

OHS19431

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MDL INFORMATION SYSTEMS, INC.
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EMERGENCY TELEPHONE NUMBER:
1-800-424-9300 (NORTH AMERICA)
1-703-527-3887 (INTERNATIONAL)

SUBSTANCE: POTASSIUM HYDROXIDE

TRADE NAMES/SYNONYMS:

POTASSIUM HYDRATE; POTASSIUM HYDROXIDE, DRY SOLID, FLAKE, BEAD OR GRANULAR;
POTASSA; CAUSTIC POTASH; POTASSIUM HYDROXIDE (DRY SOLID, FLAKE, BEAD OR
GRANULAR); UN 1813; HKO; OHS19431; RTECS TT2100000

CHEMICAL FAMILY: inorganic bases

CREATION DATE: Dec 31 1984

REVISION DATE: Mar 18 2002

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: POTASSIUM HYDROXIDE
CAS NUMBER: 1310-58-3
EC NUMBER (EINECS): 215-181-3
PERCENTAGE: >85

COMPONENT: WATER
CAS NUMBER: 7732-18-5
EC NUMBER (EINECS): 231-791-2
PERCENTAGE: <15

SECTION 3 HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=1

EMERGENCY OVERVIEW:

CHANGE IN APPEARANCE: deliquescent
COLOR: white to yellow
PHYSICAL FORM: crystals, pellets, flakes, rods
ODOR: odorless

MAJOR HEALTH HAZARDS: harmful if swallowed, respiratory tract burns, skin burns, eye burns, mucous membrane burns

PHYSICAL HAZARDS: May react on contact with water.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

SKIN CONTACT:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

EYE CONTACT:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

INGESTION:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

CARCINOGEN STATUS:

OSHA: No

NTP: No

IARC: No

SECTION 4 FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: DO NOT induce vomiting. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. For ingestion, consider esophagoscopy. Avoid gastric lavage.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk.

Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks.

SECTION 6 ACCIDENTAL RELEASE MEASURES

AIR RELEASE:

Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.

SOIL RELEASE:

Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers. Dike for later disposal. Absorb with sand or other non-combustible material. Add dilute acid.

WATER RELEASE:

Add dilute acid.

OCCUPATIONAL RELEASE:

Do not touch spilled material. Stop leak if possible without personal risk.

Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Small dry spills: Move containers away from spill to a safe area. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry.

Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

SECTION 7 HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store in a cool, dry place. Avoid contact with water or moisture. Keep separated from incompatible substances.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

POTASSIUM HYDROXIDE:

- 2 mg/m3 OSHA ceiling (vacated by 58 FR 35338, June 30, 1993)
- 2 mg/m3 ACGIH ceiling
- 2 mg/m3 NIOSH recommended TWA 10 hour(s)
- 2 mg/m3 UK OES STEL

MEASUREMENT METHOD: Particulate filter; Hydrochloric acid; Titrate; NIOSH IV # 7401, Alkaline Dusts

VENTILATION: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any dust and mist respirator with a full facepiece.

Any air-purifying respirator with a full facepiece and a high-efficiency particulate filter.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: solid

COLOR: white to yellow

CHANGE IN APPEARANCE: deliquescent

PHYSICAL FORM: crystals, pellets, flakes, rods

ODOR: odorless

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MOLECULAR WEIGHT: 56.11
MOLECULAR FORMULA: K-O-H
BOILING POINT: 2408 F (1320 C)
MELTING POINT: 680 F (360 C)
VAPOR PRESSURE: 1 mmHg @ 719 C
VAPOR DENSITY: Not applicable
SPECIFIC GRAVITY (water=1): 2.044
WATER SOLUBILITY: 107% (reacts)
PH: 13.5 (0.1 M solution)
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: glycerol
Slightly Soluble: ether
Insoluble: ammonia

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: May react with evolution of heat on contact with water.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition.
Dangerous gases may accumulate in confined spaces. May ignite or explode on contact with combustible materials.

INCOMPATIBILITIES: acids, combustible materials, metals, halo carbons, oxidizing materials, metal salts, reducing agents

POTASSIUM HYDROXIDE:

ACETIC ACID: Reacts violently.

ACIDS: Violent reaction.

ACROLEIN: Violent polymerization.

ACRYLONITRILE: Violent polymerization.

ALCOHOLS: Dissolves exothermically.

ALUMINUM: Corrosive in the presence of moisture.

AMMONIUM HEXACHLOROPLATINATE: Formation of explosive product.

AMMONIUM SALTS: Evolution of ammonia gas.

