

RMO, Inc.
P.O. Box 17085
Denver, Colorado 80217-0085
Emergency Number: 303-592-8200

MATERIAL SAFETY DATA SHEET
ISSUED: 2/14/2007

2 of 9

SECTION III - HEALTH HAZARD DATA cont.

EYE CONTACT: Potassium Bifluoride is Corrosive. Causes severe burns to eye and surrounding areas. Permanent eye damage may occur. Borax is non-irritating to eyes in normal industrial use.

INHALATION: Potassium Bifluoride causes severe irritation and burns to upper respiratory tract including nose, throat, larynx, and lungs. Can cause burning sensation, chest pain, wheezing, cough, difficulty breathing, shortness of breath and choking. Inhalation of strong concentrations or aspiration of liquid product can cause fluids to accumulate in the lungs and larynx (adema) which can progress to airway obstruction, respiratory acidosis, shock, coma, and possible death. Symptoms may be delayed 12 to 36 hours after exposure. Some individuals may suffer from residual chronic lung disease. Pulmonary effects can result even from splashes on the skin.

INGESTION: Potassium Bifluoride is Toxic. Corrosive. Harmful if swallowed. Causes burns to the mouth, throat, esophagus, and stomach. Can cause perforation of the esophagus and stomach. Can cause nausea, vomiting (may contain blood), bleeding, diarrhea, abdominal pain, and shock. Damage to stomach and esophagus may progress for several weeks. Permanent damage in the form of constriction of the esophagus may occur.

BORAX: Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction. No target organ has been identified in humans. High dose animal ingestion studies indicate the testes are the target organs in male animals. Symptoms of accidental over-exposure to borax might include nausea, vomiting and diarrhea, with delayed effects of skin redness and peeling. These symptoms have been associated with the accidental over-exposure to the chemically related substance boric acid.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE: Not known for this product

CARCINOGENICITY: Not known for this product

ADDITIONAL INFORMATION: Chronic exposure to inorganic fluorides has been known to produce demineralization and decalcification of bones, and increases calcification of ligaments and vertebrae resulting in spinal stiffness (fluorosis). Repeated inhalation may cause chronic lung inflammation, pulmonary resistance, and airway obstruction based on tests with laboratory animals. May cause kidney and liver damage.

One of the components (Potassium Bifluoride) is extremely hazardous by all routes of exposure, especially when product is dissolved in water. Any contact with this product should be considered serious and persons given prompt medical treatment.

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3 of 9

SECTION IV – FIRST AID MEASURES

EMERGENCY & FIRST AID PROCEDURES:

SKIN: Remove victim from contaminated area. Remove contaminated clothing and shoes. Immediately wash the exposed area, paying particular attention to the underside of fingernails, with plenty of water and a non-abrasive soap. If irritation persists, seek medical attention. For Potassium Bifluoride burns, after washing for 5 minutes, the burned area should be immersed in a solution of 0.15% iced aqueous benzalkonium chloride until pain is relieved. As an alternate first aid treatment, 2.5% calcium gluconate gel may be continuously massaged into burn area (hands should be protected by latex gloves to prevent secondary contamination) until the pain is relieved. For large burns or burns treated with calcium gluconate gel (in which pain is present for longer than 30 minutes), a physician should inject 5% aqueous calcium gluconate beneath, around, and in the burned area(s).

EYES: Immediately flush eyes with flowing water for at least 15 minutes while holding eyelids away from eyes.. If irritation persists, seek medical attention.

ACUTE INHALATION: Remove exposed individual from source of exposure. Allow the victim to rest in a well ventilated area. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen may be administered by certified persons only. Artificial respiration may be performed only if exposed individual is not breathing. Keep the victim lying down, quiet and warm. Seek immediate medical attention. If symptoms such as nose or throat irritation are observed, remove person to fresh air.

Seek immediate medical attention. Serious: Evacuate the victim to a safe area as soon as possible. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

INGESTION: Never give anything by mouth to an unconscious person. Get medical aid. **DO NOT** induce vomiting. If victim is alert, able to swallow, and not convulsing, give large quantities of water to dilute stomach contents. One or two glasses of milk, or a magnesium-containing (milk of magnesia) or calcium-containing antacid may be given for their soothing effect. Seek immediate medical attention.

