas/air mixture : 1.06
Density : 861 kg/m³

Soluble in water. Soluble in ethanol. Soluble in ether. Soluble in acetone. Soluble in chloroform.

Water: Complete Ethanol: Complete

Log Pow : 0.84

Log Kow : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : 0.00146 Pa.s (20 °C)
Explosive properties : No data available
Oxidizing properties : No data available
Explosive limits : 1.5 - 10.3 vol %

9.2. Other information

Saturation concentration : 115 g/m³ VOC content : 100 %

Other properties : Gas/vapour heavier than air at 20°C. Clear. Volatile. Substance has basic reaction.

#### **SECTION 10: Stability and reactivity**

#### 10.1. Reactivity

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Aqueous solution reacts violently with (some) acids. Reacts violently with (strong) oxidizers: release of toxic and corrosive gases/vapours (nitrous vapours). Thermal decomposition generates : Corrosive vapors.

## 10.2. Chemical stability

Stable under normal conditions. Not established. Highly flammable liquid and vapor. May form flammable/explosive vapor-air mixture.

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#### 10.3. Possibility of hazardous reactions

Not established.

#### **Conditions to avoid** 10.4.

Direct sunlight. Extremely high or low temperatures. Open flame.

#### Incompatible materials

strong acids. Strong bases.

#### **Hazardous decomposition products**

fume. Carbon monoxide. Carbon dioxide. May release flammable gases. Thermal decomposition generates: Corrosive vapors.

#### **SECTION 11: Toxicological information**

## Information on toxicological effects

Acute toxicity : Toxic in contact with skin. Toxic if inhaled.

PIPERIDINE ( \f )110-89-4	
LD50 dermal rabbit	276 mg/kg (Rabbit)
LC50 inhalation rat (mg/l)	1.5 - 3 mg/l/4h (Rat)
LC50 inhalation rat (ppm)	2000 - 4000 ppm/4h (Rat)

Skin corrosion/irritation : Causes severe skin burns and eye damage

pH: 12.6

Serious eye damage/irritation Not classified

pH: 12.6

Respiratory or skin sensitization Not classified Germ cell mutagenicity Not classified : Not classified Carcinogenicity Not classified Reproductive toxicity Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated

exposure)

: Not classified

Aspiration hazard

symptoms

: Not classified

Potential Adverse human health effects and

Based on available data, the classification criteria are not met. Toxic in contact with skin. Toxic if

Dry/sore throat. Coughing. Nausea. EXPOSURE TO HIGH CONCENTRATIONS: Corrosion of Symptoms/injuries after inhalation the upper respiratory tract. Feeling of weakness. Dizziness. Headache. Vomiting. Accelerated heart action. High arterial pressure. Possible laryngeal spasm/oedema. Disturbances of consciousness. Respiratory difficulties. Respiratory collapse. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema. Risk of pneumonia. Toxic if inhaled. Danger of serious

damage to health by prolonged exposure through inhalation.

Blisters. Caustic burns/corrosion of the skin. Destruction of tissue. Symptoms similar to those Symptoms/injuries after skin contact

listed under inhalation. Repeated exposure to this material can result in absorption through skin

causing significant health hazard. Toxic in contact with skin.

Symptoms/injuries after eye contact Corrosion of the eye tissue.

Symptoms/injuries after ingestion Risk of aspiration pneumonia. Burns to the gastric/intestinal mucosa. Difficulty in swallowing.

Symptoms similar to those listed under inhalation.

#### **SECTION 12: Ecological information**

12.1	Toxicity	

: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Ecology - air

Ecology - water Water pollutant (surface water). Ground water pollutant. Harmful to fishes. Toxic to invertebrates

(Daphnia). pH shift.

PIPERIDINE (110-89-4)	
LC50 fish 1	46 - 100 mg/l (96 h; Leuciscus idus)
LC50 other aquatic organisms 1	10 - 100 mg/l (96 h)
EC50 Daphnia 1	10 mg/l (48 h; Daphnia magna)
Threshold limit other aquatic organisms 1	10 - 100,96 h

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#### 12.2. Persistence and degradability

PIPERIDINE (110-89-4)	
Persistence and degradability	Readily biodegradable in water. Not established.

#### 12.3. Bioaccumulative potential

PIPERIDINE (110-89-4)		
Log Pow	0.84	
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4). Not established.	

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

Other information : Avoid release to the environment.

## **SECTION 13: Disposal considerations**

#### 13.1. Waste treatment methods

Waste disposal recommendations

: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to

people or animals. Incinerate under surveillance with energy recovery. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to local/Federal regulations.

Additional information : LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC. Handle empty containers with care because residual vapors are flammable.

Ecology - waste materials : Hazardous waste due to toxicity. Avoid release to the environment.

## **SECTION 14: Transport information**

In accordance with DOT

No dangerous good in sense of transport regulations

### **Additional information**

Other information : No supplementary information available.

#### **ADR**

Transport document description : UN 2401, 8 (3), I, (D/E)

Packing group (ADR) :

Class (ADR) : 8 - Corrosive substances

Hazard identification number (Kemler No.) : 883 Classification code (ADR) : CF1

Danger labels (ADR) : 8 - Corrosive substances

3 - Flammable liquids



883 2401

Tunnel restriction code : D/E

Transport by sea

Orange plates

UN-No. (IMDG) : 2401

Class (IMDG) : 8 - Corrosive substances

Subsidiary risks (IMDG) : 3 EmS-No. (1) : F-E

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EmS-No. (2) : S-C

Air transport

UN-No.(IATA) : 2401

Class (IATA) : 8 - Corrosives
Packing group (IATA) : 1 - Great Danger

Subsidiary risks (IATA) : 3

## **SECTION 15: Regulatory information**

## 15.1. US Federal regulations

#### **PIPERIDINE (110-89-4)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

### 15.2. International regulations

#### **CANADA**

No additional information available

#### **EU-Regulations**

No additional information available

## Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2 H225 Acute Tox. 3 (Inhalation) H331 Acute Tox. 3 (Dermal) H311 Skin Corr. 1B H314

Full text of H-phrases: see section 16

#### Classification according to Directive 67/548/EEC or 1999/45/EC

F; R11 T; R23/24 C; R34

Full text of R-phrases: see section 16

#### 15.2.2. National regulations

No additional information available

## 15.3. US State regulations

PIPERIDINE(110-89-4)	
State or local regulations	U.S New Jersey - Right to Know Hazardous Substance List

## **SECTION 16: Other information**

Other information : None.

Full text of H-phrases: see section 16:

Acute Tox. 3 (Dermal)	Acute toxicity (dermal) Category 3
Acute Tox. 3 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 3
Flam. Liq. 2	Flammable liquids Category 2
Skin Corr. 1A	Skin corrosion/irritation Category 1A
H225	Highly flammable liquid and vapor
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H331	Toxic if inhaled

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NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was

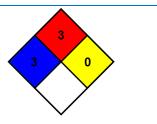
given.

NFPA fire hazard : 3 - Liquids and solids that can be ignited under almost all

ambient conditions.

: 0 - Normally stable, even under fire exposure conditions,

and are not reactive with water.



SDS US (GHS HazCom 2012)

NFPA reactivity

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