

# Material Safety Data Sheet

**Material Name: Potassium Hydroxide**

**ID: C1-133**

## \*\*\* Section 1 - Chemical Product and Company Identification \*\*\*

**Part Number:** Technical, Industrial, and Food Grade

**Chemical Name:** Potassium Hydroxide, flake and briquette

**Product Use:** For Commercial Use

**Synonyms:** Caustic potash, Potassium hydrate, Lye, Potassa, Hydroxyde de potassium, Potash.

### Supplier Information

Chem One Ltd.

14140 Westfair East Drive

Houston, Texas 77041-1104

Phone: (713) 896-9966

Fax: (713) 896-7540

Emergency # (800) 424-9300 or (703) 527-3887

**General Comments:** FOR COMMERCIAL USE ONLY; NOT TO BE USED AS A PESTICIDE.

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

## \*\*\* Section 2 - Composition / Information on Ingredients \*\*\*

CAS #	Component	Percent
1310-58-3	Potassium Hydroxide	> 90

### Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

## \*\*\* Section 3 - Hazards Identification \*\*\*

### Emergency Overview

Potassium Hydroxide is a white, odorless solid available in pellet, flake, lump, briquette or stick form. Corrosive -- causes severe skin and eye irritation and burns. May cause blindness in severe cases. Causes respiratory tract irritation or burns. May be fatal if swallowed. Keep material dry. When the solid form of product contacts moisture or water, enough heat may be generated to ignite combustible materials. Keep separate from acids, metals, explosives, organic peroxides, and easily ignitable materials. When heated to decomposition, potassium hydroxide emits toxic fumes of potassium oxide. Contact with common metals in the presence of moisture can result in production of flammable hydrogen gas. Firefighters should wear full protective clothing including self contained breathing apparatus.

### Hazard Statements

**DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED. CAUSES SEVERE IRRITATION AND BURNS OF RESPIRATORY SYSTEM, EYES AND SKIN.** Do not get in eyes, on skin, or on clothing. Do not breathe dusts or mists of solutions. Do not touch or handle briquettes with bare hands! Wash thoroughly after handling. Keep container tightly closed. Use only with adequate ventilation. Do not leave briquettes unattended and exposed to the air, as they can absorb moisture and are corrosive. When moist, generation of heat can lead to burns when handling and create a potential fire hazard.

### Potential Health Effects: Eyes

Corrosive to eyes. Potassium hydroxide is a severe eye irritant, and contact with eye may cause redness, intense pain, and tearing. In severe cases, conjunctival edema and destruction of cornea may occur, which may result in permanent damage to the eye. Blindness is possible in severe cases, especially in strong solution.

### Potential Health Effects: Skin

Corrosive to skin. Potassium hydroxide is a severe skin irritant, and contact with the skin can cause effects ranging from irritation to burns with deep and painful lesions. Burns may not be immediately painful -- onset of pain may take minutes to hours, however, damage begins immediately. Chronic contact with dilute solutions of potassium hydroxide can cause dermatitis.

### Potential Health Effects: Ingestion

May be fatal if swallowed. When ingested, potassium hydroxide can cause severe pain, bloody diarrhea, cardiovascular collapse, shock, and death. Esophageal stricture can occur up to several years later. Cicatricial cancer may develop in the esophagus at the site of scarring 15 to 20 years following ingestion.

### Potential Health Effects: Inhalation

Inhalation can cause severe irritation of the respiratory tract. Symptoms include sneezing, sore throat, coughing, shortness of breath, and lesions of the nasal septum. Inhalation of large amounts of dust may be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.

**HMS Ratings: Health Hazard: 3\* Fire Hazard: 0 Physical Hazard: 1**

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard

## \*\*\* Section 4 - First Aid Measures \*\*\*

### First Aid: Eyes

In case of contact with eyes, rinse immediately with plenty of water for at least 20 minutes. Administer anesthetic eye drops after one minute of flushing if victim suffers from spasms to the eyes, in order to facilitate irrigation. Seek immediate medical attention. In the event of a severe overexposure, victim should consult with an ophthalmologist.

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## \*\*\* Section 4 - First Aid Measures (Continued) \*\*\*

### First Aid: Skin

If contact with skin should occur, flush contaminated area with water for at least 20 minutes and get immediate medical attention.

