



Distributed By:



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Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product/Trade name, Synonym: Potassium Hydroxide, Caustic Potash, KOH
General features: As a colorless and odorless solid having deliquescence, it easily absorbs moisture and carbon dioxide in the air.
Harmful classification: Corrosive substance
Use: Additive of food, raw materials for an organic compound
Company Information: APAC Chemical Corporation
150 N. Santa Anita Ave. Suite 850
Arcadia, CA 91006

Emergency telephone: CHEMTREC (800) 424-9300

Non-Emergency telephone: (866) 849-2722

2. HAZARDS IDENTIFICATION

1. GHS Classification

Physical Hazards: Corrosive to Metals Cat. 1
Health Hazards: Acute toxicity Cat. 4(Oral)
Skin Corrosion/ irritation Cat. 1
Environmental Hazards:

2. GHS label elements, including precautionary statements

1) Hazard symbols



2) Signal word: **DANGER**

3) Hazard statement

- H290 May be corrosive to metals
- H302 Harmful if swallowed

- H314 Causes severe skin burns and eye damage
- 4) Precautionary statement
- Prevention:
- P234 Keep only in original container
 - P264 Wash Hands Thoroughly after handling
 - P279 Do not eat, drink or smoke when using this product
 - P260 Do not breathe dust/fume/gas/mist/vapors/spray
 - P280 Wear protective gloves/protective clothing/eye protection/face protection
- Response:
- P390 Absorb spillage to prevent material damage
 - P301+312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 - P330 Rinse mouth
 - P301+P361+P353 If on Skin (or hair): Rinse skin with water/ shower
 - P363 Wash contaminated clothing before reuse
 - P310 Immediately call a POISON CENTER or doctor/ physician
 - P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- Storage:
- P406 Store in corrosive resistant/ container with a resistant inner liner
 - P405 Store locked up
- Disposal:
- P501 Dispose of contents/ container in accordance with local/ regional/ national/ international regulation
3. Other hazards which do not result in classification:
- Skin exposure may cause serious damage
 - Exposure to dust or mist may cause nasal septum disorder
 - Eye contact may cause conjunctiva edema and corneal destruction
 - Inhalation may cause severe pain in the upper respiratory tract
 - Ingestion may cause vomiting, diarrhea and burning pain in the throat and mouth
 - Severe exposure may cause pneumonia, circulatory failure and peritonitis
 - NFPA Grade (0-4 level): Health – 3, Flammability – 0, Reactivity - 1

3. NAME / COMPOSITION OF COMPONENTS

Chemical name (Contents %): Potassium Hydroxide 90-95%
 Another name (Contents %): Caustic Potash
 Identification number: CAS number 1310-58-3
 UN number 1813
 RTECS TT2100000

4. FIRST AID MEASURES

- If in eyes: Immediately flush with plenty of water for at least 15 minutes. Remove contact lenses. Get immediate medical attention. If the physician is not immediately available, eye irrigation should be continued for an additional 15 minutes. If it is necessary to transport the patient to a physician and the eye needs to be bandaged, use a dry sterile cloth pad and cover both eyes.
- If on skin: Immediately wipe excess material off skin with a dry cloth; then wash skin with plenty of soap and water for at least 15 minutes. Seek medical

attention. Remove contaminated clothing and shoes while washing. Clean contaminated clothing and shoes before re-use or discard if they cannot be thoroughly cleaned.

- If inhaled: Remove victim from immediate source of exposure and assure that the victim is breathing. If breathing is difficult, administer oxygen, if available. If victim is not breathing, administer CPR (cardio-pulmonary resuscitation). Seek immediate medical attention.
- If swallowed: If victim is conscious and alert, give 2-3 glasses of water to drink and do not induce vomiting. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Vomiting may occur spontaneously. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

NOTES TO PHYSICIAN:

This material is white and odorless solid of a thin section (granular) type. If swallowed, it is harmful and causes a burn to mucous membrane, a respiratory organ, skin and eyes.

