

## ALUMINIUM FLUORIDE

Page: 1 of 13

# Safety Data Sheet

According to Annex II to REACH - Regulation 2015/830

## SECTION 1. Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Code:	FLUORSID - AIF3
Product name	ALUMINIUM FLUORIDE
EC number	232-051-1
CAS number	7784-18-1
Registration Number	01-2119485977-13-0005

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### Intended use

**Uses by workers in industrial settings:** Manufacture of substances, uses in alluminium industry as smelter, uses in alluminium industry, uses in casting industry as flux, uses in ceramic industry, manufacture of abrasives, distribution of substance, uses in alluminium alloys, uses as agent of mineralizing in industrial process, production of fluxes for foundries and smelter, ceramic tiles, production of glassware, enamel lining and metal surface treatment and planting agent, welding and soldering products, flux products, catalyst in chemical reactions and organic synthesis, intermediates, laboratory chemicals, inhibitors of fermentation, processing regulators and processing aid, not otherwise stated.

**Uses by professional workers:** uses in ceramic tiles, uses in abrasive paper, uses in ceramic tiles.

**Uses by consumers:** uses in ceramic tiles, uses in abrasive paper.

**Uses advised against** Uses other than those indicated above

### 1.3. Details of the supplier of the safety data sheet

Name	Fluorsid S.p.A.
Full address	2a Strada Macchiareddu
District and Country	09032 Assemini (CA) ITALY
	tel. +39 070 246321
	fax +39 070 2463235

e-mail address of the competent person  
responsible for the Safety Data Sheet

[msds.cagliari@fluorsid.com](mailto:msds.cagliari@fluorsid.com)

### 1.4. Emergency telephone number.

For urgent inquiries refer to.

Company Emergency telephone number:  
**Fluorsid S.p.A.** Tel . +39 070 246321 (technical support - office hours)

United Kingdom:  
111 (NHS Service).

## ALUMINIUM FLUORIDE

Page: 2 of 13

### SECTION 2. Hazards identification

#### 2.1. Classification of the substance or mixture

The product is not classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP). However, since the product contains community workplace exposure limit (OEL) substances in concentrations such as to be declared in section no. 3, it requires a safety data sheet with appropriate information, compliant to (EU) Regulation 2015/830. Hazard classification and indication:

#### 2.2. Label elements

Hazard pictograms: --

Signal words: --

Hazard statements: --

Precautionary statements: --

This product is not subject to hazard labeling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

#### 2.3. Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

### SECTION 3. Composition/information on ingredients

#### 3.1. Substances

Contains:

Identification	Conc. %	Classification 1272/2008 (CLP)
<b>ALUMINIUM FLUORIDE</b>		
CAS 7784-18-1	90 < C < 95	Substance with a community workplace exposure limit.
EC 232-051-1		
INDEX		
Reg. no. 01-2119485977-13-0005		
<b>Chemical identifier of the contained impurity:</b>		
<b>Aluminium oxide</b>	5 < C < 10	
Cas 1344-28-1		
CE 215-691-6		

The full wording of hazard (H) phrases is given in section 16 of the sheet.

### SECTION 4. First aid measures

#### 4.1. Description of first aid measures

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. If problem persists, seek medical advice.

SKIN: Remove contaminated clothing. Wash immediately with plenty of water. If irritation persists, get medical advice/attention. Wash

## ALUMINIUM FLUORIDE

contaminated clothing before using it again.

**INHALATION:** Remove to open air. In the event of breathing difficulties, get medical advice/attention immediately.

**INGESTION:** Get medical advice/attention. Induce vomiting only if indicated by the doctor. Never give anything by mouth to an unconscious person, unless authorised by a doctor.

**PROTECTIVE MEASURES FOR THE FIRST RESCUE WORKERS:** for PPE (personal protection equipment) required for first aid refer to section 8.2 of this safety data sheet.

### 4.2. Most important symptoms and effects, both acute and delayed

In comparison with well soluble fluorides, aluminium fluoride (AlF<sub>3</sub>), which is only marginally soluble, is estimated to be less toxic but the possibility of poisoning via all intake pathways is indicated. Although there is practically no confirming data, a high risk should be expected in order to be on the safe side.

Symptoms of acute poisoning:

**Eyes:** foreign body feeling, burning sensation, lacrimation, reddening; following prolonged contact, corneal damage not to be excluded

**Skin:** following intense contact, irritation up to corrosion possible; then, absorptive-toxic effects also possible

**Inhalation:** irritation to the upper airways (cough, difficulties in breathing, possibly asthma-like symptoms), following very massive impact, damage to the lungs and systemic effects possible

**Ingestion:** irritation/damage to the mucous membranes as well as gastrointestinal complaints possible; soon also systemic effects

**Absorption:** salivation, transpiration, muscular weakness, tremor, somnolence, hypotension; in isolated cases tetaniform cramps, disturbances of the heart rhythm (danger of ventricular fibrillations), respiratory insufficiency, coma; metabolic disturbances (hypocalcemia, coagulation disturbances, dehydration, hyperkalemia, changes of enzyme activities).