### First Aid: Ingestion

If the material is swallowed, get immediate medical attention or advice. DO NOT INDUCE VOMITING. Rinse mouth with water to decontaminate the oral mucosa. If no respiratory compromise is present, dilute immediately with 4 to 8 ounces of milk or water. Never give anything by mouth to a victim who is unconscious or having convulsions. If victim vomits naturally, position head lower than chest area so that aspiration into the lungs cannot occur. Contact a physician or poison control center immediately.

### First Aid: Inhalation

Remove source of contamination or move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method 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. Administer oxygen if breathing is difficult. Get immediate medical attention.

### First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically. For dermal decontamination, prolonged irrigation may be required in severe cases, occasionally up to 12 to 24 hours. Compresses of neutral phosphate buffer may be applied after irrigation is complete. For eye exposures, irrigate with sterile saline for at least an hour until all particulate matter is removed and the eye fluid has returned to neutrality. It may take 48 to 72 hours after the burn to assess the degree of ocular damage. The basis of such an evaluation is the degree of corneal opacification and perilimbal whitening.

## \*\*\* Section 5 - Fire Fighting Measures \*\*\*

**Flash Point:** Does not burn

**Method Used:** Not applicable

**Upper Flammable Limit (UEL):** Not applicable

**Lower Flammable Limit (LEL):** Not applicable

**Auto Ignition:** Not applicable

**Flammability Classification:** Not applicable

**Rate of Burning:** Not applicable

### General Fire Hazards

Not combustible. However, when the solid form contacts moisture or water, enough heat may be generated to ignite combustible materials. When wet, attacks metals such as aluminum, tin, lead, and zinc to produce flammable and explosive hydrogen gas.

### Hazardous Combustion Products

When heated to decomposition, potassium hydroxide emits toxic fumes of potassium oxide.

### Extinguishing Media

Use any media suitable for the surrounding fires. Water can be used to extinguish fire as long as the water is used in flooding amounts and care is taken to not spatter or splash the potassium hydroxide. The use of water in fires involving Potassium Hydroxide should only be done if fire-fighters are specifically trained in the procedure. Use water spray to keep fire-exposed containers closed.

### Fire Fighting Equipment/Instructions

Evacuate area and fight fire from a safe distance. Firefighters should wear full protective clothing including self-contained breathing apparatus. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Neutralize waste water with dilute acetic acid.

**NFPA Ratings: Health: 3 Fire: 0 Reactivity: 1 Other:** Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

## \*\*\* Section 6 - Accidental Release Measures \*\*\*

### Containment Procedures

Stop the flow of material, if this can be done without risk. Contain the discharged material. If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with product (see Section 10 for incompatibility information). Keep water away from the release.

### Evacuation Procedures

Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. In case of large spills, follow all facility emergency response procedures.

### Clean-Up Procedures

Wear appropriate protective equipment and clothing during clean-up. With a clean shovel, carefully place the material into a clean, dry, labeled waste container, and seal tightly. Neutralize the area of the spill with DILUTE acetic acid. Ventilate the contaminated area. Thoroughly wash the area after clean-up. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater.

### Special Procedures

Remove and dispose of soiled clothing. Avoid skin or eye contact and inhalation of dusts or mists during cleanup of spills.

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## \*\*\* Section 7 - Handling and Storage \*\*\*

### Handling Procedures

All employees who handle this material should be trained to handle it safely. Do not breathe dust. Avoid all contact with skin and eyes. Use this product only with adequate ventilation. Wash thoroughly after handling. Use caution when preparing solutions as large amounts of heat and very corrosive fumes may evolve. Do not touch or handle briquettes with bare hands! Keep container tightly closed. Do not leave briquettes unattended and exposed to the air, as they can absorb moisture and are corrosive. When moist, generation of heat can lead to burns when handling and create a potential fire hazard.

### Storage Procedures

Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Storage areas should be made of fire-resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area. Floors should be sealed to prevent absorption of this material. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers).