INHALATION:

Short term exposure: Burns

Additionally causes difficulty in breathing, low blood pressure, sleepiness, cyanoderma, and pulmonary congestion. Inhaling dust and mist induces cough, obstruction of airway, pain in nose, mouth and neck, diseases of nasal cavity diaphragm and burns of mucous membrane.

If enough amounts inhaled, lung edema will occur after latent period of 5-72 hours.

Symptoms such as pressure of the chest, difficulty breathing, cyanoderma, sleepiness, and so forth appear.

Symptoms may develop into fast and slow pulse, low blood pressure, blood concentration, wet rale.

Long term exposure:

In addition to short-term effects, causes indigestion.

Continuous and repetitive exposure according to exposure degree and time will cause inflammation and ulcer of mouth, disease of bronchus and gastrointestinal tract.

SKIN:

Short term exposure: Burns

Causes sever pain, burn and brown scar.

They decayed region becomes smooth and necrotized like gelatin.

Damage to the skin may be severe.

Long term exposure:

Shows same symptoms as those according to dermatitis and direct exposure.

Dermatitis was induced when the rat skin was in frequent contact with 3-6% of potassium hydroxide for 46 weeks.

EYES:

Short term exposure: Burns

Additionally causes damage to an eye.

Direct exposure to a solid or liquid may cause sever pain and burns.

Damage degree differs according to concentration and exposure time.

Causes edema, destruction of epithelial cell, turbidity of cornea and iritis.

As a complication, edema, vascularization, corneal cicatrix, loss of sight, staphyloma, a cataract, symblepharon appear.

Long term exposure:

Repetitive and continuous exposure to steam or dust causes conjunctivitis or short-term exposure symptoms.

INGESTION:

Short term exposure:

Cause burns, sever pain, vomiting diarrhea, stomachache, and symptom of collapse.

Sever stomachache indicating perforation of the stomach and esophagus, abdominal tetany and reduction of blood pressure

Fatal dose of a rat is 273 mg/kg.

Long term exposure:

May show the same symptom as short tem exposure.

Repetitive swallow which depends on concentration is similar to an acute symptom.

5. FIRE FIGHTING MEASURES

Flash point: N/A

Hazardous products of combustion: Pyrolysis product may contain fume of hazardous corrosive potassium oxide.

Extinguishing media: Powder extinguisher, carbon dioxide, water, general foam. Use minute water sprinkle, fog or regular foam in case of big fire.

Unusual fire and explosion hazards: Reacts with metals (aluminum, brass, copper, zinc, etc) to generate flammable hydrogen gas, which then may cause fire and explosion

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water with caution and in flooding amounts. Contact with moisture or water may generate sufficient heat to ignite nearby combustible materials.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

- Use personal protection recommended in section 8.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing
- Do not touch or walk through spilled material
- Isolate the site as a leak area by providing a azone that has an appropriate width to all directions
- Stop leak if you can do it without risk
- Keep unnecessary people away
- Isolate hazard area and deny entry
- Ventilate leak areas

Environmental precautions:

- Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains, and sewers
- If large spills, advise emergency services

Spills/leaks:

- Small spills: clean up all spills immediately. Avoid generating dust. For disposal of spilled material in appropriate containers collected and clear surface.
- Large spills: contain spill with sand, earth or vermiculite. Collect recoverable product into labeled containers for recycling. Neutralize/ decontaminate residue. Wash spill area with water. Prevent runoff into waterways, sewers, basements or confined spaces.

7. HANDLING AND STORAGE

Handling

- Avoid breathing dust and contact with the eyes and skin
- Wear appropriate personal protective equipment (see section 8)
- Use in a well-ventilated area
- Warning to avoid violent reaction. Always add material to water and never water to material
- Avoid contact with heat, open flames, sparks and other source of ignition
- Avoid contact with incompatible materials
- When handling do not eat, drink or smoke
- Keep containers securely sealed when not in use
- Wash hands with soap and water after handling
- Work clothes should be laundered separately. Launder contaminated clothing before re-use

Storage

- Store in original containers
- Keep containers securely sealed
- Store in a cool, dry, well-ventilated area
- Store away from incompatible materials and foodstuff containers
- Avoid contact with heat, open flames, sparks and other source of ignition
- Store away from water or moisture and store in dry area (strong hygroscopic property)
- Keep this product away from VOCs (volatile organic compounds) to prevent its discoloration

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

- Exposure limit under ISHL(KOREA) : TWA ($C2\text{mg}/\text{m}^3$), STEL (-)
- ACGIH limit : TLV 2 mg/m³ Ceiling
- Biological exposure limits : Not applicable

Engineering Controls

- The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in afumehood. Provide mechanical ventilation of confined spaces.

