SAFETY DATA SHEET
North American Version

ALUMINUM FLUORIDE HYDRATE

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Identification of the substance or preparation

Product name	:	ALUMINUM FLUORIDE HYDRATE
Chemical Name	:	Aluminum fluoride trihydrate
Synonyms	:	Aluminum trifluoride hydrate
Structural formula		AlF3.3H2O
Molecular Weight	:	138 g/mol

1.2. Use of the Substance/Preparation

Recommended use : - Welding and soldering agents

1.3. Company/Undertaking Identification

Address : SOLVAY FLUORIDES, LLC
3333 RICHMOND AVENUE
HOUSTON TX 77098-3099
United States

1.4. Emergency and contact telephone numbers

Emergency telephone : **1 (800) 424-9300 CHEMTREC ® (USA & Canada)**
01-800-00-214-00 (MEX. REPUBLIC)

Contact telephone number (product information): : **US: +1-800-765-8292 (Product information)**
US: +1-713-525-6500 (Product information)

2. HAZARDS IDENTIFICATION

2.1. Emergency Overview:

NFPA	:	H= 2 F= 0 I= 0 S= None
HMIS	:	H= 2 F= 0 R= 0 PPE = Supplied by User; dependent on local conditions

General Information

Appearance	:	powder
Colour	:	white
Odour	:	odourless

Main effects

- Classification and labelling according to Directive 67/548/EEC.
- Presents hazards from its ionizing fluorine.
- Harmful
- Irritating to eyes.
- In case of decomposition, releases hydrogen fluoride.

2.2. Potential Health Effects:

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

SOLVAY Fluorides

SOLVAY

Inhalation
- Irritating to mucous membranes
- In case of repeated or prolonged exposure: risk of sore throat, nose bleeds.
- In case of repeated or prolonged exposure: risk of respiratory sensitization.

Eye contact
- Eye irritation, watering and redness.

Skin contact
- In case of prolonged contact: irritation.

Ingestion
- Irritation of the mouth and throat.
- Salivation
- Nausea, vomiting, abdominal cramps and diarrhea.
- By ingestion of large quantities: risk of hypocalcemia with nervous disorders (tetany) and cardiac rhythm disorders.

Other toxicity effects
- See section 11: Toxicological Information

2.3. Environmental Effects:
- See section 12: Ecological Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Aluminium fluoride trihydrate

CAS-No.	:	15098-87-0
Concentration	:	**appr. 99,0 %**

4. FIRST AID MEASURES

4.1. Inhalation
- Remove the subject from dusty environment and let him blow his nose.
- If symptoms persist, call a physician.

4.2. Eye contact
- Flush eyes with running water for several minutes, while keeping the eyelids wide open.
- If eye irritation persists, consult a specialist.

4.3. Skin contact
- Wash off with soap and water.
- Wash contaminated clothing before re-use.

4.4. Ingestion
- Consult a physician.

If victim is conscious:
- If swallowed, rinse mouth with water (only if the person is conscious).
- Give to drink a 1% aqueous calcium gluconate solution.
- Do NOT induce vomiting.
- If the subject presents nervous, respiratory or cardiovascular disorders: administer oxygen.

If victim is unconscious but breathing:
- Loosen collar and tight clothing, lay the victim on his/her left side.
- Oxygen or cardiopulmonary resuscitation if necessary
- Keep warm and in a quiet place.

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

5. FIRE-FIGHTING MEASURES

5.1. Suitable extinguishing media
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2. Extinguishing media which shall not be used for safety reasons
- None.

5.3. Special exposure hazards in a fire
- Hazardous decomposition products
- Non-combustible/non-flammable but may produce dangerous fumes if involved in fire.

5.4. Hazardous decomposition products
- Hydrogen fluoride

5.5. Special protective equipment for fire-fighters
- Intervention only by capable personnel who are trained and aware of the hazards of the product.
- In the event of fire, wear self-contained breathing apparatus.
- Wear chemical resistant oversuit
- Clean contaminated surface thoroughly.

5.6. Other information
- If safe to do so, remove the exposed containers, or cool with large quantities of water.
- After the fire, proceed rapidly to clean the surfaces exposed to the fumes in order to limit the damage to the equipment.
- As for any fire, ventilate and clean the rooms before re-entry.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions
- Refer to protective measures listed in sections 7 and 8.
- Keep away from incompatible products
- Avoid dust formation.