Empty containers may contain residual particulates, which are corrosive; therefore, empty containers should be handled with care. Do not cut, grind, weld, or drill near this container. Never store food, feed, or drinking water in containers which held this product. Keep this material away from food, drink and animal feed. Do not store this material in open or unlabeled containers. Limit quantity of material stored. Potassium Hydroxide rapidly absorbs moisture and carbon dioxide from the air and deliquesces. Do not store this material in open or unlabeled containers. Keep separate from acids, metals, explosives, organic peroxides, and easily ignitable materials. Keep material dry. Potassium Hydroxide can cause corrosion and destruction of polyester materials, including polyester thread sometimes used to sew bulk bags for chemicals. The use of polyester materials should be avoided for containers, including bags, of Potassium Hydroxide.

## \*\*\* Section 8 - Exposure Controls / Personal Protection \*\*\*

### Exposure Guidelines

#### A: General Product Information

Follow the applicable exposure limits.

#### B: Component Exposure Limits

##### Potassium Hydroxide (1310-58-3)

ACGIH: 2 mg/m3 (ceiling) STEL

OSHA: 2 mg/m3 (ceiling) [1989 vacated OSHA PEL]

NIOSH: 2 mg/m3 TWA

### Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement.

### PERSONAL PROTECTIVE EQUIPMENT

*The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent Standards of Canada. Please reference applicable regulations and standards for relevant details.*

#### Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields (or goggles) and a face shield, if this material is made into solution. If necessary, refer to U.S.

OSHA 29 CFR 1910.133.

#### Personal Protective Equipment: Skin

Wear impervious gloves, shoes, aprons, and coveralls to prevent any skin contact with this product. Recommended gloves include butyl rubber, natural rubber, neoprene, nitrile rubber, and polyvinyl chloride gloves. Gloves should be tested to determine their suitability for prolonged contact with this material. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

#### Personal Protective Equipment: Respiratory

If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. If airborne concentrations are above the applicable exposure limits, use acid/gas cartridge respirator or other NIOSH-approved respiratory protection.

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## \*\*\* Section 8 - Exposure Controls / Personal Protection (Continued) \*\*\*

### Personal Protective Equipment: Respiratory (Continued)

The following NIOSH Guidelines for Sodium Hydroxide (a related compound, with similar respiratory hazards), are presented for further guidance in respiratory protection selection:

Concentration      Respiratory Equipment

Up to 10 mg/m<sup>3</sup>: Supplied Air Respirator (SAR) operated in continuous-flow mode, or full-facepiece respirator with a high-efficiency particulate filter(s), or powered air-purifying respirator with dust and mist filter(s), or full-facepiece SCBA, or full facepiece SAR.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA, or positive pressure, full-facepiece SCBA with an auxiliary positive pressure SCBA.

Escape: Full-facepiece respirator with high-efficiency particulate filters(s), or escape-type SCBA.

### Personal Protective Equipment: General

Have eyewash and safety showers located in work area. Discard or launder any contaminated clothing before reuse.

## \*\*\* Section 9 - Physical & Chemical Properties \*\*\*

### Physical Properties: Additional Information

The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

<b>Appearance:</b>	White or colorless	<b>Odor:</b>	Odorless
<b>Physical State:</b>	Pellets, flakes, lumps or sticks	<b>pH:</b>	13.5 (0.1 Molar aqueous solution)
<b>Vapor Pressure:</b>	1 mm Hg @ 719 deg C	<b>Vapor Density:</b>	Not applicable
<b>Boiling Point:</b>	2408 deg F (1320 deg C) @ 760 mm Hg	<b>Melting Point:</b>	680 deg F (360 deg C)[varies with water content]
<b>Solubility (H2O):</b>	Freely soluble in water	<b>Specific Gravity:</b>	2.044 @ 20 deg C (water = 1)
<b>Freezing Point:</b>	Not available	<b>Particle Size:</b>	Not available
<b>Softening Point:</b>	Not available	<b>Bulk Density:</b>	55 lbs/cft
<b>Molecular Weight:</b>	56.10	<b>Chemical Formula:</b>	KOH

## \*\*\* Section 10 - Chemical Stability & Reactivity Information \*\*\*

### Chemical Stability

Stable under standard pressure and temperature. Potassium Hydroxide rapidly absorbs water and carbon dioxide from the air to form potassium carbonate.