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

In case of accident or unwellness, immediately consult a doctor (if possible show the instructions for use or the safety data sheet).

**Medical advice:**

Following intense contact with the skin or felt irritation, carefully cleanse the contaminated areas and treat them with calcium gluconate gel (carefully massage it in) in order to bind possibly released fluoride ions. Then apply an ointment containing glucocorticoids. Generally, the subcutaneous injection into the skin should not be necessary following contact with AlF<sub>3</sub>.

Following massive inhalation of dust and always in cases when irritation to the airways/difficulties in breathing become noticeable: apply glucocorticoids (inhalatively / i.v.) and carry out all further prophylactic measures for pulmonary edema and pneumonia. Hospitalize the casualty for further check-up.

Intensively monitor the cardiovascular and respiratory functions. Transport the casualty to hospital for further observation/treatment.

## SECTION 5. Firefighting measures

### 5.1. Extinguishing media

**SUITABLE EXTINGUISHING EQUIPMENT**

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder, water spray.

**UNSUITABLE EXTINGUISHING EQUIPMENT**

None in particular.

### 5.2. Special hazards arising from the substance or mixture

**HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE**

Do not breathe combustion products. Thermal decomposition can result in the release of toxic and corrosive gases such as hydrogen fluoride. The gas formation occurs in case of combustion with a temperature above 600 ° C and in presence of water.

### 5.3. Advice for firefighters

**GENERAL INFORMATION**

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS**

Fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137), as foreseen in its emergency plan.

**ALUMINIUM FLUORIDE****SECTION 6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures***For non-emergency personnel*

Do not take any action that involves any personal risk or without adequate training. Evacuate the surrounding areas. Wear appropriate protective equipment (including personal protective equipment referred to in section 8 of this safety data sheet) to prevent contamination of the skin, eyes and personal clothing. Wear appropriate respirator when ventilation is inadequate. Do not inhale the dust. Avoid dispersion of the product in the environment. Follow the appropriate internal procedures for unauthorized personnel to intervene directly in case of accidental release.

*For emergency responders*

Evacuate non-authorized personnel. Wear appropriate protective equipment. (see section 8 of this Safety Data Sheet). Follow the appropriate internal procedures for authorized personnel. Isolate the danger area and deny entry. Ventilate enclosed spaces before entering. Remove unequipped persons. Eliminate all sources of ignition (cigarettes, flames, sparks, etc.) from the area in which the leak occurred.

**6.2. Environmental precautions**

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

**6.3. Methods and material for containment and cleaning up**

Collect as much material as possible and eliminate the rest using jets of water. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

**6.4. Reference to other sections**

Any information on personal protection and disposal is given in sections 8 and 13.

**SECTION 7. Handling and storage****7.1. Precautions for safe handling**

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use.

**7.2. Conditions for safe storage, including any incompatibilities**

Keep the product in clearly labelled containers. Keep containers away from any incompatible materials, see section 10 for details.

**7.3. Specific end use(s)**

No use other than as indicated in section 1.2 of this safety data sheet

**SECTION 8. Exposure controls/personal protection****8.1. Control parameters**

Regulatory References:

FRA	France	Valeurs limites d'exposition professionnelle aux agents chimiques en France. ED 984 - INRS
ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81
GBR	United Kingdom	EH40/2005 Workplace exposure limits
ROU	România	Monitorul Oficial al României 44; 2012-01-19
DEU	Deutschland	TRGS 900 - Seite 1 von 69 (Fassung 29.03.2019)- Liste der Arbeitsplatzgrenzwerte und Kurzzeitwerte
GRC	Ελλάδα	ΕΦΗΜΕΡΙΔΑ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ - ΤΕΥΧΟΣ ΠΡΩΤΟ Αρ. Φύλλου 152 - 21 Αυγούστου 2018

## ALUMINIUM FLUORIDE

NOR	Norge	Fastsatt av Arbeids- og sosialdepartementet 21. august 2018 med hjemmel i lov 17. juni 2005 nr. 62 om arbeidsmiljø, arbeidstid, stillingsvern mv. (arbeidsmiljøloven) § 1-3, § 1-4 og § 4-5
SVK	Slovensko	Nariadenie vlády č. 33/2018 Z. z. Nariadenie vlády Slovenskej republiky, ktorým sa mení a dopĺňa nariadenie vlády Slovenskej republiky č. 355/2006 Z. z. o ochrane zamestnancov pred rizikami súvisiacimi s expozíciou chemickým faktorom pri práci v znení neskorších predpisov
NLD	Nederland	Regeling van de Staatssecretaris van Sociale Zaken en Werkgelegenheid van 13 juli 2018, 2018-0000118517 tot wijziging van de Arbeidsomstandighedenregeling in verband met de implementatie van Richtlijn 2017/164 in Bijlage XIII
EU	OEL EU TLV-ACGIH	Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 91/322/EEC. ACGIH 2020

