



## MATERIAL SAFETY DATA SHEET

Effective Date: 01/01/2014

# POTASSIUM HYDROXIDE (4.5%)

## Solutions and Concentrates

### 1. Product Identification

**Synonyms:** Caustic potash - liquid or solutions; Potassium hydrate

**CAS No.:** 1310-58-3 (Potassium hydroxide)

**Molecular Weight:** 56.11

**Chemical Formula:** KOH (4.5% in water)

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Hydroxide	1310-58-3	4.5%	Yes
Water	7732-18-5	95.50%	No

### 3. Hazards Identification

#### Emergency Overview

**POISON! DANGER! CORROSIVE. CAUSES SEVERE BURNS TO SKIN, EYES, RESPIRATORY TRACT, AND GASTROINTESTINAL TRACT. MATERIAL IS EXTREMELY DESTRUCTIVE TO ALL BODY TISSUES. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White Stripe (Store Separately)

#### Potential Health Effects

##### Inhalation:

Respiratory tract irritant, may cause serious burns on acute contact. Severe injury is usually avoided by the self-limiting coughing and sneezing symptoms.

## **Ingestion:**

Toxic! Corrosive to mucous membranes and may cause perforation of the esophagus and stomach. Abdominal pain, nausea, vomiting, general gastro-intestinal upset can be expected.

## **Skin Contact:**

Irritant, possibly corrosive if contact is prolonged. Soreness, redness, destruction of skin may result.

## **Eye Contact:**

Irritant, possibly corrosive to eye tissues. Tearing, redness, pain, impaired vision are symptoms.

## **Chronic Exposure:**

Development of a defatting dermatitis on prolonged contact with potassium hydroxide has been reported. Continued irritation may lead to increased susceptibility to respiratory illness.

## **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems, or impaired kidney or respiratory function may be more susceptible to the effects of the substance.

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## **4. First Aid Measures**

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

### **Ingestion:**

DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately.

### **Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

### **Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## **5. Fire Fighting Measures**

### **Fire:**

Not considered to be a fire hazard.

### **Explosion:**

Not considered to be an explosion hazard.

### **Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Avoid direct contact of liquid with water.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## **6. Accidental Release Measures**

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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## **7. Handling and Storage**

Keep in a tightly closed container. Store in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and alkalis. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### Airborne Exposure Limits:

For Potassium Hydroxide [1310-58-3]:

- OSHA Permissible Exposure Limit (PEL):

2 mg/m<sup>3</sup> Ceiling

- ACGIH Threshold Limit value (TLV):

2 mg/m<sup>3</sup> Ceiling

### Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

### Appearance:

Clear, colorless solution.

### Odor:

Odorless.

### Solubility:

Completely soluble in water.

### Specific Gravity:

4.5% TO 10% Solution: 1.0-1.1

### pH:

13.5 (0.1 molar solution)

### % Volatiles by volume @ 21C (70F):

90 (as water)

### Boiling Point:

10% Solution: 101C (213F) to 45% Solution: 132C (270F)

### Melting Point:

10% Solution: -3C (27F) to 45% Solution -29C (-20F).

### Vapor Density (Air=1):

No information found.

### Vapor Pressure (mm Hg):

10% Solution: No Information Found - to - 45% Solution: 2 @ 20C (68F)

### Evaporation Rate (BuAc=1):

No information found.

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**10. Stability and Reactivity****Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Potassium oxide.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong acids, aluminum, tin, zinc, chlorinated hydrocarbons, acetone.

**Conditions to Avoid:**

Heat, incompatibles.

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**11. Toxicological Information**

For potassium hydroxide: Oral rat LD50: 273 mg/kg; Investigated as a mutagen. Skin Irritation Data (std Draize, 50 mg/24 H): Human, Severe; Rabbit, Severe. Eye Irritation Data(Rabbit, non-std test, 1 mg/24 H, rinse): Moderate.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Potassium Hydroxide (1310-58-3)	No	No	None
Water (7732-18-5)	No	No	None

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**12. Ecological Information****Environmental Fate:**

No information found.

**Environmental Toxicity:**

Potassium Hydroxide: TLM: 80 ppm/Mosquito fish/ 24 hr./ Fresh water

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**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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**14. Transport Information****Domestic (Land, D.O.T.)**

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**Proper Shipping Name:** POTASSIUM HYDROXIDE, SOLUTION

**Hazard Class:** 8

**UN/NA:** UN1814

**Packing Group:** II

**Information reported for product/size:** 19L

**International (Water, I.M.O.)**

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**Proper Shipping Name:** POTASSIUM HYDROXIDE, SOLUTION

**Hazard Class:** 8

**UN/NA:** UN1814

**Packing Group:** II



Information reported for product/size: 19L

International (Air, I.C.A.O.)

Proper Shipping Name: POTASSIUM HYDROXIDE, SOLUTION

Hazard Class: 8

UN/NA: UN1814

Packing Group: II

Information reported for product/size: 19L

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Potassium Hydroxide (1310-58-3)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	Canada NDSL	Phil.
Potassium Hydroxide (1310-58-3)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Potassium Hydroxide (1310-58-3)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	RCRA 261.33	TSCA 8(d)
Potassium Hydroxide (1310-58-3)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: Yes      (Pure / Liquid)

Australian Hazchem Code: 2R

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 1

Label Hazard Warning:

POISON! DANGER! CORROSIVE. CAUSES SEVERE BURNS TO SKIN, EYES, RESPIRATORY TRACT, AND GASTROINTESTINAL TRACT. MATERIAL IS EXTREMELY DESTRUCTIVE TO ALL BODY TISSUES. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.



**Label Precautions:**

- Do not breathe mist.
- Do not get in eyes, on skin, or on clothing.
- Avoid breathing mist.
- Keep container closed.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

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**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

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N/D= No data; N/A = Not available; N/E= Not established