Personal Protective Equipment

1) Respiratory Protection :

- 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.
 - Dust, mist, fume-purifying respiratory protection
 - Any air-purifying respirator with a corpuscle filter of high efficiency
 - Any respiratory protection with a electromotion fan(for dust, mist, fume- purifying)
- For Unknown Concentration or Immediately Dangerous to Life or Health
 - Self-contained breathing apparatus(pressure-demand or other positive-pressure mode in combination)
 - Supplied-air respirator with full facepiece

- 2) Eye protection :
- Wear primary eye protection such as splash resistant safety goggles with a secondary protection faceshield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- 3) Hand protection : Wear appropriate protective gloves.
- 4) Body protection : Wear appropriate protective cloth.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical condition:	Solid
Shape:	Transparent through opaque shape
Odor:	Odorless
Mol. Wt.:	56.11
Molecular formula:	KOH
Vapor density:	N/A
Vapor pressure:	1 mm Hg at 719°C
Density:	Unknown
Evaporation rate:	N/A
Boiling point:	1320°C (@101 Kpa)
Melting point:	380°C
pH:	13.5 (0.1 M solution)
Solubility:	Soluble 112g/100ml @20°C (water) soluble: Ethanol
Solvent solubility:	Soluble in alcohol and glycerin

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

1. Stability
 - This material is stable under recommended storage at normal temperature and pressure
 - When dissolved in water may produce dilution heat
2. Possibility of hazardous reaction
 - Polymerization will not occur
3. Conditions to avoid
 - Keep away from heat, flame sparks and source of ignition
 - Hazardous vapors may accumulate in confined spaces
 - Contact with combustible materials may ignite or explode
4. Materials to avoid
 - Acid, combustible materials, metals, halocarbon compounds, oxidizer, metal salt, reductant, reduction agent materials
5. Hazardous decomposition products
 - Thermal decomposition may produce toxic or/and corrosive fume of potassium oxide
 - Carbon monoxide when reacting with carbohydrates, and hydrogen gas when reacting with aluminum, zinc and tin
 - Thermal oxidation can produce toxic fumes of potassium oxide (K₂O)

11. TOXICOLOGICAL INFORMATION

1. Information of Exposure route :
 - (Respiratory tract) : May cause respiratory irritation.
 - (Oral) : Harmful if swallowed
 - (Eye ·Skin) : Causes severe skin burns and eye damage
2. Delayed and immediate effects and also chronic effects from short and long term exposure
 - Acute Toxicity :
 - Oral Toxicity : LD50 = 333mg/kg b.w.(Rat ; Sprague-Dawley.)
 - Dermal Toxicity : Not available
 - Inhalation Toxicity : Not available
 - Skin corrosion/irritation :
 - Application of KOH 10% during the 4hours in a rabbit Draize test, KOH was appeared as corrosive.
 - Serious eye damage/irritation :
 - Reported as cause irreversible damage in human and in a rabbit Draize test.
 - Respiratory sensitization : Not available
 - Skin sensitization :
 - In the intracutaneous skin sensitisation test with guinea pig, allergic skin reactions was not observed.
 - Carcinogenicity : Not applicable
 - Germ cell mutagenicity :
 - KOH was not mutagen because negative results were obtained in bacterial reverse mutation assay and in a mouse bone micronucleus test.
 - Reproductive toxicity :
 - No adverse effects were observed in the reproductive sturdy using mouse or rat.
 - Specific Target organ Toxicity(single exposure) :
 - Inhalation of dust or mist may cause injury in nose and respiratory.
 - Specific Target organ Toxicity(repeated exposure) : Not available
 - Aspiration hazard : Not available