### Conditions to Avoid

Avoid contact with water, organic peroxides, easily ignitable materials, and any other incompatible materials listed below. Above 84° Celsius it reacts with reducing sugars to form poisonous carbon monoxide gas. Heat is generated if potassium hydroxide comes in contact with water and carbon dioxide from the air.

### Incompatibility

Potassium Hydroxide will react violently, yielding heat and pressure, with strong acids, acid chlorides, acid anhydrides, nitroaromatic, nitroparaffin and organohalogen compounds and organic peroxides. Potassium Hydroxide will react violently with water, generating significant heat and will cause dangerous spattering of a corrosive solution. Potassium Hydroxide will violently polymerize with acetaldehyde, acrolein or acrylonitrile. Potassium Hydroxide will produce flammable and explosive hydrogen gas in reaction with sodium tetrahydroborate or metals, such as tin, aluminum or zinc. Potassium Hydroxide will product spontaneously flammable phosphine gas if it reacts with phosphorous. Potassium Hydroxide can form spontaneously flammable chemicals upon contact with 1,2-Dichloroethylene, trichloroethylene or tetrachloroethane. Potassium will react explosively with bromoform + crown ethers, chlorine dioxide, maleic anhydride, nitrogen trichloride, nitrobenzene, nitromethane, nitrogen trichloride, peroxidized tetrahydrofuran, 2,4,6-trinitrotoluene, n-nitrosomethylurea and tetrahydrofuran. Potassium Hydroxide can produce carbon monoxide upon contact with solutions of sugars, such as fructose, lactose and maltose. Reaction with ammonium hexachloroplatinate (2-) + heat forms a heat-sensitive explosive product. Violent reaction or ignition under the appropriate conditions with acids, acrolein, acrylonitrile, alcohols, p-bis (1,3-dibromoethyl)benzene, cyclopentadiene, germanium, halogenated hydrocarbons, hyponitrous acid, maleic anhydride, nitroalkanes, 2-nitrophenol, potassium peroxodisulphate, sugars; 2,2,3,3-tetrafluoropropanol; thorium dicarbide. Potassium persulfate plus a small amount of Potassium Hydroxide and water can ignite polythene (polyethylene) liner of a container by simultaneous release of heat and oxygen. Potassium Hydroxide can cause liquid chlorine dioxide to explode. Reactions between n-nitrosomethylurea and Potassium Hydroxide in n-butyl ether can result in an explosion due to formation of diazomethane.

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## \*\*\* Section 10 - Chemical Stability & Reactivity Information (Continued) \*\*\*

### Incompatibility (continued)

When moist chlorine was passed over calcium carbide and Potassium Hydroxide, a solution of 58% dichloroacetylene was collected in ether. This solution can burn spontaneously and generate toxic phosgene. Alkali and other alkaline earth compounds such as Potassium Hydroxide, will cause explosive decomposition of maleic anhydride. The nitroparaffins such as nitroethane, nitromethane or nitropropane, in presence of water, form salts with inorganic bases such as Potassium Hydroxide; the resulting dry salts are explosive. Nitrogen trichloride explodes on contact with concentrated Potassium Hydroxide. Using Potassium Hydroxide to dry impure tetrahydrofuran, which can contain peroxides, is hazardous, serious explosions can occur. When heated, trichloroethylene and Potassium Hydroxide form explosive mixtures of dichloroacetylene. Potassium Hydroxide can cause corrosion and destruction of polyester materials, including polyester thread sometimes used to sew bulk bags for chemicals. The use of polyester materials should be avoided for containers, including bags, of Potassium Hydroxide.

### Hazardous Decomposition

When heated to decomposition, potassium hydroxide emits toxic fumes of potassium oxide. Will absorb moisture and carbon dioxide from the air to form hazardous potassium carbonate.

### Hazardous Polymerization

Potassium Hydroxide will violently polymerize with acetaldehyde, acrolein or acrylonitrile.

