

POTENTIAL HEALTH EFFECTS:

ROUTES OF ENTRY.....: Eye and skin contact, inhalation of vapors or mists, accidental ingestion.

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE INHALATION.....: Inhalation of potassium hydroxide vapors can cause severe respiratory tract irritation with symptoms of coughing, choking, runny nose, and possible burns of the mucous membranes. Potassium bromide and potassium sulfite may cause irritation with symptoms of coughing, sore throat, and runny nose. Sulfites may cause an allergic reaction in some asthmatics and sulfite sensitive individuals. Possible symptoms include bronchoconstriction, sweating, flushing, hives, rapid heart rate, decreased blood pressure, and anaphylaxis. Inhalation of sufficient amounts of p-aminophenol can cause methemoglobinemia resulting in an inability of the blood to carry oxygen. Symptoms may include cyanosis (bluish color), severe headache, nausea, vomiting, chest or abdominal pain, and dryness of the throat. Central nervous system effects may include confusion, irritability, faintness, weakness, disorientation, lethargy, drowsiness, convulsions, coma, and unconsciousness.

CHRONIC INHALATION.....: Prolonged exposure to high concentrations of potassium hydroxide may cause discomfort and ulceration of the nasal passages. Persons who have been previously sensitized to sulfites should take precautions to prevent the inhalation of potassium sulfite. Prolonged inhalation of potassium bromide may cause skin eruptions.

ACUTE SKIN CONTACT.....: Contact with potassium hydroxide can be corrosive to the skin with symptoms of itching, reddening, and burning. Potassium bromide and potassium sulfite can be irritating to the skin with symptoms of reddening and itching. P-Aminophenol may cause effects as noted under acute inhalation.

CHRONIC SKIN CONTACT.....: Repeated contact with low concentrations of potassium hydroxide may cause skin drying and ulcerations. Repeated or prolonged contact to sulfites or p-aminophenol may cause an allergic skin reaction in sensitive individuals.

ACUTE EYE CONTACT.....: Contact with potassium hydroxide can be corrosive to the eyes resulting in burning, itching, reddening, swelling of the eye and surrounding tissue and clouding of the cornea. Potassium bromide and potassium sulfite can be irritating to the eyes with symptoms of reddening, tearing, and stinging.

CHRONIC EYE CONTACT.....: Repeated or prolonged exposure may result in lacrimation and chronic conjunctivitis.

ACUTE INGESTION.....: If ingested, potassium hydroxide solutions are corrosive to the tissues and may cause burning pain in the mouth, throat, esophagus and abdomen. P-Aminophenol is expected to be toxic by ingestion (see Section 11). Animal studies with p-aminophenol indicate kidney damage from ingestion.

CARCINOGENICITY.....: The components of this product are not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: Persons with preexisting eye, skin, or blood conditions or impaired pulmonary function may be more susceptible to the effects of this product.

4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

FIRST AID FOR SKIN.....: Flush affected areas promptly with water and soap for 15 minutes. Remove contaminated clothing. In case of continued irritation consult physician.

FIRST AID FOR INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
FIRST AID FOR INGESTION.: If swallowed, rinse mouth with plenty of water, call a Physician.

5. FIRE FIGHTING MEASURES:

FLASH POINT.....: Noncombustible
EXTINGUISHING MEDIA.....: Material is not combustible. Use extinguishing media suitable for other combustible materials in the area.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus.
UNUSUAL FIRE / EXPLOSION HAZARDS: When heated to decomposition emission of toxic fumes of SO₂ is possible.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES.....: Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Dike Spill. Prevent liquid from entering sewers, waterways or low areas. Soak up with sawdust, sand, oil dry or other absorbent material. Spill may be neutralized with powdered Citric Acid. For disposal see section 13.

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE(MIN/MAX): Store between 40 F (4.4 C) and 80 F (26 C). Preferred storage is at 68 F (20 C).
SHELF LIFE.....: N.A.
SPECIAL SENSITIVITY.....: Keep from freezing.
HANDLING/STORAGE PRECAUTIONS: Avoid eye and skin contact, and store in well-ventilated area. Keep container tightly closed. Do not store with incompatible materials. Do not store or consume food, drink or tobacco in area where they may become contaminated with this material. For incompatibles see section 10.
OTHER NOTES.....: Keep out of the reach of children.

8. PERSONAL PROTECTION:

PROTECTIVE CLOTHING REQUIREMENTS...: Splash protection required for eyes, e.g., eye glasses with side shields or goggles. For skin protection use chemical resistant gloves and aprons, e.g. made of neoprene, rubber or vinyl.
VENTILATION REQUIREMENTS.....: Use sufficient general room ventilation and/or local exhaust to maintain airborne levels of vapors below applicable exposure limits (see Section 2).
RESPIRATOR REQUIREMENTS.....: Under normal conditions of use, respirator protection is not required. If respirators are used, institute a program in accordance with OSHA standard 29CFR1010.134.
ADDITIONAL PROTECTIVE MEASURES.....: Emergency showers and eye wash stations should be made available. Educate and train employees in the safe use and handling of this product.