6.2. Environmental precautions
- Should not be released into the environment.

6.3. Methods for cleaning up
- Pick up and arrange disposal without creating dust.
- Place everything into a closed, labelled container compatible with the product.
- Treat recovered material as described in the section "Disposal considerations".
- Flush with plenty of water.

7. HANDLING AND STORAGE

7.1. Handling
- Used in closed system
- Handle small quantities under a lab hood.
- Use only in well-ventilated areas.
- Prevent any product decomposition from contacting hot spots.
- Keep away from heat.
- Keep away from incompatible products

7.2. Storage
- Keep in a cool, well-ventilated place.
- Keep away from heat.

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

- Keep away from incompatible products
- Keep in original packaging, closed.

7.3. Packaging material

- Paper + PE.

7.4. Other information

- Avoid dust formation.
- Warn people about the dangers of the product.
- Refer to protective measures listed in sections 7 and 8.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure Limit Values

Aluminium fluoride trihydrate

- US. ACGIH Threshold Limit Values 2008
  time weighted average = 2,5 mg/m3
  Remarks: as F
- Canada. Quebec OELS. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) 2006
  time weighted average = 2,5 mg/m3
  Remarks: as F
- Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) 10 2006
  time weighted average = 2,5 mg/m3
  Remarks: as F
- Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) 07 2007
  time weighted average = 2,5 mg/m3
  Remarks: as F
- Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents) 12 2007
  time weighted average = 2,5 mg/m3
  Remarks: as fluoride

8.2. Engineering controls

- Ensure adequate ventilation.
- Provide appropriate exhaust ventilation at places where dust is formed.
- Apply technical measures to comply with the occupational exposure limits.

8.3. Personal protective equipment

8.3.1. Respiratory protection

- Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.
- Use only respiratory protection that conforms to international/ national standards.
- Use NIOSH approved respiratory protection.
- In the case of dust or aerosol formation use respirator with an approved filter.

8.3.2. Hand protection

- Wear suitable gloves.
- Recommended materials: PVC, neoprene, rubber

8.3.3. Eye protection

- Chemical resistant goggles must be worn.
- Dust proof goggles, if dusty.

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

8.3.4. Skin and body protection

- Protective suit

8.3.5. Hygiene measures

- When using do not eat, drink or smoke.
- Shower and eye wash stations.
- Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General Information

Appearance	:	powder
Colour	:	white
Odour	:	odourless

9.2. Important health safety and environmental information

pH	:	ca. 3 - 5 *Concentration*: 670 mg/l *Temperature*: 20 °C (68 °F)
Boiling point/boiling range	:	1.537 °C (2.799 °F) (Anhydrous form)
Flash point	:	*Remarks*: Not applicable
Flammability	:	*Lower explosion limit*: *Remarks*: ZACT-000169000010
Explosive properties	:	*Explosion danger*: *Remarks*: no data available
Vapour pressure	:	1,33 hPa *Temperature*: 1.238 °C (2.260 °F)
Relative density / Density	:	2,88
Bulk density	:	ca. 1.000 kg/m3
Solubility	:	Water 5,6 g/l *Temperature*: 25 °C (77 °F)
	:	Soluble in:
	:	Acids
Partition coefficient: n-octanol/water	:	*Remarks*: Not applicable

9.3. Other data

Melting point/range	:	1.260 °C (2.300 °F) (Anhydrous form) *Remarks*: Sublimation point
Granulometry	:	75 % < 0,06 mm
Decomposition temperature	:	> 100 °C (212 °F) *Remarks*: Dehydration

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

10. STABILITY AND REACTIVITY

10.1. Stability

10.2. Conditions to avoid

- To avoid thermal decomposition, do not overheat.
- Keep at temperature not exceeding: 100 °C (212 °F)

10.3. Materials to avoid

- Strong acids
- glass

10.4. Hazardous decomposition products

- Hydrogen fluoride

11. TOXICOLOGICAL INFORMATION

Toxicological data

Acute oral toxicity

- LD50, rat, from 200 - 2.000 mg/kg

Eye irritation

- rabbit, Eye irritation (Anhydrous form)

Chronic toxicity

- Oral, Prolonged exposure, Target Organs**:** skeleton, testes, thyroid gland, Liver, NOEL**:** ca. 1 mg/kg, observed effect, (Sodium fluoride)
- Oral, Repeated exposure, Various species, Target Organs**:** hematology system, skeleton, nervous system, NOEL**:** 17,7 mg/kg, observed effect
- Oral, Repeated exposure, Target Organs**:** Central nervous system, observed effect, (Aluminium/soluble salts)

Carcinogenicity

- Ambiguous carcinogenic effect, (Sodium fluoride)