## \*\*\* Section 11 - Toxicological Information \*\*\*

### Acute and Chronic Toxicity

#### A: General Product Information

Potassium hydroxide is corrosive to all tissues. It is a severe eye, skin, and respiratory tract irritant, and can burn any tissue with which it comes in contact. Contact with eye may cause redness, intense pain, and tearing. In severe cases, conjunctival edema and destruction of cornea may occur, which may result in permanent damage to the eye. Potassium hydroxide is a severe skin irritant, and contact with the skin can cause effects ranging from irritation to burns with deep and painful lesions. Burns may not be immediately painful. The onset of pain after contact may take minutes to hours; however, damage begins immediately. Alkalies penetrate the skin slowly, and the extent of damage depends on the duration of contact. When ingested, potassium hydroxide can cause severe pain, bloody diarrhea, cardiovascular collapse, and death. Esophageal stricture can occur up to several years later. Cicatricial cancer may develop in the esophagus at the site of scarring 15 to 20 years following ingestion as a secondary effect of physical injury. Inhalation can cause severe irritation of the respiratory tract. Symptoms include sneezing, sore throat, coughing, shortness of breath, and lesions of the nasal septum. However, there appears to be no loss of pulmonary function with chronic inhalation exposure. Inhalation of large amounts of dust may be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Chronic: Long term skin overexposure to this product may lead to dermatitis and eczema. Prolonged or repeated eye contact may cause conjunctivitis and possibly corneal abnormalities.

#### B: Component Analysis - LD50/LC50

##### Potassium Hydroxide (1310-58-3)

LD<sub>50</sub> (Oral-Rat) 273 mg/kg; LD<sub>50</sub> (Oral-Rat) 365 mg/kg; LD<sub>50</sub> (Skin-Rabbit) 1260 mg/kg;

### Carcinogenicity

#### A: General Product Information

Cancer may develop 15 to 20 years later in the esophagus at the site of scarring from acute ingestion as a secondary effect of injury. Potassium hydroxide is not regarded as a human carcinogen. Potassium hydroxide caused tumors in mouse skin painting studies using a 3 to 6 percent solution for 46 weeks. These tumors were also probably due to physical tissue injury.

#### B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

### Epidemiology

No information available.

### Neurotoxicity

No information available.

### Mutagenicity

Potassium hydroxide caused chromosome aberrations in rat ascites tumor cells at a very high dose (greater than the LD<sub>50</sub>) and in hamster ovary cells. It also caused formation of spiral structures in human chromosomes. These effects on chromosomes were probably due to alterations in pH. Tests using potassium hydroxide to produce mutations in E. coli were inconclusive. Tested positive for in vitro Chinese hamster ovary K1 cells, with metabolic activation.

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## \*\*\* Section 11 - Toxicological Information (Continued) \*\*\*

### Teratogenicity

No information available.

### Other Toxicological Information

None.

## \*\*\* Section 12 - Ecological Information \*\*\*

### Ecotoxicity

#### A: General Product Information

Expected to be highly toxic to aquatic organisms and ecosystems due to effects on pH.

#### B: Ecotoxicity

##### Potassium Hydroxide (1310-58-3)

LC<sub>50</sub> (24 hr) mosquito fish: 80.0 mg/L; TLm (mosquito fish) = 80 ppm/ 24 hours/ fresh water

### Environmental Fate

Experimental Log P Coefficient value = 0.65

## \*\*\* Section 13 - Disposal Considerations \*\*\*

### US EPA Waste Number & Descriptions

#### A: General Product Information

If wastes are generated, EPA hazardous waste numbers D002 for corrosivity and D003 for reactivity may apply. Wastes should be tested for applicability.

#### B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

### Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations. It may be possible to neutralize, and dilute Potassium Hydroxide in solution. Such material should not be flushed to sewer without prior authorization from local authorities and required permits (if necessary).

## \*\*\* Section 14 – Transportation Information Ground \*\*\*

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under 49 CFR, IATA and IMDG to assure regulatory compliance.

### US DOT 49 CFR 100-185 Revised July 24, 2009 Information

UN/NA #: UN 1813

Shipping Name: Potassium hydroxide, solid

Hazard Class: 8

Packing Group: II

Required Label(s): 8(Corrosive)

Special Provision: B2, IB2

Packaging: 172.202

RQ Quantity: For a single package less than the RQ of 1,000lb (454 kg), the RQ designation should be not be used.

### Additional Shipping Information

**Limited Quantity Shipments:** Shipments, except for air, need not be marked with the Proper Shipping Name of the contents, but shall be marked with the UN Number (1813) of the contents, preceded by the letters "UN", placed within a diamond. The width of the line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. The total weight of each outer packaging cannot exceed 30 kg (66 pounds.) .