BENZOYL CHLORIDE + SODIUM AZIDE: Violent exothermic reaction.

P-BIS(1,2-DIBROMOETHYL)BENZENE: Highly exothermic reaction.

BROMOFORM: Violent, exothermic reaction.

BROMOFORM + CYCLIC POLYETHYLENE OXIDES: Possible explosive reaction.

CALCIUM CARBIDE + CHLORINE: Formation of explosive dichloroacetylene.

CHLORINE: Explosive reaction.

CHLORINE DIOXIDE: Explosion on contact.

CHLORINE + HYDROGEN PEROXIDE: Produces red luminescence during reaction.

CHLOROFORM + METHANOL: Intense exothermic reaction.
CYCLOPENTADIENE: Vigorous exothermic resin formation.
1,2-DICHLOROETHYLENE: Formation of explosive and spontaneously flammable chloroacetylene.
GERMANIUM: Incandescent reaction.
GLASS: Slowly attacked.
HYDROCARBONS (HALOGENATED): Violent reaction.
HYPONITROUS ACID: Ignition reaction.
LEAD: Corrosive in the presence of moisture.
MALEIC ANHYDRIDE: Decomposes exothermically or explosively.
METALS: Corrosive reaction with formation of flammable hydrogen gas.
N-METHYL-N-NITROSOUREA + METHYLENE CHLORIDE: Explosive reaction.
NITRIC TRICHLORIDE: Explosive reaction.
NITROALKANES: Formation of explosive salts.
NITROBENZENE + METHANOL (TRACE): Violent, exothermic reaction.
NITROETHANE: Formation of explosive salt.
NITROGEN TRICHLORIDE: Explosive reaction.
NITROMETHANE: Formation of explosive salt.
O-NITROPHENOL (MOLTEN): Reacts violently.
NITROPROPANE: Formation of explosive salt.
N-NITROSOMETHYLUREA + N-BUTYL ETHER: Formation of explosive compound.
PHOSPHORUS: Evolution of flammable phosphine.
POTASSIUM PEROXODISULFATE: Ignition reaction.
POTASSIUM PERSULFATE + WATER: Exothermic reaction.
SUGARS: Evolve carbon monoxide at or above 84 C.
TETRACHLOROETHANE: Formation of flammable chloroacetylene gas.
2,2,3,3-TETRAFLUOROPROPANOL: Exothermic reaction.
TETRAHYDROFURAN (PEROXIDISED): Possible explosive reaction.
THORIUM DICARBIDE: Incandescent reaction on heating.
TIN: Corrosive in the presence of moisture.
TRICHLOROETHYLENE: Formation of explosive dichloroacetylene on heating.
2,4,6-TRINITROTOLUENE + METHANOL: Formation of explosive product.
ZINC: Corrosive in the presence of moisture.

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: oxides of potassium

POLYMERIZATION: Will not polymerize.

SECTION 11 TOXICOLOGICAL INFORMATION

POTASSIUM HYDROXIDE:

IRRITATION DATA:

50 mg/24 hour(s) skin-human severe; 50 mg/24 hour(s) skin-rabbit severe; 1 mg/24 hour(s) rinsed eyes-rabbit moderate; 50 mg/24 hour(s) skin-guinea pig severe

TOXICITY DATA:

273 mg/kg oral-rat LD50

LOCAL EFFECTS:

Corrosive: inhalation, skin, eye, ingestion

ACUTE TOXICITY LEVEL:

Toxic: ingestion

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: eye disorders, skin disorders and allergies

MUTAGENIC DATA:

cytogenetic analysis - rat Ascites tumor 1800 mg/kg; cytogenetic analysis - hamster ovary 12 mmol/L

HEALTH EFFECTS:

INHALATION:

ACUTE EXPOSURE:

POTASSIUM HYDROXIDE: Inhalation of dust or mist may cause symptoms of respiratory tract irritation possibly including coughing, choking, pain in the nose, mouth, and throat, lesions of the nasal septum, and burns of the mucous membranes. If sufficient quantities are inhaled, pulmonary edema may develop, often with a latent period of 5-72 hours. The symptoms may include tightness in the chest, dyspnea, frothy sputum, cyanosis, and dizziness. Physical findings may include weak, rapid pulse, hypotension, hemoconcentration, and moist rales.

CHRONIC EXPOSURE:

POTASSIUM HYDROXIDE: Depending on the concentration and duration of exposure, repeated or prolonged exposure to corrosive substances may cause inflammatory and ulcerative changes in the mouth and possibly bronchial and gastrointestinal disturbances.

