

Product Safety Summary

Alkali aluminum hexafluorides

Trisodium aluminum hexafluoride – sodium cryolite

CAS No. : 13775-53-6

Trilithium aluminum hexafluoride – lithium cryolite

CAS No. : 13821-20-0

Tripotassium aluminum hexafluoride – potassium cryolite

CAS No. : 13775-52-5

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 Material Safety Data Sheet (MSDS) for the chemical substance.

Names

Trisodium aluminum hexafluoride:

- Sodium cryolite
- Synthetic cryolite
- Cryolite
- Kryolite
- Sodium hexafluoroaluminate
- Sodium aluminum fluoride
- Sodium aluminofluoride

Trilithium aluminum hexafluoride:

- Lithium cryolite
- Lithium aluminofluoride
- Lithium hexafluoroaluminate
- Lithium aluminum fluoride

- Trisopotassium aluminum hexafluoride:
- Potassium cryolite
 - Potassium aluminofluoride
 - Potassium hexafluoroaluminate
 - Potassium aluminum fluoride

Product Overview

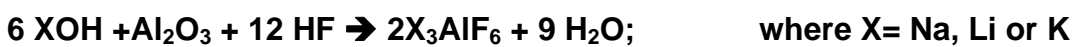
Alkali aluminum hexafluorides (cryolites) are used primarily as welding and soldering agents or abrasives. Additionally, sodium aluminum hexafluoride is used in the glass industry. A small amount of sodium cryolite is also used as a registered pesticide in production of grapes. Alkali aluminum hexafluorides are sold as a solid.

Solvay Fluorides, LLC does not sell alkali aluminum hexafluorides directly to consumers. Alkali aluminum hexafluorides are used in industrial applications and processes.

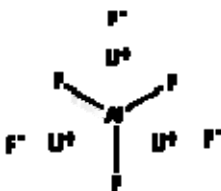
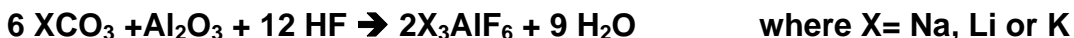
Alkali aluminum hexafluorides are hazardous chemicals due primarily to the physical hardness of the particles or the decomposition product (hydrogen fluoride). Repeated or prolonged contact can irritate the skin and eyes. Breathing cryolite particles can irritate the nose, throat, and lungs, causing nosebleeds, cough, wheezing and shortness of breath. Ingestion of large amounts of alkali aluminum hexafluorides can cause nausea, vomiting and loss of appetite.

Manufacture of Product

- Solvay manufactures solid alkali aluminum hexafluorides from aluminum oxides, alkali hydroxides or carbonates and hydrogen fluoride.



or



Atomic representation of Lithium Cryolite (trilithium aluminum hexafluoride)

In the other alkali cryolites, the Li^+ ion would be replaced by Na^+ (sodium) or K^+ (Potassium)

Product Description

Alkali aluminum hexafluorides ($3XF \cdot AlF_3$ where $X = Na, Li$ or K) is manufactured and sold in solid form. The solid is a white or slightly colored odorless powder. Typical physical properties for alkali aluminum hexafluorides are provided in Table 1.

Table 1: Typical physical properties Alkali aluminum hexafluorides

	Trisodium aluminum hexafluorides	Trilithium aluminum hexafluorides	Tripotassium aluminum hexafluorides
Melting point temperature	1881°F (1027°C)	790°F (1454°C)	1877°F (1025°C)
Bulk Density @ 20°C (68°F)	500-800 kg/m ³	400-500 kg/m ³	450-650 kg/m ³
Relative Density @ 20°C (68°F)	2.9	2.7	2.8
Solubility in water @ 25°C (77°F)	0.41 g/l	0.41 g/l	1.4 g/l
pH @ 20°C (68°F)	6 (0.42 g /l) @ 20°C (68°F)	6 (1.1g /l) @ 20°C (68°F)	6 (1.4 g /l) @ 25°C (77°F)
Flash point	Non- flammable		

Product Uses

Alkali aluminum hexafluorides are used as welding and soldering agents or abrasives. Additionally, sodium aluminum hexafluoride is used in the glass industry. A small amount of sodium Cryolite is also used as a registered pesticide in production of grapes.

