Material Safety Data Sheet (MSDS)

1. Chemical substance and company information

Product name: CLEARCUT-P (High-purity liquid potassium hydroxide)
Company: Tsurumi Soda Co., Ltd.
Address: 1-7 Suehiro-cho, Tsurumi-ku, Yokohama
Responsible department: Tsurumi Soda Co., Ltd. sales department
Address: Tanaka-Tamuracho Bldg., 2-12-15 Shimbashi, Minato-ku, Tokyo
Phone: 03-3503-0856; Fax: 03-3503-4595
Emergency contact: Factory headquarters, Tel: 045-503-7326
Reference number: L-B-03
Drafted: 14 February 2001
Revised: 31 July 2006

2. Composition and constituents

Chemical name: Potassium hydroxide
Constituents and quantities: Potassium hydroxide 10–50%
Chemical formula or structural formula: KOH
Reference number in Japanese gazette: JCSCL existing chemical substance 1-369; Not listed in ISHL
TSCA: Listed
EINECS: 215-181-3
CAS No.: 1310-58-3
PRTR Law: Not applicable

3. Summary of hazards and toxicity

Name of classification: Acutely toxic substances, corrosive substances
Hazards: Corrodes metals such as aluminum, tin and zinc to produce hydrogen gas.
Toxicity: (1) Causes proteins to break down, and may gradually penetrate into organic tissue unless all traces are removed, In particular, can cause impaired vision or blindness if it enters the eye.
Toxicity: (2) Even in dilute solutions, repeated contact can lead to various kinds of infiltration into the surface of the skin, resulting in chronic eczema symptoms or dermatitis by direct irritation.
Toxicity: (3) When highly concentrated, cases acute localized corrosion.
Toxicity: (4) Inhalation of mist can cause symptoms of irritation in the airways.
Toxicity: (5) Accidental swallowing causes inflammation of the mouth, throat, esophagus, stomach, etc.
Environmental effects: This substance is a strong alkali which reacts with the dissolved components of sea water to form a milky precipitate; it also has serious effects on all living organisms, so its release into natural habitats is strictly prohibited.

4. First aid measures

Contact with eyes: Immediately flush eyes with large amounts of tap water for at least 15 minutes, and seek prompt attention from an ophthalmologist.
Contact with skin: Immediately rinse the parts that were splashed by or came into contact with the material using large amounts of water. Remove contaminated clothing and footwear, and seek prompt medical attention. Unless directed to do so by a doctor, do not apply oils or other preparations to the affected area.

Inhalation: If the patient has inhaled fine particles or a mist, immediately wrap the patient in a blanket, calm the patient down, and move the patient to a place of fresh air. If possible, apply an oxygen mask. Seek prompt medical attention.

Ingestion: Under no circumstances should you attempt to induce vomiting, as the stomach wall may have been weakened and be liable to rupture. Make the patient drink as much water as possible, and seek immediate medical attention.

5. Fire procedure (in the event of a fire in the vicinity)

Fire extinguishing method: Not flammable

(If there is a fire in the vicinity): Immediately move the container to a safe place. If this is not possible, spray the container and its surrounding area with water to keep it cool and prevent the container from rupturing.

6. Leakage procedure

This material is highly corrosive, so protective gear must always be worn when working with this material. If necessary, cordon off the location of the leak to prevent people from entering.

(If the leak is small): Use large amounts of water to fully dilute the leaked liquid and wash it away.

(If the leak is large): Use earth and sand or the like to stop the escaped liquid flowing, and use earth and sand or the like to absorb the liquid; or alternatively, guide the leaked liquid to a safe place and wash it out with large amounts of water. If necessary, perform additional neutralization and wash using large amounts of water. In such cases, take care to ensure that concentrated run-off is not discharged into waterways.

7. Handling and storage precautions

Handling: Corrodes metals such as aluminum, tin and zinc to produce hydrogen gas, which can mix with the air to form a flammable explosive gas.

Storage: The storage must conform to the standards laid down by the Poisonous and Deleterious Substances Control Law with regard to structures and facilities used for storage. These standards include the following important points:

(Tanks): Provide a liquid level gauge to prevent overflows. The maximum quantity of liquid stored should be 95% of the total capacity available for storage.

(Liquid barrier wall): Capacity should be equivalent to 100% of the tank capacity, and if there are two or more tanks, it should be equivalent to 100% of the capacity of the largest tank.

(Inlet): Connection with lorry hoses and the like should be made with a flange connection or screw connection or the like. Provide face-washing and hand-washing facilities close to places where the material is stored and used.

8. Explosion prevention and protective measures

Administrative concentration: Not set

Permitted concentration: Japan Association of Industrial Health (2005 edition): 2 mg/m^3; ACGIH (2004 edition): TLV-STEL C 2 mg/m^3; (OSHA (1993 edition) PEL-TWA: 2 mg/m^3)

Facility measures: Ventilation, local exhaust

Protective gear

Protective eyewear: Goggles, face shield

Protective gloves: Rubber gloves

Protective clothing: Rubber boots, protective clothing, headgear (made with cotton or synthetic fibers. Wool is broken down by potassium hydroxide.)