12. ECOLOGICAL INFORMATION

1. Ecotoxicity :
 - Toxicity to fish : LC50=80mg/L, 96hr, *Gambusia affinis*(non-GLP)
 - Toxicity to daphnia magna : EC50=660mg/L, 48hr, *Daphnia magna*(non-GLP)
 - Toxicity to algal : EC50=1337mg/L, 120hr, *Nitscheria linearis*(non-GLP)
2. Persistence and degradability :
 - Persistence : log Kow -3.88
3. Bioaccumulation :
 - Bioaccumulation : BCF 3.162

- Biodegradation : Ready biodegradation(BiOWin 5)
- 4. Mobility in soil : Not available
- 5. Other adverse effects : Not available

13. DISPOSAL CONSIDERATIONS

Collect and reclaim or dispose in sealed containers at licensed waste disposal site if possible. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. Empty containers or liners may retain some product residues.

14. TRANSPORT INFORMATION

1. UN Number : UN 1813
2. UN Proper Shipping name : POTASSIUM HYDROXIDE, SOLID
3. Transport hazard class(es) : 8
4. Packing group : 2
5. Sea pollutants : Not applicable
6. Special precautions for user related to transport or transportation measures :
 - EmS FIRE SCHEDULE : F-A
 - EmS SPILLAGE SCHEDULE : S-B
7. CANADIAN TRANSPORTATION OF DANGEROUS GOODS :
 - Shipping name : POTASSIUM HYDROXIDE, SOLID
 - UN Number : UN 1813
 - Class or Division : 8
 - Packing/Risk Group : II

15. REGULATORY INFORMATION

1. ISHL(The industrial Safety and Health Law in Korea)
 - Environment monitoring required substances
 - Korea occupational exposure limits
 - Hazardous Substances Requiring Management
2. The Toxic Chemical Control Act in Korea(TCCA in Korea)
 - Toxic Chemical [POTASSIUM HYDROXIDE and its compounds: Contents > 5 %]
3. Dangerous goods Safety Management Law in Korea : Not applicable
4. Waste Management Law in Korea : Designated waste
5. Other regulations
 - 1) POPs Management Law : Not applicable
 - 2) Information of EU Classification :
 - Classification :
 - Xn (Harmful) : R22
 - C (Corrosive) : R35
 - Symbol(s) and Indication(s) of Danger :
 - R22 : Harmful if swallowed.
 - R35 : Causes severe burns.
 - Risk and Safety Phrases :
 - S1/2 : Keep locked up and out of reach of children.
 - S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 : Wear suitable protective clothing, gloves and eye/face protection.
S45 : In case of accident or if you feel unwell, seek medical advice immediately.
(show the label where possible).

3) US REGULATIONS :

- CERCLA section 103 (40 CFR 302.4) : POTASSIUM HYDROXIDE 1000 LBS RQ
- SARA section 302 (40 CFR 355.30) : Not regulated
- SARA section 304 (40 CFR 355.40) : Not regulated
- SARA Hazard Categories, SARA section 311/312 (40 CFR 370.21)
ACUTE: YES
CHRONIC: NO
FIRE: NO
REACTIVE : YES
SUDDEN RELEASE : NO
- SARA section 313 (40 CFR 372.65) : Not regulated
- OSHA regulation (29 CFR 1910.119) : Not regulated
- US STATE REGULATIONS :
CALIFORNIA PROPOSITION 65 (Safe Drinking Water and Toxic Enforcement Act)
: Not regulated

4) Chemical inventory status:

- US inventory (TSCA): listed.
- TSCA 12(b) Export Notifications : Not listed.

5) Others

- Rotterdam Convention on Harmful Chemicals & Pesticides : Not applicable
- Stockholm Convention on Persistent Organic Pollutants : Not applicable
- Montreal Protocol on Substances That Deplete the Ozone Layer : Not applicable

6) CANADIAN REGULATIONS

- This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations

7) WHMIS – Classifications of Substances :

- E – Corrosive Material

16. OTHER INFORMATION

Date prepared: January 9th, 2017

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall APAC Chemical be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if APAC Chemical has advised of the possibility of such damages.