Product Safety Summary

Potassium Fluoride Solution

CAS No. 7789-23-3

This Product Safety Summary is intended to provide a general overview of the chemical substance. The information on the summary is basic information and is not intended to provide emergency response information, medical information or treatment information. The summary should not be used to provide in-depth safety and health information. In-depth safety and health information can be found in the Safety Data Sheet (SDS) for the chemical substance.

Names

- Potassium fluoride solution
- Potassium monofluoride solution
- KF Solution
- KFXX – where XX indicates concentration of potassium fluoride in percent

Product Overview

Solvay Fluorides, LLC does not sell potassium fluoride solution (KF) directly to consumers. Most potassium fluoride solution is used in industrial applications and processes.

Potassium fluoride solution is used for pH adjustment in industrial textile processing facilities or laundries. It is also an intermediate or raw material used in other chemical synthesis or processes, most often for agrichemical or pesticide products. Potassium fluoride is sold in an aqueous (water) solution.

Potassium fluoride solution is corrosive and contact can severely irritate and burn the skin or eyes causing possible eye damage. Breathing potassium fluoride solution vapors can irritate and burn the nose, throat, and lungs. Chronic exposure to KF may cause nosebleeds, cough, wheezing and shortness of breath. When heated potassium fluoride solution releases hydrogen fluoride, a toxic, corrosive gas.

Inhalation or ingestion of large amounts of potassium fluoride solution can cause nausea, vomiting and loss of appetite. Exposure to high concentrations or long term exposure can cause fluoride poisoning with stomach pain, weakness, convulsions and death. Long term or repeated exposures can cause deposits of fluorides in bones and teeth, a condition called fluorosis. Fluorosis may cause pain, disability and discoloration of teeth.

Manufacture of Product

Solvay Fluorides, LLC, makes potassium fluoride solution at its North American production facility in the central United States.

- Potassium fluoride solution is manufactured by mixing anhydrous hydrogen fluoride (liquid) and potassium hydroxide solution.

$$HF + KOH\ (aq) \rightarrow KF + H_2O$$

Product Description

Potassium fluoride solution is a colorless, odorless liquid of 29% to 40% KF concentration in water. Typical physical properties for potassium fluoride solution are provided in Table 1.

Table 1: Typical physical properties of Potassium Fluoride Solution

	KF(aq) 29-40%
Boiling Point	212°F (100°C)
Density	1.15-1.25 (1150-1250 g/l; 63.3-68.8 lbs/ft^3)
pH	10-12
Flash Point	Non- flammable

Product Uses

Potassium fluoride solution is used for pH adjustment in industrial textile processing facilities or laundries. It is also an intermediate or raw material used in other chemical synthesis or processes; most often for agrichemical or pesticide products.

Exposure Potential

- **Workplace Exposure** - Potassium fluoride is corrosive and toxic by ingestion, inhalation or contact with skin and eyes. Exposures can occur at a potassium fluoride manufacturing facility or a manufacturing, packaging or storage facility that handles KF. Exposure may also occur in the event of a transportation incident. Persons involved in maintenance, sampling and testing activities, or in the loading and unloading of KF containers are at greater risk of exposure. Following good industrial hygiene practices will minimize the likelihood of KF exposure; however, persons involved in higher risk activities should always wear proper personal protective equipment such as rubber gloves and boots, goggles and a hard hat. In instances where the potential for splashes is high, a face shield should also be worn.

Exposure limits for potassium bifluoride (per OSHA, ACGIH, and other agencies) are listed as the "fluoride" content rather than as KBF specifically. Please consult the Safety Data Sheet for information concerning exposure limits.

- **Consumer Exposure to Products Containing Potassium Fluoride Solution** - Solvay Fluorides, LLC does not sell potassium fluoride solution directly to consumers although it may be used in some consumer cleaning products. The user should use these products in strict adherence with the manufacturer's use and/or label instructions.

- **Environmental Releases** - Spills of potassium fluoride solution should be contained and isolated from waterways and sewers or drains. The contaminated area should be washed down with plenty of water. Lime or calcium hydroxide may be used to neutralize contaminated water and immobilize the fluoride ions as calcium fluoride. Disposal should be in accordance with applicable local, state or federal regulations. Persons attempting to clean up potassium fluoride solution spills should wear proper personal protective equipment (see guidelines in Workplace Exposure section of this document or Safety Data Sheet). If required, report spills to the appropriate state or federal authorities.