**Small Quantities for Highway and Rail:** The maximum quantity of this material per inner receptacle is limited to 30 g (1 ounce) per receptacle. The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement of the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet the drop test requirements of 173.4(6) (i). The outside of the package must be marked with the statement "**This package conforms to 49 CFR 173.4 for domestic highway or rail transport only.**"

**Excepted Quantities:** The maximum quantity of this material per inner receptacle is limited to 30 g (1 ounce) per receptacle and the aggregate quantity of this material per completed package does not exceed 500g (1.1 pounds). The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet a drop test. The requirements are found in

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173.4(6) (i). The package must not be opened or otherwise altered until it is no longer in commerce. For highway or rail transportation no shipping paper is required. The package must be legibly marked with the following marking:



**NOTE:** The "\*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "\*\*" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm (3.9 inches) x 100 mm (3.9 inches), and must be durable and clearly visible.

**De minimis Exceptions:** The maximum quantity of this material per inner receptacle is limited to 1g (0.04 ounce) per receptacle and the aggregate quantity of this material per completed package does not exceed 100 g (0.22 pounds). The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet the drop test. The requirements are found in 173.4(6) (i). The package must not be opened or otherwise altered until it is no longer in commerce and may be transported by aircraft. If all of the above requirements are met, then this material is not regulated.

### \*\*\* Section 14 – Transportation Information Air \*\*\*

#### 50<sup>th</sup> Edition International Air Transport Association (IATA):

For Shipments by Air transport: This information applies to air shipments both within the U.S. and for shipments originating in the U.S., but being shipped to a different country.

**UN/NA #:** UN 1813

**Proper Shipping Name:** Potassium hydroxide, solid

**Hazard Class:** 8

**Packaging Group:** II

**Passenger & Cargo Aircraft Packing Instruction:** 814

**Passenger & Cargo Aircraft Maximum Net Quantity:** 15 kg

**Limited Quantity Packing Instruction (Passenger & Cargo Aircraft):** Y814

**Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft):** 5 kg

**Cargo Aircraft Only Packing Instruction:** 816

**Cargo Aircraft Only Maximum Net Quantity:** 50 kg

**Excepted Quantities:** E2

**Special Provisions:** None

**ERG Code:** 8L

**Limited Quantity Shipments:** Shipments for air must be marked with the Proper Shipping Name, Potassium hydroxide, solid, and shall be marked with the UN Number (1813) preceded by the letters "UN", placed within a diamond. The width of the line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. The total weight of each outer packaging cannot exceed 30 kg.

**Excepted Quantities:** The maximum quantity of this material per inner receptacle is limited to 30 g per receptacle and the aggregate quantity of this material per completed package does not exceed 500g. The inner receptacles must be securely packed in an intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg. The completed package must meet a drop test. The requirements are found in 2.7.6.1. The package must not be opened or otherwise altered until it is no longer in commerce. For air transportation no shipping paper is required. The package must be legibly marked with the following marking:

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**NOTE:** The "\*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "\*\*" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.

## \*\*\* Section 14 – Transportation Information Vessel \*\*\*

### Amendment 34-08 International Maritime Dangerous Goods (IMDG) Code

For shipments via marine vessel transport, the following classification information applies.

**UN/NA #:** UN 1813

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

**Hazard Class:** Class 8

**Packing Group:** II

**Special Provisions:** None

**Limited Quantities:** 1kg

**Excepted Quantities:** E2

**Packing Instructions:** P002

**Provisions:** None

**IBC Instructions:** IBC08

**IBC Provisions:** B2, B4

**EmS:** F-A, S-B

**Stowage and Segregation:** Category A. "Separated from" acids

**Limited Quantity Shipments:** Shipments need not be marked with the Proper Shipping Name of the contents, but shall be marked with the UN Number (1813) of the contents, preceded by the letters "UN", placed within a diamond. The width of the line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. The total weight of each outer packaging cannot exceed 30kg.