NOTE TO PHYSICIANS: Borax – Observation only is required for adult ingestion in the range of 4-8 grams of Borax. For ingestion of larger amounts, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or the guide treatment.

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4 of 9

SECTION V – FIRE FIGHTING MEASURES

FLASH POINT: Not available

FLAMMABLE LIMITS: Upper – Not available Lower- Not available

AUTO IGNITION TEMPERATURE: Not available

EXTINGUISHING MEDIUM: use extinguishing media appropriate to surrounding fire conditions.

SPECIAL FIRE FIGHTING PROCEDURES: Do not get material on skin or clothing. Avoid inhalation of dust, fumes or mists. Stay upwind, out of low areas, and ventilate closed spaces before entering. Cool containers from the side with water until fire is out. Use water spray to reduce vapor; do not put water directly on leak or spill area. Keep combustibles away from spilled material. Self-contained breathing apparatus (SCBA) and chemical protective clothing can be worn but may not be adequate thermal protection for chemical fire unless stated by the manufacturer. Structural fire fighter's protective clothing may not be effective. Move containers from fire area, if possible to do so without risk.

UNUSUAL FIRE & EXPLOSIVE CONDITIONS: One of the components (Potassium Bifluoride) may evolve toxic and corrosive fumes during fire conditions.

SECTION VI - SPILL OR LEAK PROCEDURE

SPILL OR LEAK PROCEDURES: Wear NIOSH/MSHA-approved respiratory protection and protective clothing to prevent skin and eye contact when cleaning spill. Do not get spilled material on skin or clothing; stop leak if you can do so without risk. Vacuum spilled solids or dilute with water and neutralize with slaked lime. Scoop up absorbed material and transfer to a suitable plastic or plastic-lined container for evaluation and disposal. Wash spill area and collect this wash water for later evaluation and disposal.

Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately.

NOTE: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Spillage into water: Where possible, remove any intact containers from the water. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its normal environmental background level.

OTHER PROCEDURES: For large product users or involving large product quantities, we recommend that the purchaser establish a spill prevention, control and counter-measure plan. This plan should include procedures for proper storage as well as clean-up of spills or leaks. The procedures should conform to safe practices and provide for proper recovery and/or disposal. Depending on the quantity spilled, notification to the U.S. National response center (800-424-8802) may be required in case of hazardous substances. (See USEPA and USDOT regulations; also various state and local regulations.)

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5 of 9

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING: Practice good housekeeping procedures. Do not get in eyes, on skin, or on clothing. Do not breathe dusts. Do not take internally. Use only with adequate ventilation. Wash thoroughly after handling. Emptied container may contain vapors and product residue. Handle accordingly.

Store in a cool, dry place away from incompatible material. Store away from acids. Maintain package integrity. Keep away from heat and sources of ignition. Keep in well ventilated area. Keep product away from children and their environment.

OTHER PRECAUTIONS:

SECTION VIII - PROTECTION MEASURES

PROTECTION:

EYES: Chemical dust-resistant goggles. A face shield must also be worn when working with solutions of this product. **DO NOT WEAR CONTACT LENSES!**

SKIN: Long sleeves, gloves

CLOTHING: Boots, apron, sleeves. An impervious coverall may be substituted for the apron and sleeves when additional protection is needed. Launder contaminated clothing before reuse.

VENTILATION: Local exhaust (will reduce airborne concentrations) or an enclosed handling system is highly recommended. Mechanical (general) ventilation is required. Use NIOSH/MSHA-approved respiratory protection if ventilation is inadequate.

PROTECTIVE GLOVES: Butyl rubber or neoprene gloves

OTHER PROTECTIVE EQUIPMENT: Safety equipment should be worn as appropriate for the work environment includes apron, safety goggle and gloves.

WORK/HYGIENIC PRACTICES: Do not permit eating, drinking or the use of cosmetics or tobacco products while handling or processing material or in product work areas. Practice good personal hygiene procedures. Wash hands and face thoroughly before eating, drinking, applying cosmetics or using tobacco products. Avoid inhalation and ingestion of product and activities which generate dust or fume.

