POTASSIUM HYDROXIDE SOLUTION
WHMIS CONTROLLED PRODUCT
Date Issued:05/05/2009
Revision #:4

MATERIAL SAFETY DATA SHEET

1. Chemical Product And Company Information

Chemical Name: Potassium Hydroxide Solution
Synonyms/Trade Names: Caustic Potash Solution, KOH, Potash Lye, Lye, Lye Solution
Chemical Family: Alkali metal hydroxide
Formula: KOH
Molecular Weight: 56.1
CAS No.: 1310-58-3
Uses:

Manufacturer & Supplier:
ERCO Worldwide, a division of Superior Plus LP
302 The East Mall, Ste. 200
Toronto, Ontario Canada M9B 6C7
(416) 239-7111

ERCO Worldwide (USA) Inc.
101 Highway 73 South
Nekoosa, Wisconsin 54457
(715) 887-4000

Transportation Emergency Telephone Numbers :
USA: 1-800-424-9300
CHEMTREC

CANADA: (613) 996-6666
CANUTEC

Emergency Information:

Call toll-free 24 hours a day:
866-855-6947

Canadian WHMIS Classification (s):

E - Corrosive

D1B- Very Toxic

2. Composition / Information On Ingredients

Name:	Conc. % By Weight	CAS No.
Potassium Hydroxide	50% or less	1310-58-3

3. Hazard Identification

Emergency Overview:
White to light grey, odorless, viscous liquid
DANGER Corrosive. Causes severe burns to skin, eyes and digestive tract.
Harmful if swallowed or inhaled.

Routes of Entry:

INHALATION
Breathing of mist is possible. Breathing this material is harmful and can cause death. Harmful effects include burns and permanent damage to the airways, including the nose, throat and lungs.

SKIN
Causes skin burns and permanent skin damage.

EYES
Causes burns and permanent injury to eye tissue. Can cause blindness.

INGESTION
Swallowing this material may be harmful or cause death. Harful effects include burns and permanent damage to the digestive tract, including the mouth, throat, stomach and intestines. Symptoms may include severe abdominal pain and vomiting of blood. Blood loss throughdamaged tissue can lead to low blood pressure and shock.

Symptoms of Exposure:
Depending upon level and duration of exposure, other possible signs and symptoms from breathing, swallowing, and contact of this material with the skin may include: irritation of the nose, throat, airways, and lungs with cough, sneezing, perforation of the nasal septum, and blindness.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Preexisting disorders of the following organs or systems which may be aggravated by exposure to this material (or a component) include: respiratory system (includining asthma and other breathing disorders), and eyes.

EFFECTS FOLLOWING REPEATED EXPOSURE
This material may cause the following effects: eye damage, blindness, respiratory tract damage (nose, throat, airways) lung damage, skin damage, and gastrointestinal tract damage.

4. First Aid Measures

Skin:
Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get immediate medical attention. Wash clothing before reuse and throw away shoes which cannot be thoroughly cleaned.

Eyes:
Hold the eyelids apart and flush the eye gently with a large amount of water for at least 15 minutes. Get immediate medical attention. Washing eyes within several seconds of contact is necessary.

Inhalation:
Remove individual to fresh air and get immediate medical attention. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration.

Ingestion:

Have person drink a glass of water immediately if able to swallow. Get medical attention immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIAN
Probable mucosal damage may contraindicate the use of gastric lavage.

5. Fire-Fighting Measures

Conditions Of Flammability:
Not combustible, however the product can react with metals such as aluminum, tin, zinc to form flammable and explosive hydrogen gas (see Reactivity Section 10)

Means To Extinguish:
Use an extinguisher appropriate for the surrounding fire.

FIRE FIGHTING INSTRUCTIONS
Approach fire from upwind to avoid hazardous vapors. Use flooding quantities of water as fog or spray to keep fire-exposed containers cool.

Firefighters should wear self-contained positive pressure breathing apparatus, and avoid skin contact. (see Reactivity Section 10).