Teratogenicity

- Inhalation, Repeated exposure, rat, foetotoxic effect, teratogenic effect

Remarks

- Harmful if swallowed.
- Irritating to eyes.
- Chronic exposure may entail dental or skeletal fluorosis
- Risk of the central nervous system effect
- Risk of toxic effect on reproduction
- The carcinogenic effect found in animals is not demonstrated in human

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity effects

Acute toxicity

- Remarks: no data available

12.2. Mobility

- Air
  Remarks: mobility as solid aerosols
- Water/soil
  Remarks: low solubility and mobility

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

- Soil/sediments
  Conditions: alkaline
  Remarks: adsorption on mineral and organic soil constituents

12.3. Persistence and degradability

Abiotic degradation

- Water/soil
  Result: acid/base equilibrium as a function of pH
  Degradation products: fluoro-complexes (acid pH) / hydroxy-aluminum (environmental pH) / fluorhydric acid/fluoride
- Water/soil
  Result: complexation/precipitation of inorganic and organic materials

Biodegradation

- Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

12.4. Bioaccumulative potential

- Result: not applicable

12.5. Other adverse effects

- Study in progress

12.6. Remarks

- no specific data
- Product fate is highly depending on environmental conditions: pH, temperature, oxidoreductive potential, mineral and organic content of the medium,...

13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products

- In accordance with local and national regulations.
- Dispose of product at a landfill authorised for industrial waste.

13.2. Packaging treatment

- Containers that cannot be cleaned must be treated as waste.
- Or
- Dispose of the containers by dispatching them to an approved incineration facility for hazardous waste.
- The empty and clean containers are to be reused in conformity with regulations.

13.3. RCRA Hazardous Waste

- Listed RCRA Hazardous Waste (40 CFR 302) - No
- Unlisted RCRA Hazardous Waste (40 CFR 302) - No

14. TRANSPORT INFORMATION

- not regulated
- It is recommended that ERG Guide number 111 be used for all non-regulated material.

15. REGULATORY INFORMATION

15.1. Inventory Information

Canadian Domestic Substances	:	- yes:

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

List (DSL)		
Toxic Substance Control Act list (TSCA)	:	- yes:
EU list of existing chemical substances (EINECS)	:	- yes:
Philippines PICCS (PICCS (PH))	:	- yes:
New Zealand Inventory of Chemicals (NZIOC)	:	- yes: - HSNO Approved. May be used as a single component chemical under an appropriate group standard..

15.2. Other regulations

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)

- not regulated.

SARA Hazard Designation (SARA 311/312)

- Chronic Health Hazard: Yes.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

- not regulated.

US. EPA CERCLA Hazardous Substances (40 CFR 302)

- not regulated.

US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

- not regulated.

US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

- not regulated.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

- not regulated.

15.3. Classification and labelling

Canada. Canadian Environmental Protection Act (CEPA). WHMIS Ingredient Disclosure List (Can. Gaz., Part II, Vol. 122, No. 2)

- Not listed

Remarks: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

EC Label

- Labelling according to Article 6 of Dir. 92/32/EEC.

Symbol(s)	Xn	Harmful
R-phrase(s)	R22 R36	Harmful if swallowed. Irritating to eyes.

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us

S-phrase(s)	S 1/2	Keep locked up and out of the reach of children.
	S22	Do not breathe dust.
	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	S46	If swallowed, seek medical advice immediately and show this container or label.

16. OTHER INFORMATION

Ratings :

NFPA (National Fire Protection Association)
Health = 2 Flammability = 0 Instability = 0 Special =None

HMIS (Hazardous Material Information System)
Health = 2 Fire = 0 Reactivity = 0 PPE : Supplied by User; dependent on local conditions

Further information

- General revision
- Distribute new edition to clients

Material Safety Data Sheets contain country specific regulatory information; therefore, the MSDS's provided are for use only by customers of the company mentioned in section 1 in North America. If you are located in a country other than Canada, Mexico or the United States, please contact the Solvay Group company in your country for MSDS information applicable to your location. The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product). To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither the company mentioned in section 1 nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this information or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the 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. The company mentioned in section 1 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 mentioned in section 1 referenced herein are either trademarks or registered trademarks of the company mentioned in section 1 or its affiliates, unless otherwise indicated.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Copyright 2009, Company mentioned in Section 1. All Rights Reserved.

Copyright 2009, SOLVAY FLUORIDES, LLC
A member of SOLVAY Chemicals
All Rights Reserved
www.solvaychemicals.us