

## Safety Data Sheet

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

Date of issue: 10/09/2004 Revision date: 06/26/2013 Supersedes: 10/09/2004 Version: 1.0

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

#### **Product identifier**

Product form : Substance

Substance name Potassium Hydroxide

CAS No 1310-58-3 : LC19190 Product code Formula : KOH

Synonyms : caustic potash / caustic potash dry / caustic potash, dry solid, flake, bead or granular / caustic

potash, solid / caustic potash, solid / hydrate of potash / hydrate of potassium / hydroxide of potash / hydroxide of potassium / lye (=potassium hydroxide) / potash / potash hydrate / potash lye / potassium hydrate / potassium hydroxide (K(OH)) / potassium hydroxide dry / potassium hydroxide pellets / potassium hydroxide, dry solid, flake, bead or granular / potassium hydroxide, electrolytical, solid / potassium hydroxide, solid / Potassium hydroxide, solid / potassium lye

BIG no

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

Use of the substance/mixture : For laboratory and manufacturing use only.

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

LabChem Inc

Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court

16063 Zelienople, PA - USA T 412-826-5230 - F 724-473-0647 info@labchem.com - www.labchem.com

#### **Emergency telephone number**

Emergency number : CHEMTREC: 1-800-424-9300 or 011-703-527-3887

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

## Classification of the substance or mixture

#### **GHS-US** classification

Acute Tox. 4 (Oral) H302 Skin Corr. 1A H314 H318 Eye Dam. 1

#### Label elements 22

## **GHS-US** labelling

Hazard pictograms (GHS-US)





GHS05

: Danger

Signal word (GHS-US) Hazard statements (GHS-US)

H302 - Harmful if swallowed

H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS-US) P260 - Do not breathe dust

P264 - Wash exposed skin thoroughly after handling P270 - Do no eat, drink or smoke when using this product

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

P303+P361+P353 - IF ON SKIN (or hair): Remove/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/doctor/...

P330 - If swallowed, rinse mouth

P363 - Wash contaminated clothing before reuse

P405 - Store locked up

P501 - Dispose of contents/container to comply with local, state and federal regulations

#### Other hazards

Other hazards not contributing to the classification

: None under normal conditions.

06/26/2013 EN (English) Page 1

## Safety Data Sheet

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

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

No data available

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

#### 3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS-US classification
Potassium Hydroxide (Main constituent)	(CAS No) 1310-58-3	100	Acute Tox. 4 (Oral), H302 Skin Corr. 1A, H314 Eye Dam. 1, H318

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.

First-aid measures after inhalation

Remove the victim into fresh air. Doctor: administration of corticoid spray. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact

: Wash immediately with lots of water (15 minutes)/shower. 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.

First-aid measures after eye contact

Rinse immediately with plenty of water for 15 minutes. Cover eyes aseptically. Do not apply neutralizing agents. Take victim to an ophthalmologist.

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). Ingestion of large quantities: immediately to hospital. Take the container/vomit to the doctor/hospital. Do not give chemical antidote.

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

Symptoms/injuries after inhalation

: AFTER INHALATION OF DUST: Dry/sore throat. Corrosion of the upper respiratory tract. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upper respiratory tract. Possible inflammation of the respiratory tract. Possible laryngeal spasm/oedema. Risk of pneumonia.

Symptoms/injuries after skin contact

: Caustic burns/corrosion of the skin. Slow-healing wounds.

Symptoms/injuries after eye contact

: Corrosion of the eye tissue. Permanent eye damage. Blindness.

Symptoms/injuries after ingestion

: Abdominal pain. Difficulty in swallowing. Possible esophageal perforation. Irritation of the oral mucous membranes. Burns to the gastric/intestinal mucosa. Blood in vomit. AFTER ABSORPTION OF HIGH QUANTITIES: Change in the haemogramme/blood composition. Disturbances of heart rate. FOLLOWING SYMPTOMS MAY APPEAR LATER: Bleeding of the gastrointestinal tract. Low arterial pressure. Blood in stool. Shock.

Chronic symptoms : No effects known

## 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

: EXTINGUISHING MEDIA FOR SURROUNDING FIRES: Adapt extinguishing media to the environment.

Unsuitable extinguishing media

: No unsuitable extinguishing media known.

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

Fire hazard

: DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Reactions involving a fire hazard: see "Reactivity Hazard".