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7 of 9

SECTION XI - TOXICOLOGICAL INFORMATION cont.

EYE IRRITATION: Draize test in rabbits produced eye irritation effects. Fifty years of occupational exposure to Borax indicates no adverse effects on human eye. Therefore, Borax is not considered to be a human eye irritant in normal industrial use.

SENSITIZATION: Borax is not a skin sensitizer.

OTHER:

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: Animal feeding studies in rat mouse and dog, at high doses, have demonstrated effects on fertility and testes. Studies with the chemically related Boric Acid in the rat, mouse and rabbit, at high doses, demonstrate developmental effects on the fetus, including fetal weight loss and minor skeletal variations. The doses administered were many times in excess of those to which humans would normally be exposed.

CARCINOGENICITY/MUTAGENICITY: No evidence of carcinogenicity in mice. No mutagenic activity was observed for Boric acid in a battery of short-term mutagenicity assays.

HUMAN DATA: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to Boric Acid dust and Sodium Borate dust. A recent epidemiology study under the conditions of normal occupational exposure to Borate dusts indicated no effect on fertility.

SECTION XII – ECOTOXICITY

POTASSIUM BIFLUORIDE: Not available

BORAX: Large amounts of Borax can be harmful to plants and other species. Therefore, release to the environment should be minimized. General: Boron (6) is the element in Sodium Tetraborate decahydrate (Borax) which is used by convention to report Borate product ecological effects. It occurs naturally in seawater at an average concentration of 5 mg B/L and generally occurs in fresh water at concentrations up to 1 mg B/L. In dilute aqueous solutions the predominant boron species present is undissociated boric acid. To convert sodium tetraborate decahydrate into the equivalent boron (B) content, multiply by 0.1134.

PHYTOTOXICITY: Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants in high quantities. Care should be taken to minimize the amount of Borax released to the environment.

ALGAL TOXICITY: Green algae, *Scenedesmus subspicatus*
96-hr EC10 = 24 mg B/L*

INVERTEBRATE TOXICITY: Daphnids, *Daphnia magna* straus
24-hr EC50 = 242 mg B/L*

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8 of 9

SECTION XII – ECOTOXICITY cont.

FISH TOXICITY: Sea-water: Dab, *Limanda limanda*
96-hr LC50 = 74 mg B/L*
Fresh water: Rainbow trout, *S. gairdneri* (embryo-larval stage)
24-day LC50 = 88 mg B/L*
32-day LC50 = 54 mg B/L*
Goldfish, *Carassius auratus* (embryo-larval stage)
7-day LC50 = 65 mg B/L*
3-day LC50 = 71 mg B/L*

ENVIRONMENTAL FATE DATA: Persistence/degradation: Boron is naturally occurring and ubiquitous in the environment. Borax decomposes in the environment to natural borate.

Octanol/water partition coefficient: No value. In aqueous solution Sodium tetraborate decahydrate is converted substantially into undissociated boric acid.

Soil mobility: Borax is soluble in water and is leachable through normal soil.

Test substance: *Sodium tetraborate

SECTION XIII – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: If disposed of, dispose of in a permitted disposal site in accordance with all federal, state and local disposal or discharge regulations. Under the U.S. Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user of the product to determine at the time of disposal whether the product falls under the RCRA as a hazardous waste. This is because product uses, transformations, synthesis, mixtures, etc. may cause the resulting end-product to be classified as hazardous.

Disposal of waste material from the use of this product may be subject to federal, state, and local regulations. Refer to Part 261 of 40 CFR for the applicability of federal regulations. Consult with your state and local governments for additional regulatory requirements. Disposal of this material must be in a manner compliant with all federal, state, and local regulations.

SECTION XIV – TRANSPORT INFORMATION

DOT SHIPPING NAME: Tru-Chrome Flux J00041 Liquid

HAZARD CLASS: 8

UN/NA NO.: UN1811

DOT LABEL(S): Corrosive, Toxic

Regulatory References: MSDS for Potassium Hydrogen Fluoride

Proper Shipping Name: Potassium Hydrogen Fluoride

Labels: U.S. Customs Harmonization Number :

International (I.M.O.):

*Hazard Class:*8

*UN:*UN1811