**Excepted Quantities:** The maximum quantity of this material per inner receptacle is limited to 30g per receptacle and the aggregate quantity of this material per completed package does not exceed 500g. Maximum number of packages per Cargo Transport Unit (CTU) shall not exceed 1,000 packages. The inner receptacles must be securely packed in an intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29 kg. The completed package must meet a drop test. The requirements are found in 3.5.3.1. Packages must not be opened or otherwise altered until it is no longer in commerce and a shipping paper is required. The package must be legibly marked with the following marking:



**NOTE:** The "\*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "\*\*" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.

## \*\*\* Section 15 - Regulatory Information \*\*\*

### US Federal Regulations

#### A: General Product Information

No additional information

#### B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

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## \*\*\* Section 15 - Regulatory Information (Continued) \*\*\*

SARA 302 (EHS TPQ): There are no specific Threshold Planning Quantities for Potassium Hydroxide. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.

### Potassium Hydroxide (1310-58-3)

CERCLA: final RQ = 1000 lb(454 kg)

#### C: Sara 311/312 Tier II Hazard Ratings:

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Potassium Hydroxide	1310-58-3	No	No	No	Yes	Yes

#### State Regulations

##### A: General Product Information

Other state regulations may apply.

##### B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Potassium Hydroxide	1310-58-3	Yes	Yes	Yes	Yes	Yes	Yes

#### Other Regulations

##### A: General Product Information

None.

##### B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Potassium Hydroxide	1310-58-3	Yes	Yes	Yes

##### C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Potassium Hydroxide	1310-58-3	1% item 1335 (996)

**ANSI LABELING (Z129.1): DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED. CAUSES SEVERE IRRITATION AND BURNS OF RESPIRATORY SYSTEM, EYES AND SKIN.** Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing dusts or particulates. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH/MSHA-approved respiratory protection, as appropriate. Can be corrosive to metals. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use dry chemical, CO<sub>2</sub>, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with inert material or neutralizing agent for bases. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

## \*\*\* Section 16 - Other Information \*\*\*

#### Other Information

Chem One Ltd. ("Chem One") shall not be responsible for the use of any information, product, method, or apparatus herein presented ("Information"), and you must make your own determination as to its suitability and completeness for your own use, for the protection of the environment, and for health and safety purposes. You assume the entire risk of relying on this Information. In no event shall Chem One be responsible for damages of any nature whatsoever resulting from the use of this product or products, or reliance upon this Information. By providing this Information, Chem One neither can nor intends to control the method or manner by which you use, handle, store, or transport Chem One products. If any materials are mentioned that are not Chem One products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed. Chem One makes no representations or warranties, either express or implied of merchantability, fitness for a particular purpose or of any other nature regarding this information, and nothing herein waives any of Chem One's conditions of sale. This information could include technical inaccuracies or typographical errors. Chem One may make improvements and/or changes in the product (s) and/or the program (s) described in this information at any time. If you have any questions, please contact us at Tel. 713-896-9966 or E-mail us at Safety@chemone.com.

## Material Safety Data Sheet

**Material Name: Potassium Hydroxide**

**ID: C1-133**

### Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

**Contact:** Sue Palmer-Koleman, PhD

**Contact Phone:** (713) 896-9966

### Revision Log

08/23/00 4:42 PM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd.  
05/31/01 9:31 AM HDF Checked exposure limits; made changes to Sect 9; overall review, add SARA 311/312 Haz Ratings.  
08/20/01 2:20 PM CLJ Changed contact to Sue, non-800 Chemtrec Num.  
10/23/01 2:20 PM HDF Added incompatibility statement with polyester in Sect 7 & 10.  
11/16/01 1:57 PM SEP In Sect 14, removed RQ from shipping name and modified RQ statement under Additional Info.  
07/31/03 15:25 PM HDF Up-graded Section 10 Reactivity Information. Up-Dated entire Section 14 Transportation Information to include IATA, IMO transport information.  
06/22/05 9:38AM SEP Updated IATA Section 14  
09/05/06 3:08 PM SEP Updated DOT & IMO Section 14  
06/06/08 12:08 PM SEP Added handling warning for briquettes.  
10/15/08 9:08 AM DLY Changed Chem One Physical Address, Section 1  
09/18/09 MMK Updated Section 14 limited & excepted quantities and exceptions.

This is the end of MSDS # C1-133