Explosion hazard

: INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard".

Reactivity

: Violent exothermic reaction with water (moisture). Reacts on exposure to water (moisture) with combustible materials: risk of spontaneous ignition. Reacts on exposure to water (moisture) with (some) metals: release of highly flammable gases/vapours (hydrogen). Absorbs the atmospheric CO2. Violent to explosive reaction with many compounds e.g.: with organic material, with (some) halogens and with (some) acids: heat release resulting in increased fire or explosion risk.

06/26/2013 EN (English) 2/9

## Safety Data Sheet

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

#### 5.3. Advice for firefighters

Firefighting instructions

: Cool tanks/drums with water spray/remove them into safety. Take account of toxic fire-fighting

water. Use water moderately and if possible collect or contain it.

Protection during firefighting : Heat/fire exposure: compressed air/oxygen apparatus.

#### **SECTION 6: Accidental release measures**

#### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Protective equipment

 $: \ \ \, \text{Gloves. Face-shield. Corrosion-proof suit. Dust cloud production: compressed air/oxygen}$ 

apparatus

**Emergency procedures** 

: Mark the danger area. Avoid ingress of water in the containers. Prevent dust cloud formation. Wash contaminated clothes. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation.

Measures in case of dust release

: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

#### 6.1.2. For emergency responders

Protective equipment

: Equip cleanup crew with proper protection.

**Emergency procedures** 

: Ventilate area. Stop release.

#### 6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

#### 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 solid spill. Knock down/dilute dust cloud with water spray. Take account of toxic/corrosive precipitation water. Hazardous reaction: measure explosive gas-air mixture. Reaction: dilute combustible gas/vapour with water curtain.

Methods for cleaning up

Collect the spill only if it is in a dry state. Wetted substance: cover with dry sand/earth. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Take collected spill to manufacturer/competent authority. Small quantities of liquid spill: neutralize with dilute acid solution. Wash away neutralized product with plentiful water. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

## 6.4. Reference to other sections

No additional information available

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

## 7.1. Precautions for safe handling

Precautions for safe handling

: Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Use corrosionproof equipment. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Avoid raising dust. Avoid contact of substance with water. Observe very strict hygiene - avoid contact. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

Hygiene measures

Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse. Do no eat, drink or smoke when using this product.

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

Storage temperature

: 20 °C

Heat and ignition sources

: KEEP SUBSTANCE AWAY FROM: heat sources.

Prohibitions on mixed storage

 KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. (strong) acids. highly flammable materials. metals. organic materials. water/moisture.

Storage area

: Store in a dry area. Keep container in a well-ventilated place. Keep locked up. Provide for a tub to collect spills. Unauthorized persons are not admitted. Meet the legal requirements.

Special rules on packaging

: SPECIAL REQUIREMENTS: hermetical. watertight. corrosion-proof. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials

: SUITABLE MATERIAL: steel. stainless steel. carbon steel. iron. nickel. cardboard. synthetic material. glass. stoneware/porcelain. MATERIAL TO AVOID: lead. aluminium. copper. tin. zinc. bronze. polyethylene.

## 7.3. Specific end use(s)

No additional information available

06/26/2013 EN (English) 3/9

## Safety Data Sheet

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

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

## 8.1. Control parameters

Potassium Hydroxide (1310-	um Hydroxide (1310-58-3)		
USA ACGIH	ACGIH Ceiling (mg/m³)	2 mg/m³	

#### 8.2. Exposure controls

Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity

of any potential exposure. Provide adequate general and local exhaust ventilation.

Personal protective equipment : Corrosionproof clothing. Protective goggles. Dust formation: dust mask. Gloves.



Materials for protective clothing : GIVE EXCELLENT RESISTANCE: butyl rubber. natural rubber. neoprene. nitrile rubber. PVC.

viton. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: leather. natural

fibres. PVA.

Hand protection : Gloves.

Eye protection : Face shield.

Skin and body protection : Corrosion-proof clothing. In case of dust production: head/neck protection.

Respiratory protection : Dust production: dust mask with filter type P3. Self-contained breathing apparatus if conc. in air >

1 vol %

## SECTION 9: Physical and chemical properties

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

Physical state : Solid

Appearance : Solid in various shapes. Powder.

Molecular mass : 56.11 g/mol

Colour : White to light yellow.

 Odour
 : Odourless.