Hazardous Combustion Products:
None

Flash Point & Method: Not applicable
Upper Flammability Limit: Not applicable
Lower Flammability Limit: Not applicable
Auto-Ignition Temperature: Not applicable
Mechanical Impact Sensitivity: Not sensitive
Static Discharge Sensitivity: Not applicable

6. Accidental Release Measures

Leak Or Spill Procedures:
Cleanup personnel must wear proper protective equipment (refer to Section 8). Completely contain spilled material with dikes, sandbags, etc., and prevent run-off into ground or surface waters or sewers. Recover as much material as possible into containers for disposal. Remaining material may be neutralized with dilute hydrochloric or acetic acid. Neutralization products, both liquid and solid, must be recovered for disposal. Reportable Quantity (RQ) is 1000 lbs. Notify National Response Center (800/424-8802) of uncontained releases to the environment in excess of the RQ.

Waste Control Procedures:
All disposals of this material must be done in accordance with Federal, state and local regulations. Waste characterization and compliance with disposal regulations are the responsibilities of the waste generator.

SPILL RESIDUES
Recovered solids or liquids may be sent to a licensed reclaimer or disposed of in a permitted waste management facility. Consult Federal, state, or local disposal authorities for approved procedures. Do not dump into any sewers, on the ground, or into any body of water.

7. Handling Storage

Handling Procedures And Equipment:
Do not get in eyes, on skin or on clothing. Avoid breathing mist. Do not taste or swallow. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom. Any protective clothing or shoes which become contaminated with caustic potash should be removed immediately and thoroughly laundered before any reuse.

Follow protective controls set forth in Section 8 when handling this product.

When diluting with water, slowly add caustic potash solution to cold water with mixing. Heat will be produced during dilution. Full protective clothing, goggles and faceshield should be worn. Do not add large quantities of water to caustic potash because excessive heat formation will cause boiling and spattering.

Storage:
Store in closed, properly labeled tanks or containers. Do not remove or deface labels or tags. Contact of caustic potash cleaning solutions with food and beverage products (in enclosed vessels or spaces) can produce lethal concentrations of carbon monoxide gas. Do not enter confined spaces such as tanks or pits without following proper entry procedures as required by 29 CFR 1910.146.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT
Aluminum equipment should not be used for storage and/or transfer.

8. Exposures Controls / Personal Protection

Protective Equipment:
EYE AND FACE PROTECTION
Wear chemical goggles. A face shield should be worn in addition to goggles where splashing or spraying is possible.

SKIN PROTECTION
Wear chemical resistant clothing, boots, and gloves, which are made of neoprene, PVC, or rubber. Always place pants legs over boots.

RESPIRATORY PROTECTION
Where concentrations exceed or are likely to exceed 2 mg/m3 use a NIOSH approved high-efficiency particulate filter with full face piece or self-contained breathing apparatus. Follow any applicable respirator use standards and regulations.

GENERAL
Safety shower and eyewash station must be provided in the immediate work area. Protective equipment and clothing should be selected, used, and maintained according to applicable standards and regulations. For further information, contact the clothing or equipment manufacturer.

Engineering Controls:
VENTILATION
As necessary to maintain concentration in air below 2 mg/m3 at all times. To determine the exposure level(s), monitoring should be performed regularly.

9. Physical And Chemical Properties

State: Viscous liquid
Odour: Odorless
Odour Threshold: Not applicable
Boiling Point: 45% Solution: 270°F (132.2°C)
50% Solution: 290°F (143.4°C)
Melting Point:
Freezing Point: 45% Solution: -20°F (-29°C)
50 % Solution: -45°F (-43°C)
pH: 0.1M Solution: 13.5 pH
Coefficient Of Water/Oil Distribution: Not available
Appearance: Clear to white/light gray

Specific Gravity: 45% Solution: 1.457 @ 60/60°F
50% Solution: 1.516 @ 60/60°F
Vapour Pressure: 45% Solution: 39 mm Hg at 140°F (60°C) 50% Solution: 27 mm Hg at 140°F (60°C)
Vapour Density: N/A
Evaporation Rate: Not applicable
Solubility In Water: 100%:
Bulk Density: Not applicable

10. Stability And Reactivity

Chemical Stability:
Normally Stable. Absorbs carbon dioxide from the air to form potassium carbonate

Reactivity Conditions:
Mixture with water, acid or incompatible materials can cause splattering and release of large amounts of heat (Refer to Section 8). Will react with some metals, such as aluminum, tin and zinc, forming flammable hydrogen gas.

