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## 3:1, 4:1 Potassium Chloride/Potassium Fluoride

MSDS Number: P5776 --- Effective Date: 12/08/96

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### 1. Product Identification

**Synonyms:** None  
**CAS No.:** Not applicable to mixtures.  
**Molecular Weight:** Not applicable to mixtures.  
**Chemical Formula:** KCl, KF  
**Product Codes:** 5613, 5615

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### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Chloride	7447-40-7	75%	Yes
Potassium Fluoride	7789-23-3	25%	Yes

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### 3. Hazards Identification

#### Emergency Overview

**DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION AND BURNS TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION AND BURN EFFECTS MAY BE DELAYED. HARMFUL IF ABSORBED THROUGH SKIN.**

J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)  
Flammability Rating: 0 - None  
Reactivity Rating: 1 - Slight  
Contact Rating: 1 - Slight  
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
Storage Color Code: Blue (Health)

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#### Potential Health Effects

If inhaled or swallowed, this compound can cause fluoride poisoning. Early symptoms include nausea, vomiting, diarrhea, and weakness. Later effects include central nervous system effects, cardiovascular effects and death. The predominant hazards for this product are based upon the hazards for anhydrous potassium fluoride.

#### Inhalation:

May cause irritation and burns to the respiratory tract, symptoms may include coughing, sore throat, and labored breathing. May be absorbed through inhalation of dust; symptoms may parallel those from ingestion exposure. Irritation and burning effects may not appear immediately.

#### Ingestion:

May cause salivation, nausea, vomiting, diarrhea, and abdominal pain, followed by weakness, tremors, shallow respiration, cardopedal spasm, convulsions, and coma. May cause brain and kidney damage. Death may be caused by respiratory paralysis. Affects heart and circulatory system.

#### Skin Contact:

Causes severe irritation and possibly burns to the skin. May be absorbed through the skin. Effects may not appear immediately.

**Eye Contact:**

Causes irritation. May be extremely irritating with possible burns to eye tissue and permanent eye damage may result.

**Chronic Exposure:**

Chronic exposure may cause mottling of teeth and bone damage (osteosclerosis) and fluorosis. Symptoms of fluorosis include brittle bones, weight loss, anemia, calcified ligaments, general ill health and joint stiffness.

**Aggravation of Pre-existing Conditions:**

Populations that appear to be at increased risk from the effects of fluoride are individuals that suffer from diabetes insipidus or some forms of renal impairment.

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## 4. First Aid Measures

First aid procedures should be pre-planned for fluoride compound emergencies.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. CALL A PHYSICIAN IMMEDIATELY.

**Ingestion:**

Administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. CALL A PHYSICIAN IMMEDIATELY.

**Skin Contact:**

Wipe off any excess material from skin and then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. CALL A PHYSICIAN IMMEDIATELY.

**Eye Contact:**

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

**Note to Physician:**

For large exposures, systemic effects (hypocalcemia and hypomagnesia) may occur.

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## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Water spray will also reduce fumes and irritant gases.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

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## 7. Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and alkalis. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL): 2.5 mg(F)/m<sup>3</sup> (TWA) -ACGIH Threshold Limit Value (TLV): 2.5 mg(F)/m<sup>3</sup> (TWA)

### Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

### Appearance:

White powder.

### Odor:

Odorless.

### Solubility:

KCl: 28 g/100 g water @ 0C (32F); KF: 92 g/100 g water @ 18C (45F).

### Specific Gravity:

KCl (1.98), KF (2.48)

### pH:

No information found.

### % Volatiles by volume @ 21C (70F):

0

### Boiling Point:

KCl: sublimes @ 1500C (2730F); KF: 1505C (2739).

### Melting Point:

KCl: 772C (1422F); KF: 846C (1555F).

### Vapor Density (Air=1):

No information found.

### Vapor Pressure (mm Hg):

No information found.

### Evaporation Rate (BuAc=1):

No information found.

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## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage.

### Hazardous Decomposition Products:

Oxides of the contained metal and halogen, possibly also free, or ionic halogen.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Bromine trifluoride; strong bases; potassium permanganate + sulfuric acid; contact with acids liberates hydrogen fluoride; solutions are corrosive to ceramic and glass

**Conditions to Avoid:**

Moisture and incompatibles.

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## 11. Toxicological Information

KCl- Oral rat LD50: 2600 mg/kg; eye rabbit (standard Draize): 500 mg/24-hr, mild; investigated as a mutagen KF- Oral rat LD50: 245 mg/kg

-----\Cancer Lists\-----

Ingredient	--NTP Carcinogen--		IARC Category
	Known	Anticipated	
Potassium Chloride (7447-40-7)	No	No	None
Potassium Fluoride (7789-23-3)	No	No	None

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## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

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## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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## 14. Transport Information

**Domestic (Land, D.O.T.)**

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Proper Shipping Name: POTASSIUM FLUORIDE, MIXTURE

Hazard Class: 6.1

UN/NA: UN1812

Packing Group: III

Information reported for product/size: 200LB

**International (Water, I.M.O.)**

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Proper Shipping Name: POTASSIUM FLUORIDE, SOLID, MIXTURE

Hazard Class: 6.1

UN/NA: UN1812

Packing Group: III

Information reported for product/size: 200LB

**International (Air, I.C.A.O.)**

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Proper Shipping Name: POTASSIUM FLUORIDE, SOLID, MIXTURE

Hazard Class: 6.1  
UN/NA: UN1812  
Packing Group: III  
Information reported for product/size: 200LB

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Potassium Chloride (7447-40-7)	Yes	Yes	Yes	Yes
Potassium Fluoride (7789-23-3)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
Potassium Chloride (7447-40-7)	Yes	DSL	NDSL	Yes
Potassium Fluoride (7789-23-3)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Potassium Chloride (7447-40-7)	No	No	No	No
Potassium Fluoride (7789-23-3)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Potassium Chloride (7447-40-7)	No	No	No
Potassium Fluoride (7789-23-3)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
Reactivity: No (Mixture / Solid)

**Australian Hazchem Code:** 2Z

**Poison Schedule:** No information found.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0**

### Label Hazard Warning:

DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION AND BURNS TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION AND BURN EFFECTS MAY BE DELAYED. HARMFUL IF ABSORBED THROUGH SKIN.

### Label Precautions:

Do not breathe dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing.

### Label First Aid:

In all cases call a physician immediately. First Aid procedures should be pre-planned for fluoride compound emergencies. If swallowed, administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing difficult, give artificial respiration. In case of skin contact wipe off any excess material then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. In case of eye contact, immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting upper and lower eyelids occasionally.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

Mixture. New 16 section MSDS format, all sections have been revised.

**Disclaimer:**

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