9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM.....: Liquid
COLOR.....: Dark brown
ODOR.....: Characteristic smell
pH: Approx. 14
BOILING POINT.....: Greater than 212 F (100 C)
MELTING/FREEZING POINT....: Less than 32 F (0 C)
SOLUBILITY IN WATER: Soluble
SPECIFIC GRAVITY: Approx. 1.383 at 68 F (20 C)
BULK DENSITY.....: Not Applicable
VAPOR PRESSURE: Approx. 23 mbar at 68 F (20 C) (water)

10. STABILITY AND REACTIVITY:

STABILITY.....: This is a stable material.
HAZARDOUS POLYMERIZATION...: Will not occur.
INCOMPATIBILITIES.....: Strong Acids, oxidizers
INSTABILITY CONDITIONS.....: None known.
DECOMPOSITION PRODUCTS.....: Oxides of Sulfur

11. TOXICOLOGICAL INFORMATION:

TOXICITY DATA FOR: p-Aminophenol
ACUTE TOXICITY
ORAL LD50.....: 375 mg/kg (rat)

12. ECOLOGICAL INFORMATION:

NO ECOLOGICAL INFORMATION AVAILABLE

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD.....: Recover nonusable free liquid and/or contaminated water, and dispose of in an approved and permitted treatment system. Remove nonusable solid material and/or contaminated soil, for disposal in an approved and permitted landfill. Discharge to sewer may require approval of permitting authority and may require pretreatment.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME.....: Aqueous Alkaline Solution containing Potassium Hydroxide
PRODUCT LABEL.....: Rodinal

DOT (DOMESTIC SURFACE)

PROPER SHIPPING NAME.....: Potassium Hydroxide Solution
HAZARD CLASS OR DIVISION: 8
UN/NA NUMBER.....: UN1814
PACKAGING GROUP: PG II
DOT PRODUCT RQ lbs (kgs).....: None
HAZARD LABEL(s).....: Corrosive
HAZARD PLACARD(s).....: Corrosive

Limited Quantity Exception may apply to this product, for "inner packagings not over 1.0 L (0.3 gal) for liquids and 1.0 kg (2.2 lb) for solids". 173.154(b)(1). Each package must conform to the packaging requirements of Subpart B of Part 173 and may not exceed 30 kg (66 lb) gross weight. For further information consult the 49 CFR.

IMO / IMDG CODE (OCEAN)

PROPER SHIPPING NAME.....: Potassium Hydroxide Solution
HAZARD CLASS DIVISION NUMBER...: 8
UN NUMBER.....: UN1814
PACKAGING GROUP.....: II
HAZARD LABEL(s).....: Corrosive
HAZARD PLACARD(s).....: Corrosive

ICAO / IATA (AIR)

PROPER SHIPPING NAME.....: Potassium Hydroxide Solution
HAZARD CLASS DIVISION NUMBER...: 8
UN NUMBER.....: UN1814
SUBSIDIARY RISK.....: None
PACKING GROUP.....: II
HAZARD LABEL(s).....: Corrosive
RADIOACTIVE?.....: Non-Radioactive

PASSENGER AIR - MAX. QTY.: 1 L
PASSENGER PACKING INSTRUCTION..: 809
CARGO AIR - MAX. QTY.: 30 L
CARGO AIR PACKING INSTRUCTION..: 813

15. REGULATORY INFORMATION:

OSHA STATUS.....: This product is hazardous under the criteria of
the Federal OSHA Hazard Communication Standard 29
CFR 1910.1200.
TSCA STATUS.....: On TSCA Inventory
CERCLA REPORTABLE QUANTITY..: Potassium Hydroxide (Reportable Quantity = 1,000 lbs.)
SARA TITLE III:
SECTION 302 EXTREMELY
HAZARDOUS SUBSTANCES...: None
SECTION 311/312
HAZARD CATEGORIES.....: Immediate Health Hazard
SECTION 313
TOXIC CHEMICALS.....: None
RCRA STATUS.....: When discarded in its purchased form, this
product meets the criteria of Corrosivity, and
should be managed as a hazardous waste (EPA
Hazardous Waste Number D002). (40 CFR 261.20-24)

The following chemicals are specifically listed by individual states; other
product specific health and safety data in other sections of the MSDS may also
be applicable for state requirements. For details on your regulatory
requirements you should contact the appropriate agency in your state.

COMPONENT NAME /CAS NUMBER	CONCENTRATION	STATE CODE
Potassium Hydroxide 1310-58-3	3.000 %	PA1, PA4, MA, NJ1, NJ3
Water 7732-18-5	55-60 %	PA3, NJ4
Potassium Sulfite 10117-38-1	30-40 %	PA3, NJ4
Potassium Bromide 7758-02-3	1-5 %	PA3, NJ4
p-Aminophenol 123-30-8	1-5 %	PA3, NJ4

MA = Massachusetts Hazardous Substance List
NJ1 = New Jersey Hazardous Substance List
NJ3 = New Jersey Special Health Hazardous Substance List
NJ4 = New Jersey Other - included in 5 predominant ingredients > 1%
PA1 = Pennsylvania Hazardous Substance List
PA3 = Pennsylvania Non-hazardous present at 3% or greater.
PA4 = Pennsylvania Environmental Hazardous Substance List.

16. OTHER INFORMATION:

HMIS RATINGS: Health Flammability Reactivity Personal Prot
 3 0 0 B
 0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe
 B=Safety Glasses, Gloves

Agfa's method of hazard communication is comprised of Product Labels and Material
Safety Data Sheets. HMIS ratings are provided by Agfa as a customer service.

REASON FOR ISSUE.....: Reviewed, Harmonized
PREPARED BY.....: R. Ruppel-Kerr
APPROVED BY.....: M. Patrick
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