- **Fires** - Fires involving potassium fluoride solution should be extinguished using measures appropriate to the circumstances and surrounding environment. Hazardous decomposition products such as hydrogen fluoride vapor can be generated if KF is involved in a fire. Fire fighters should wear self-contained breathing apparatus and protective suits.

For additional information concerning potassium fluoride solution emergency response procedures, please consult the Safety Data Sheet.

Health Information

Concentrations of potassium fluoride solution typically found in consumer products may pose risk of symptoms due to skin, ingestion or inhalation exposure. Persons suffering from eye or ingestion exposure to consumer strength potassium fluoride solution products may experience symptoms similar to persons exposed to industrial strength potassium fluoride solution (see below).

Exposures to potassium fluoride solutions can produce the following adverse health affects:

- **Contact** - Skin exposures can cause symptoms ranging from minor skin irritation to painful redness and swelling. Severe burns can occur if treatment is delayed after exposure to potassium fluoride solution. Eye exposure to potassium fluoride solution may result in severe eye irritation, burns or even blindness.
- **Inhalation** - The inhalation of potassium fluoride solution vapors can cause symptoms ranging from nose and throat irritation to coughing and difficulty breathing. Aspiration may cause pulmonary edema (fluid on the lungs) and pneumonitis (inflammation of the lungs). Repeated or prolonged exposures may cause sore throat, nosebleeds and chronic bronchitis. Prolonged exposure may cause hypocalcemia (reduced calcium levels) with nervous problems (tetany) and cardiac arrhythmia (irregular heart beat) and /or spasms.

- **Ingestion** - The ingestion of potassium fluoride solution may cause burns of the mouth and throat and perforation of the esophagus and stomach. Nausea, bloody vomiting, abdominal pain, diarrhea, difficulty breathing, swelling of the throat, loss of consciousness, coma and heart failure can also occur.
- **Other Effects** - The International Agency for Research on Cancer (IARC) has not determined sodium fluoride solution to be carcinogenic (cancer causing).

For more information on health effects and routes of exposure, or for information concerning proper first aid measures, please consult the Safety Data Sheet.

Environmental Information

Potassium fluoride solution is not known to bioaccumulate or persist in the environment for more than a few days. For more ecological and environmental information concerning this product, please consult the Safety Data Sheet.

Physical Hazard Information

Potassium fluoride solution is corrosive and can corrode some metals. It is not flammable or explosive.

Exposure of potassium fluoride solution to strong acids, strong bases, metals, glass or high temperatures can cause decomposition. Decomposition of potassium fluoride solution will result in the liberation of hydrogen fluoride gas.

For more information concerning the physical hazards of this product, please consult the Safety Data Sheet.

Regulatory Information

Regulations may exist that govern the manufacture, sale, export, import, storage, transportation, use and/or disposal of this chemical. These regulations can vary by city, state, country or geographic region. Information may be found by consulting the relevant Safety Data Sheet specific to your country or region.

Additional Information

- Solvay America, Inc. www.solvaynorthamerica.com
- Solvay Fluorides, LLC www.solvaychemicals.us
- Solvay Fluorides, LLC Safety Data Sheets
  www.solvaychemicals.us/EN/Literature/LiteratureDocuments.aspx
- Contact Solvay Fluorides, LLC solvaychemicals.us@solvay.com
- NJ Department of Health & Senior Services Hazardous Substance Fact Sheets
  http://web.doh.state.nj.us/rtkhsfs/factsheets.aspx
- This summary was prepared in June, 2010
  This summary was revised in September, 2013

NOTICE

To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither Solvay America, Inc. nor any of its affiliates makes any warranty, express or implied, or accepts any liability in connection with this information or its use. This information is for use by persons at their own discretion and risk and does not relate to use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. The user alone must finally determine suitability of any information or material for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. This information gives typical properties only and is not to be used for specification purposes. Solvay America, Inc. reserves the right to make additions, deletions or modifications to the information at any time without prior notification. Trademarks and/or other products of the company referenced herein are either trademarks or registered trademarks of the company mentioned or its affiliates, unless otherwise indicated.