SKIN CONTACT:

ACUTE EXPOSURE:

POTASSIUM HYDROXIDE: Direct contact may cause severe pain, burns, and possibly brownish stains. The corroded areas are soft, gelatinous and necrotic, and the tissue destruction may be deep.

CHRONIC EXPOSURE:

POTASSIUM HYDROXIDE: Repeated or prolonged contact may cause dermatitis or effects similar to acute exposure. Frequent applications of aqueous solutions (3-6 percent) of potassium hydroxide to the skin of mice for 46 weeks produced tumors identical to those from coal tar; warts occurred first and then skin tumors developed.

EYE CONTACT:

ACUTE EXPOSURE:

POTASSIUM HYDROXIDE: Direct contact with solid or solutions may cause pain and burns, possibly severe. The degree of injury depends on the concentration and duration of contact. There may be edema, destruction of

epithelium, corneal opacification, and iritis. When damage is less than excessive, these symptoms tend to ameliorate. In severe burns, the full extent of the injury may not be immediately apparent. Late complications may include persistent edema, vascularization, and scarring of the cornea, permanent opacity, staphyloma, cataract, and symblepharon.

CHRONIC EXPOSURE:

POTASSIUM HYDROXIDE: Effects depend on concentration and duration of exposure. Repeated or prolonged exposure to vapors and/or fumes may result in conjunctivitis or effects as in acute exposure.

INGESTION:

ACUTE EXPOSURE:

POTASSIUM HYDROXIDE: Ingestion of 273 mg/kg of potassium hydroxide was lethal to rats tested. Ingestion of strong alkalis may be followed by severe pain, vomiting, diarrhea, and collapse. The vomitus contains blood and desquamated mucosal lining. If death does not occur in the first 24 hours, the patient may improve for 2-4 days and then have a sudden onset of severe abdominal pain, boardlike abdominal rigidity, and rapid fall of blood pressure indicating delayed gastric or esophageal perforation. Damage to the esophagus and stomach after ingestion may progress for 2-3 weeks. Death from peritonitis may occur as late as 1 month after ingestion. Even though the patient recovers from the immediate damage, esophageal stricture may occur weeks, months or even years later to make swallowing difficult.

CHRONIC EXPOSURE:

POTASSIUM HYDROXIDE: Depending on the concentration, repeated ingestion may cause effects as with acute ingestion.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: 165000 ug/L 24 hour(s) LC50 (Mortality) Guppy (*Poecilia reticulata*)

INVERTEBRATE TOXICITY: 600 ug/L 21 hour(s) MATC (Reproduction) Water flea (*Daphnia magna*)

SECTION 13 DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

SECTION 14 TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Potassium hydroxide, solid
ID NUMBER: UN1813
HAZARD CLASS OR DIVISION: 8
PACKING GROUP: II

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR/RID:

PROPER SHIPPING NAME: Potassium hydroxide, solid
UN NUMBER: UN1813
ADR/RID CLASS: 8
CLASSIFICATION CODE: C6
PACKING GROUP: II

AIR TRANSPORT IATA/ICAO:

PROPER SHIPPING NAME: Potassium hydroxide, solid
UN/ID NUMBER: UN1813
IATA/ICAO CLASS: 8
PACKING GROUP: II

MARITIME TRANSPORT IMDG:

PROPER SHIPPING NAME: Potassium hydroxide, solid
UN NUMBER: UN1813
IMDG CLASS: 8
PACKING GROUP: II

SECTION 15 REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
POTASSIUM HYDROXIDE: 1000 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: No
FIRE: No

REACTIVE: Yes
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:

EC CLASSIFICATION (ASSIGNED):

Xn Harmful
C Corrosive

EC Classification may be inconsistent with independently-researched data.

DANGER/HAZARD SYMBOL:

C Corrosive

EC RISK AND SAFETY PHRASES:

R 22 Harmful if swallowed.
R 35 Causes severe burns.

S 1/2 Keep locked-up and out of reach of children.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

CONCENTRATION LIMITS:

C >= 25%	C	R 22-35
5% <= C < 25%	C	R 35
2% <= C < 5%	C	R 34
0.5% <= C < 2%	Xi	R 36/38

GERMAN REGULATIONS:

WATER HAZARD CLASS (WGK):

STATE OF CLASSIFICATION: VwVwS

CLASSIFICATION UNDER HAZARD TO WATER: 1

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

SECTION 16 OTHER INFORMATION

MSDS SUMMARY OF CHANGES

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION
SECTION 3 HAZARDS IDENTIFICATION
SECTION 6 ACCIDENTAL RELEASE MEASURES
SECTION 7 HANDLING AND STORAGE

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