 Odour threshold
 : No data available

 pH
 : 13.5 (0.60 %)

 pH solution
 : 0.60 %

Relative evaporation rate (butylacetate=1) : No data available

Melting point : 360 °C

Freezing point : No data available
Boiling point : No data available
Flash point : Not applicable
Self ignition temperature : Not applicable
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapour pressure : < 0.1 hPa

Relative vapour density at 20  $^{\circ}$ C : No data available Relative density : 2.0 (20  $^{\circ}$ C)

Density : 2044 kg/m³ (20  $^{\circ}$ C)

Solubility : Exothermically soluble in water. Soluble in ethanol. Soluble in glycerol.

Water: 112 g/100ml

Log Pow: No data availableLog Kow: No data availableViscosity, kinematic: No data availableViscosity, dynamic: No data availableExplosive properties: Not applicable.

Oxidising properties : None.

Explosive limits : No data available

## 9.2. Other information

Minimum ignition energy : Not applicable SADT : Not applicable VOC content : Not applicable

06/26/2013 EN (English) 4/9

## Safety Data Sheet

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

Other properties : Translucent. Hygroscopic. Substance has basic reaction.

## SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Violent exothermic reaction with water (moisture). Reacts on exposure to water (moisture) with combustible materials: risk of spontaneous ignition. Reacts on exposure to water (moisture) with (some) metals: release of highly flammable gases/vapours (hydrogen). Absorbs the atmospheric CO2. Violent to explosive reaction with many compounds e.g.: with organic material, with (some) halogens and with (some) acids: heat release resulting in increased fire or explosion risk.

#### 10.2. Chemical stability

Hygroscopic. Absorbs the atmospheric CO2.

### 10.3. Possibility of hazardous reactions

Reacts violently with water. Reacts violently with acids.

#### 10.4. Conditions to avoid

Moisture. High temperature. Incompatible materials.

### 10.5. Incompatible materials

metals. Halogens. Acid anhydrides. Nitrates. Organic compounds. Water.

#### 10.6. Hazardous decomposition products

Potassium oxide.

## **SECTION 11: Toxicological information**

#### 11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed.

Potassium Hydroxide ( \f )1310-58-3		
LD50 oral rat	333 mg/kg (Rat; Experimental value,Rat; Experimental value)	
Skin corrosion/irritation	: Causes severe skin burns and eye damage.	
	pH: 13.5 (0.60 %)	
Serious eye damage/irritation	: Causes serious eye damage.	
	pH: 13.5 (0.60 %)	
Respiratory or skin sensitisation	: Not classified	
Germ cell mutagenicity	: Not classified	
Carcinogenicity	: Not classified	
Reproductive toxicity	: Not classified	
Specific target organ toxicity (single exposure)	: Not classified	
Specific target organ toxicity (repeated exposure)	: Not classified	
Aspiration hazard	: Not classified	
Symptoms/injuries after inhalation	: AFTER INHALATION OF DUST: Dry/sore throat. Corrosion of the upper respiratory tract. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upper respiratory tract. Possible inflammation of the respiratory tract. Possible laryngeal spasm/oedema. Risk of pneumonia.	
Symptoms/injuries after skin contact	: Caustic burns/corrosion of the skin. Slow-healing wounds.	
Symptoms/injuries after eye contact	: Corrosion of the eye tissue. Permanent eye damage. Blindness.	
Symptoms/injuries after ingestion	: Abdominal pain. Difficulty in swallowing. Possible esophageal perforation. Irritation of the oral mucous membranes. Burns to the gastric/intestinal mucosa. Blood in vomit. AFTER ABSORPTION OF HIGH QUANTITIES: Change in the haemogramme/blood composition. Disturbances of heart rate. FOLLOWING SYMPTOMS MAY APPEAR LATER: Bleeding of the gastrointestinal tract. Low arterial pressure. Blood in stool. Shock.	

## **SECTION 12: Ecological information**

12.1	 Tox	icity

Chronic symptoms

Ecology - water : Ground water pollutant. Harmful to fishes. Highly toxic to plankton. pH shift. Insufficient data available on ecotoxicity.

: No effects known.