Incompatible Substances:
Reacts vigorously or violently with many organic and inorganic chemicals such as: acids, acrolein, acrylonitrile, chlorinated hydrocarbons (e.g. 1,2 dichloroethylene, trichloroethylene), chlorine dioxide, maleic anhydride, nitroethane, nitroparaffins, 2-nitrophenol, nitropropane, phosphorus, potassium persulfate, and tetrahydrofuran (containing peroxides). Will react with aluminum, tin, zinc or sodium borohydride forming hydrogen.

Hazardous Decomposition Products:
Will not decompose.

11. Toxicological Information

Skin Contact: Major potential hazard - contact with the skin can cause severe burns with deep ulcerations. Contact with solution or mist can cause multiple burns with temporary loss of hair at burn site. Solutions may not cause immediate pain or irritation upon skin contact. Prolonged or repeated contact with dilute solutions may cause drying and cracking of skin and possible skin damage.

Skin Absorption: It can penetrate to deeper layers of skin and corrosion will continue until removed. The severity of injury depends on the concentration and the duration of exposure.

Eye Contact: Major potential hazard – Liquid in the eye can cause severe destruction and blindness. These effects can occur rapidly affecting all parts of the eye. Mist or dust can cause irritation with high concentrations causing destructive burns.

Inhalation: By analogy with sodium hydroxide, inhalation of solution mist is expected to cause mild irritation at 2 mg/m3. More severe burns and tissue damage in the upper respiratory tract can occur at higher concentrations. Pneumonitis can result from severe exposures.

Ingestion: Ingestion of potassium hydroxide can cause severe burning and pain in lips, mouth, tongue, throat and stomach. Severe scarring of the throat can occur after swallowing. Death can result from ingestion.

LD_{50}: Oral LD50: 273 mg/kg (rat)

LC_{50}: LC50 (24 Hours, static) for fresh water Mosquito Fish: 80.0 mg/L

Exposure Limits: Permissable Exposure Limits (OSHA) not yet established.
Ceiling Exposure Limit (ACGIH 2005): 2 mg/m^3

Irritancy: A study with a 10% solution showed severe tissue damage when applied to skin for 4 hours.

Sensitization: Not available

Carcinogenicity: One study was identified relative to potassium hydroxide and carcinogenicity. Mice painted with a 3 to 6% aqueous potassium hydroxide solution for 46 weeks developed skin tumors. This study was conducted in 1925 and the adequacy of the test and its design are unknown. No conclusions can be drawn from this study Potassium hydroxide is not listed on the IARC, OSHA or NTP carcinogen lists.

Teratogenicity & Mutagenicity: Not available

Reproductive Toxicology: Not available

Toxicological Synergism: Not available

12. Ecological Information

Ecological Information:
No data available

Biodegradability:
Not biodegradable

Aquatic Toxicity:
May cause shifts in water pH outside the range of pH 5 -10. This change may be toxic to aquatic organisms.

13. Disposal Considerations

Disposal Considerations:
Consider recycle or re-use where possible. Do not discharge to sewers or any body of water. Disposal must be in compliance with Federal, State/Provincial and local regulations.

14. Transportation Information

Shipping Name (TDGR)	UN Number	Hazard Class	Packing Group
Potassium Hydroxide, Solution	UN 1814	8	II

15. Regulatory Information

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR .

Safety:
U S FEDERAL REGULATIONS

OSHA Hazard Communication Evaluation :
Meets criteria for hazardous material, as defined by 29 CFR 1910.1200.

CANADA

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) CLASSIFICATION
WHMIS Classifications applicable to this product:

WHMIS Classification:
D1B - Poisonous and infectious material - Immediate and serious effects - Toxic
E - Corrosive material

HAZARDOUS PRODUCTS ACT
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR).

Environmental:
U S FEDERAL REGULATIONS
REPORTABLE QUANTITY (RQ)
Reportable Quantity (RQ) is 1000 lbs.

TOXIC SUBSTANCES CONTROL ACT
Listed on TSCA Inventory

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III
Components identified with an asterisk (*) in Section 2 are subject to the reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372.

CANADA

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)
All components of this product are on the Domestic Substances List (DSL).

Transportation:
Refer to Section 14.

16. Other Information

NFPA RATINGS
Health 3, Flammability 0, Instability 1

Prepared By:
ERCO Worldwide, A division of Superior Plus LP
Toronto, ON
416-239-7111

Summary of Changes Made in this Revision :
Review of new information: no significant changes to sections 1,2,5,6,9,10,11,12,13.