

Product Name: Potassium Hydroxide, 45 - 50%
Revision Date: 01/27/06

Revision No.: 16

OCEAN NETWORK EMERGENCY PHONE 1-888-2891-911

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD. (REFER TO THE OSHA CLASSIFICATION IN SEC.I.) THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE. THE EXPOSURE TO THE COMMUNITY, IF ANY, IS QUITE DIFFERENT.

I - Product Identification

Product Code:	105528 (Formerly CPE11670)
File No.:	MSDS1005 (Formerly CPE00054.0001)
Product Name:	POTASSIUM HYDROXIDE, 45% -50%
Synonyms:	Caustic Potash
Chemical Family:	Alkali, base
Formula:	KOH
Use Description:	Potassium source, pH adjustment, neutralizing agent
Hazard Classification:	Irritant; Corrosive; eye and skin hazard; lung toxin

II - COMPONENT DATA

This Product Composition information presented here describes the major components and their concentrations found in this product and other information as required by OSHA. This is not, and should not be interpreted, or used as, a Product Specification or a detailed chemical analysis.

Established Federal OSHA PEL is provided. OSHA Agreement State PEL may be different.

Product Composition

CAS or Chemical Name:	Potassium hydroxide	
CAS Number:	1310-58-3	
Percentage Range:	45-53	
Hazardous Per 29 CFR 1910.1200:	Yes	
Exposure Standards:	OSHA (PEL) mg/M3	ACGIH (TLV) mg/M3
	TWA: None	None
	CEILING: None	2.0
	STEL: None	None

AS or Chemical Name:	Water
CAS Number:	7732-18-5
Percentage Range:	47-55
Hazardous Per 29 CFR 1910.1200:	No
Exposure Standards:	None Established

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III - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER FOR 15 MINUTES. AVOID BREATHING MIST OR VAPOR.

STORAGE CONDITIONS:

DO NOT STORE AT TEMPERATURES ABOVE: 54 Deg.C (130 Deg F)

PRODUCT STABILITY AND COMPATIBILITY:

SHELF LIFE LIMITATIONS:	None if tightly sealed.
INCOMPATIBLE MATERIALS FOR PACKAGING:	Aluminum, zinc, tin, wood, paper, glass
INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT:	Acids, nitrogen containing organics, phosphorus, explosives, organic peroxides, halogen compounds, aluminum, zinc, tin

IV - PHYSICAL DATA

Appearance:	Colorless to slight yellow clear to cloudy liquid
Freezing Point:	45%: -33 Deg.C (-27 Deg.F) 50%: 2 Deg.C (36 Deg. F)
Boiling Point:	45%: 133 Deg.C (271 Deg.F) 50%: 143 Deg.C (289 Deg.F)
Decomposition Temperature:	No Data
Specific Gravity:	45%: 1.447 at 20 Deg.C (68 Deg.F) 50%: 1.505 at 20 Deg.C (68 Deg.F)
Bulk Density:	Not Applicable
pH @ 25° C:	> 13 (0.5% Solution)
Vapor Pressure @ 25° C:	45%: 6.4 mmHg 50%: 4 mmHg
Solubility in Water:	Miscible
Volatiles, Percent by Volume:	47-55
Evaporation Rate:	No Data
Vapor Density:	1
Molecular Weight:	56.1 (Active ingredient)
Odor:	None
Coefficient of Oil/Water Distribution:	No Data

V - PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

Personal Protection for Routine Use of Product:

Respiratory Protection:	Respirator protection not normally needed since the volatility and toxicity are low. If vapors, mists, or aerosols are generated, wear a NIOSH approved respirator.
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Ventilation:	Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.
Skin and Eye Protection:	Wear gloves, boots, apron and a face shield with safety goggles. A full impermeable suit is recommended if exposure is possible to large portion of body.
Other:	Emergency eye wash and safety showers must be provided in the immediate work area.

Equipment Specifications (When Applicable):

Respirator Type:	NIOSH approved HEPA filter respirator
Protective Clothing Type: (This includes: gloves, boots, apron, protective suit.)	All types including glove, boot, apron and protective suit: Neoprene, NBR, PVC, Natural Rubber

VI - FIRE AND EXPLOSION HAZARD INFORMATION

Flammability Data:

Explosive:	N/A
Flammable:	No
Combustible:	No
Pyrophoric:	No
Flash Point:	Not Applicable
Autoignition Temperature:	Not Applicable
Flammable Limits at Normal Atmospheric Temperature and Pressure (Percent Volume in Air):	LEL - Not Applicable UEL - Not Applicable

NFPA Ratings:

Health:	3
Flammability:	0
Reactivity:	1

HMIS Ratings:

Health:	3
Flammability:	0
Reactivity:	1

Extinguishing Media:

Not Applicable. Choose extinguishing media suitable for surrounding materials.

Fire Fighting Techniques and Comments:

Use water to cool containers exposed to fire. Use flooding quantities of water. Potassium hydroxide may react with water (see Section VII). Contact with reactive metals, e.g., aluminum may result in the generation of flammable hydrogen gas. See Section XI for protective equipment for fire fighting. On small fires, use dry chemical, carbon dioxide, water spray, or foam. On large fires, use water-flooding quantities as a fog.

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VII - REACTIVITY INFORMATION

Conditions under Which This Product May Be Unstable:

Temperatures Above:	Decomposition temperature
Mechanical Shock or Impact:	No
Electrical (Static) Discharge:	No
Other:	None
Hazardous Polymerization:	Will not occur
Incompatible Materials:	Acids, nitrogen containing organics, chlorinated alkenes, carbohydrates, phosphorous, explosives, organic peroxides, per sulfates, aluminum, tin, or zinc
Hazardous Decomposition:	Carbon monoxide with carbohydrates, hydrogen with aluminum, zinc or tin; K2O from decomposition by heat, Chloroacetylene with chlorinated alkenes and heat.