Potassium Hydroxide (1310-58-3)	
LC50 fishes 1	> 28.6 mg/l (96 h; Pisces; LETHAL)
LC50 fish 2	80 mg/l (Gambusia affinis)
TLM fish 1	80 ppm (24 h; Gambusia affinis)

06/26/2013 EN (English) 5/9

## Safety Data Sheet

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

#### 12.2. Persistence and degradability

Potassium Hydroxide (1310-58-3)	
Persistence and degradability	Biodegradability: not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oyxgen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

### 12.3. Bioaccumulative potential

Potassium Hydroxide (1310-58-3)	
Log Pow	No data available
Bioaccumulative potential	Bioaccumulation: not applicable.

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

No additional information available

## **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. Should not be landfilled with household waste. Recycle/reuse. Immobilize the toxic or harmful components. Precipitate/make insoluble. Remove to an authorized dump (Class I). Treat using the best available techniques before discharge into drains or the aquatic environment

Additional information

LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

## **SECTION 14: Transport information**

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT) : 1813 DOT NA no. UN1813

14.2. UN proper shipping name

DOT Proper Shipping Name : Potassium hydroxide, solid

Department of Transportation (DOT) Hazard

Classes

Hazard labels (DOT) : 8 - Corrosive substances

Packing group (DOT) : II - Medium Danger

06/26/2013 EN (English) 6/9

: 8 - Class 8 - Corrosive material 49 CFR 173.136

## Safety Data Sheet

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

DOT Special Provisions (49 CFR 172.102)

: IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2).

IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.

IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner.

T3 - 2.65 178.274(d)(2) Normal...... 178.275(d)(2)

TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154
DOT Packaging Non Bulk (49 CFR 173.xxx) : 212
DOT Packaging Bulk (49 CFR 173.xxx) : 240

#### 14.3. Additional information

Other information : No supplementary information available.

State during transport (ADR-RID) : as solid.

#### **Overland transport**

Packing group (ADR) : II

Class (ADR) : 8 - Corrosive substances

Hazard identification number (Kemler No.) : 80
Classification code (ADR) : C6

Danger labels (ADR) : 8 - Corrosive substances



80 1813

Tunnel restriction code : E

#### Transport by sea

Orange plates

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a

passenger vessel.

DOT Vessel Stowage Other : 52 - Stow "separated from" acids

EmS-No. (1) : F-A EmS-No. (2) : S-B

#### Air transport

DOT Quantity Limitations Passenger aircraft/rail : 15 kg

(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 50 kg

CFR 175.75)

## **SECTION 15: Regulatory information**

#### 15.1. US Federal regulations

Potassium Hydroxide (1310-58-3)		
Listed on the United States TSCA (Toxic Substances Control Act) inventory		
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	1000 lb	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard	

06/26/2013 EN (English) 7/9

## Safety Data Sheet

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

#### 15.2. International regulations

#### **CANADA**

Potassium Hydroxide (1310-58-3)		
Listed on the Canadian DSL (Domestic Sustances List) inventory.		
WHMIS Classification Class E - Corrosive Material		Class E - Corrosive Material

#### **EU-Regulations**

No additional information available

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

Acute Tox. 4 (Oral) H302 Skin Corr. 1A H314

Full text of H-phrases: see section 16

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

Xn; R22 C; R35

Full text of R-phrases: see section 16

#### 15.2.2. National regulations

## Potassium Hydroxide (1310-58-3)

Listed on the Canadian Ingredient Disclosure List

### 15.3. US State regulations

Potassium Hydroxide(1310-58-3)	
State or local regulations	U.S Massachusetts - Right To Know List U.S New Jersey - Right to Know Hazardous Substance List U.S Pennsylvania - RTK (Right to Know) List

## **SECTION 16: Other information**

Full text of H-phrases: see section 16:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Skin Corr. 1A	Skin corrosion/irritation, Category 1A
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H318	Causes serious eve damage

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

given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with

some release of energy, but not violently.

NFPA specific hazard

: W - Unusual reactivity with water. This indicates a potential hazard using water to fight a fire involving this material.

When a compound is both water-reactive and an oxidizer,

When a compound is both water-reactive and an oxidizer, the W/bar symbol should go in this quadrant and the OX warning is placed immediately below the NFPA diamond.



**HMIS III Rating** 

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

given

Flammability : 0 Minimal Hazard
Physical : 1 Slight Hazard

Personal Protection : F

06/26/2013 EN (English) 8/9

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

SDS US (GHS HazCom 2012)

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06/26/2013 EN (English) 9/9