9. Physical and chemical properties

Appearance: Colorless or gray odorless liquid exhibiting strong alkalinity; may solidify depending on concentration and temperature.
Boiling point: 140°C
Solidification point: −3°C (48%)
Specific gravity: 1.50 (48%; 20°C)
Solubility: Dissolves in water

10. Stability and reactivity

Flammable: Not flammable
Combustible: No
Stability/reactivity: Generates heat of solution when diluted with water.

11. Toxicity information (including information on human cases and epidemiology)

Caustic action on skin: Strongly alkaline and highly caustic
Irritation: Skin irritation — strong irritation in rabbits at 500 mg/24 hours; Eye irritation — strong irritation in rabbits at 50 μg/24 hours
Acute toxicity: Oral (rabbits) LD_{50} 500 mg/kg; Oral (mice) LD_{50} 40 mg/kg

12. Environmental effects

Aquatic toxicity: *Gambusia*	TLm 96 hr 125 ppm
Blue gills	TLm 48 hr 42 ppm
Gambusia affinis	TLm 24 hr 125 ppm
Lepomis macrochirus	TLm 96 hr 9.9 ppm

13. Disposal precautions

Add water to obtain a dilute solution and neutralize with an acid (e.g., dilute hydrochloric acid or dilute sulfuric acid), then treat by diluting with large amounts of water. Waste alkali is designated as a specially-controlled industrial waste, so its collection, transportation and disposal must be performed according to prescribed standards.

14. Transportation precautions

The container must comply with the standards for containers used for transportation of poisonous and deleterious substances stipulated by the Poisonous and Deleterious Substances Control Law.
The container must be labeled “Not for medical use”, “Hazardous (red characters on a white background)”, and must indicate the names and quantities of each constituent (and if the substance is to be sold in this container, it must also show the manufacturer’s name and address).
According to regulations for the shipping and storage of dangerous substances, it is the responsibility of the consignor when transporting hydrochloric acid by ship or the responsibility of the storage consignor when storing chlorine on a storage ship to affix and display a regular diamond-shaped label with sides of length 10 cm to the container packaging bearing the words “腐食性物質 Corrosive” with the Japanese on top and the English below.
When the material is transported in bottles or 18 L canisters, these must be placed in wooden boxes or crates packed with suitable padding material.
UN hazard class: 8 (corrosive substance)
UN identification number: 1814

15. Applicable laws and ordinances

No.	Law	Legal classification	Applicable conditions
1	Industrial Safety and Health Law	Hazardous materials requiring notification (Law article 57-2, enforcement ordinance article 18-2, annex table no. 9) (315: potassium hydroxide)	In formulations and other products with a content of more than 1 wt% (Regulations annex table 9, no. 632, article 34-2-2)
2		Corrosive liquid (Industrial safety and health regulations, article 326) (caustic potash solution)	
3	Poisonous and Deleterious Substances Control Law	Deleterious substance (Law article 2 annex table no. 2) (53: potassium hydroxide)	Raw material (pure substance for industrial use)
4		Deleterious substance (specific order article 2) (65: potassium hydroxide)	Preparations containing this substance, except those with a content of 5% or less
5	Civil Aeronautics Law	Corrosive substance (enforcement regulations article 194, dangerous substances bulletin, annex table no. 1) (8: potassium hydroxide)	Solid
6		Corrosive substance (enforcement regulations article 194, dangerous substances bulletin, annex table no. 1) (8: potassium hydroxide)	Liquid
7	Ship Safety Law	Corrosive substance (Regulations for the Carriage and Storage of Dangerous Goods in Ships articles 2 & 3, dangerous substances bulletin annex table no. 1) (UN identification number: 1813 potassium hydroxide)	Solid
8		Corrosive substance (Regulations for the Carriage and Storage of Dangerous Goods in Ships articles 2 & 3, dangerous substances bulletin annex table no. 1) (UN identification number: 1814 potassium hydroxide)	Aqueous solution
9	Law Relating to the Prevention of Marine Pollution and Maritime Disaster	Hazardous liquid substance (type C substance) (enforcement ordinance annex table no. 1) (83: potassium hydroxide solution)	
10	Port Regulations Law	Dangerous substance / corrosive substance (Law article 21-2, regulations article 12, 1979 bulletin 547, annex table (iv)(ii)) (caustic potash)	Except for aqueous solutions, critical regulations, and packing group 3
11	Road Law	Vehicle passage restrictions (enforcement ordinance article 19-13, Japan Highway Public Corporation notice) (Annex table 2-3, caustic potash)	Preparations containing this substance (except those with a content of 5% or less), liquids
12	Labor Standards Law	Disease-inducing chemical substance (law article 75, paragraph 2, enforcement regulations article 35 / annex table no. 1-2, no. 4-1 / 1978 labor report no. 36) (potassium hydroxide)	

16. Other information (contact for further information, cited sources, etc.)

Contact for further information: Tsurumi Soda Co., Ltd. sales department
Tel: 03-3503-0856; Fax: 03-3503-4595

Note:
This document is based on materials, information and date available at the time of preparation, but the accuracy or safety of this information cannot be guaranteed.
The precautions in this document relate to normal handling conditions. Additional safety measures should be drawn up and implemented for special handling situations and for new applications and modes of use.