Exposure Potential

- **Workplace exposure** - Exposure can occur at either a cryolite manufacturing facility, or a manufacturing, packaging or storage facility that handles alkali aluminum hexafluorides. 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 alkali aluminum hexafluorides packages are at greater risk of exposure. Following good industrial hygiene practices will minimize the likelihood of exposure; however, persons involved in higher risk activities should always wear proper personal protective equipment such as rubber gloves and boots, respiratory protection, goggles and a hard hat.

Please consult the [Material Safety Data Sheet](#) for occupational exposure limits.

- **Consumer exposure to products containing alkali aluminum hexafluorides** Solvay Fluorides, LLC does not sell cryolite directly to consumers. Users should follow the manufacturer's use and/or label instructions if an alkali aluminum hexafluoride is listed as a component.
- **Environmental releases** - Spills of cryolite should be contained and isolated from waterways, sewers and drains. Small spills of alkali aluminum hexafluorides should be swept or shoveled up and placed in suitable containers for disposal. Disposal should be in accordance with applicable local, state and federal regulations. Persons attempting to clean up alkali aluminum hexafluoride spills should wear proper personal protective equipment (See guidelines in the Workplace exposure section of this document or the [Material Safety Data Sheet](#)). If required, report spills to the appropriate state or federal authorities.
- **Fires** - Fires involving cryolites should be extinguished using measures appropriate to the circumstances and surrounding environment. Hazardous decomposition products such as hydrogen fluoride will be generated. Fire fighters should wear self-contained breathing apparatus and protective suits.

For additional information concerning cryolite emergency response procedures, please consult the [Material Safety Data Sheet](#).

Health Information

Exposures to cryolite (industrial) can produce the following adverse health affects:

- **Contact** - Skin exposures can cause symptoms ranging from minor skin irritation to dermatitis or sensitization. Eye exposure to cryolite may result in slight eye irritation.
- **Inhalation** - The inhalation of alkali aluminum hexafluorides can cause symptoms ranging from nose and throat irritation to coughing and difficulty breathing. Prolonged

exposures may cause sore throat, nosebleeds and chronic bronchitis. At high concentrations, pulmonary fibrosis.

- **Ingestion** - The ingestion of cryolite may cause nausea, vomiting, abdominal pain, and diarrhea, dizziness drowsiness and hand tremor. Ingestion may cause pulmonary edema and pneumonitis (fluid on the lungs and inflammation of the lungs). High concentration exposures may cause hypocalcemia with nervous system disorders (tetany) and cardiac arrhythmia (reduced calcium levels, spasms and irregular heart beat).
- **Other Effects** - The International Agency for Research on Cancer (IARC) has not determined ammonium fluoride to be carcinogenic (cancer causing).

Please consult the [Material Safety Data Sheet](#) for additional information.

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

Environmental Information

Alkali aluminum hexafluorides are not known to bioaccumulate or persist in the environment. However, they are harmful to aquatic organisms. For more ecological and environmental information concerning this product, please consult the [Material Safety Data Sheet](#).

Physical Hazard Information

Alkali aluminum hexafluorides are not flammable or explosive.

Exposure of alkali aluminum hexafluorides to strong acids or strong bases or high temperatures can cause decomposition. Decomposition will result in the liberation of hydrogen fluoride.

For more information concerning the physical hazards of this product, please consult the [Material 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 [Material Safety Data Sheet](#) specific to your country or region.

Additional Information

- Solvay America, Inc. www.solvaynorthamerica.com
- Solvay Chemicals, Inc. www.solvaychemicals.us
- Solvay Fluorides, LLC Material 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> (sodium aluminum fluoride)
- This summary was prepared in April, 2011.

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