Summary of Reactivity:

Explosive:	No
Oxidizer:	No
Pyrophoric:	No
Organic Peroxide:	No
Water Reactive:	No (See caution below)
Corrosive:	Yes

Caution: heat is liberated when potassium hydroxide and water are mixed which can result in splattering or dangerous mists.

VIII - FIRST AID

Eyes

Immediately Flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention at once.

Skin

Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, seek medical attention. If clothing, shoes and/or jewelry come in contact with the product, they should be laundered before re-use.

Ingestion

Immediately drink large quantities of water. DO NOT induce vomiting. Seek medical attention at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

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Inhalation

If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Seek medical attention. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once immediately seek medical attention. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX - TOXICOLOGY AND HEALTH INFORMATION

Routes of Absorption

Dermal and eye contact, inhalation, ingestion

Warning Statements and Warning Properties

May be harmful if swallowed. Causes skin and eye burns. May cause respiratory tract irritation.

Human Threshold Response Data

Odor Threshold:	No Data
Irritation Threshold:	No Data
Immediately Dangerous to Life or Health:	None established.

Signs, Symptoms and Effects of Exposure

Inhalation

Acute:	Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract, which can result in shortness of breath, wheezing, choking, chest pain and impairment of lung function. Inhalation of high concentration can result in permanent lung damage.
Chronic:	Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage.

Skin

Acute:	Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause permanent damage.
Chronic:	Effects from chronic skin exposure would be similar to those from single exposure and may include effects secondary to tissue destruction.

Eye

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

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Ingestion

Acute:	Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding and/or tissue ulceration. Ingestion causes severe damage to the gastrointestinal tract with the potential to cause perforation.
Chronic:	Effects from chronic exposure would be similar to those from single exposure and may include effects secondary to tissue destruction.

Medical Conditions Aggravated by Exposure

Asthma, respiratory and cardiovascular disease

Interactions with Other Chemicals Which Enhance Toxicity

There are no chemicals known to enhance the toxicity of the product.

Animal Toxicology

Acute Target Organ Toxicity

Inhalation LC 50: No Data
Dermal LD 50: Believed to be > 2 g/kg. (Rabbit)
Oral LD 50: Believed to be 500-700 mg/kg. (Rat)
Irritation: Causes burns to eyes and skin

Chronic Target Organ Toxicity

There are no known or reported effects from repeated exposure.

Reproductive and Developmental Toxicity

There are no known or reported effects on reproductive function or fetal development.

Carcinogenicity

This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA

Mutagenicity

This product is not known or reported to be mutagenic.

Aquatic Toxicity

Aquatic Toxicity Rating 2 (TLM96:100-10 ppm)
TLM96 - Gambusia Affinis (Mosquito-Fish) 80 ppm
Lethal Dose (24 hr. exposure):
Trout - 50 ppm
Bluegills - 56 ppm
Lepomis Pallidus (minnows) - 28 ppm

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X - TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS DOT HAZARDOUS MATERIAL.

DOT Description from the Hazardous Materials Table 49 CFR 172.101:

Land (U.S. DOT):	Potassium hydroxide solution, 8, UN1814, PG II
Water (IMO):	Same as above
Air (IATA/ICAO):	Same as above
Hazard Label/Placard:	CORROSIVE
Reportable Quantity:	1,000 lbs. (Per 49 CFR 172.101, Appendix)
Emergency Guide:	154

XI - SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

Reportable Quantity: 1000 LBS. (Per CFR 302.4)

Spill Mitigation Procedures:

Hazardous concentrations in air may be found in local spill area and immediately downwind. This product may represent an explosion hazard if in contact with some metals. Remove all sources of ignition.

Air Release:	Vapors may be suppressed by the use of a water fog. Contain all run-off water for treatment and/or proper disposal.
Water Release:	This material is heavier than water. This material is soluble in water. Stop source of spill if safe to do so, divert all flow and contain in a dike or trench. Remove and containerize or neutralize in place, then remove for proper disposal.
Land Spill:	This material may cause ground water contamination. Collectively dike and contain all material as necessary. Begin a neutralization and/or containerization process as soon as possible. Rinse spill area with water after clean up is complete and containerize rinse water and/or neutralize as necessary.

Spill Residues:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

This material may be neutralized for disposal; you are requested to contact OCEAN at 888-289-1911 before beginning any such operation.

Personal Protection for Emergency Spill and Firefighting Situations:

Response to this material requires the use of a full-encapsulated suit and self-contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to: boots, gloves, hard hat, splash-proof goggles and impervious clothing, i.e., chemically impermeable suit.

Compatible materials for response to this material are neoprene, polyvinyl chloride, butyl rubber and natural rubber.

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XII - WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D002.

If this product becomes a waste, it will be a hazardous waste, which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous liquid waste, it must be disposed of in accordance with local, state and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by treatment.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USE OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII - ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:

This substance is listed on the Toxic Substances Control Act inventory.

NSF LIMITS: NSF Maximum Drinking Water Use Concentration - 100 mg/l (dry basis).

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP. A:

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

None Established

XIV - ADDITIONAL INFORMATION

MSDS REVISION STATUS: Changes from Rev14 (27/97) have been made to Sections I - Product Identification, II - Component Data, IV - Physical Data, VI - Fire and Explosion Hazard Information, VII - Reactivity Information, XIII - Additional Regulatory Status Information, XV - Major References. Revised Section XIII January 2006.

XV - MAJOR REFERENCES

References are available upon request.

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THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

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