### ALUMINIUM FLUORIDE

#### Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
AGW	DEU	1		4		INHAL Aerosol, As F
MAK	DEU	1		4		INHAL Aerosol, As F
VLEP	FRA	2,5				As F
VLEP	ITA	2,5				As F
TGG	NLD			2		As F
TLV	ROU	2,5				Inorganic, As F
OEL	EU	2,5				As F
TLV-ACGIH		2,5				As F

#### Predicted no-effect concentration - PNEC

Normal value in fresh water	0,106	mg/l
Normal value in marine water	0,011	mg/l
Normal value for fresh water sediment	0,28	mg/kg/d
Normal value for marine water sediment	0,028	mg/kg/d
Normal value for water, intermittent release	0,042	mg/l
Normal value of STP microorganisms	5	mg/l

#### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral				0,002 mg/kg bw/d				
Inhalation				0,008 mg/m <sup>3</sup>				0,047 mg/m <sup>3</sup>
Skin				0,024 mg/kg bw/d				0,068 mg/kg bw/d

### ALUMINIUM OXIDE - EXPOSURE LIMITS FOR IMPURITY CONTAINED

#### Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm	
MAK	DEU	4				INHAL
MAK	DEU	1,5				RESP
TLV	DNK	2				RESP Som Al
VLEP	FRA	10				RESP
TLV	GRC		10			
TLV	NOR	10				
TLV	ROU	2	0,5	5	1,2	Aerosoli

## ALUMINIUM FLUORIDE

NPEL	SVK	4	INHAL
NPEL	SVK	1,5	RESP
WEL	GBR	4	RESP
WEL	GBR	10	INHAL

### ALUMINIUM - INSOLUBLE COMPOUNDS

#### Threshold Limit Value

Type	Country	TWA/8h		STEL/15min	
		mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>	ppm
TLV-ACGIH		1			RESP

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.  
VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

During the risk assessment process, it is essential to take into consideration the ACGIH occupational exposure levels for inert particulate not otherwise classified (PNOC respirable fraction: 3 mg/m<sup>3</sup>; PNOC inhalable fraction: 10 mg/m<sup>3</sup>).

#### Biological indicators of exposure adopted; TLV ACGIH 2020

Fluorides in urine: 2 mg / l. Time of withdrawal: before the shift.

Fluorides in urine: 3 mg / l. Time of withdrawal: end of shift.

#### Recommended monitoring procedures

The methods for assessment of the atmosphere in the workplace must comply with the requirements stated in norms EN 482 and EN 689.

### 8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

When choosing personal protective equipment, ask your personal protective equipment (PPE) supplier for advice.  
Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

#### HAND PROTECTION

In the case of prolonged contact with the product, protect the hands with penetration-resistant work gloves (see standard EN 374).

Recommended materials:

Nitrile rubber / butadiene (nitrile or NBR), Neoprene, Polyvinyl chloride (PVC or vinyl) natural rubber.

Level: 1 (permeation time greater than 10 minutes according to EN 374 e EN16523-1:2019).

Recommended material thickness: when identifying the thickness of the material, it is highly recommended to compare it with the PPE manufacturer to assess the effective protection regarding the peculiar characteristics of the same.

Work glove material must be chosen according to the use process and the products that may form. Latex gloves may cause sensitivity reactions.

#### SKIN PROTECTION

Wear professional long-sleeved overalls and safety footwear whose category, must be defined according to the outcome of risk assessment (see Regulation 2016/425 and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

#### EYE PROTECTION

Wear protective goggles (see standard EN 166).

#### RESPIRATORY PROTECTION

Use a type P filtering facemask, whose class (1, 2 or 3) and effective need, must be defined according to the outcome of risk assessment (see standard EN 149).

#### ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

## ALUMINIUM FLUORIDE

### SECTION 9. Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Appearance	powder	
Colour	White	
Odour	Odourless	
Odour threshold	Not available	
pH	4, 5-5, 0	Saturated solution
Melting point / freezing point	1291 °C	Agency for Toxic Substances and Disease Registry (ATSDR)
Initial boiling point	1537°C	Dangerous Properties of Industrial Materials (7th Ed.)
Boiling range	Not available	
Flash point	Not applicable as the physical state	
Evaporation Rate	Not available	
Flammability of solids and gases	In accordance with section 1 of REACH (Regulation (EC) No 1907/2006) Annex XI, the flammability study (for solids as required in Annex VII section 7.10) does not need to be conducted as the substance has almost no vapour pressure, a nonexistent flash point, and based on thermogravimetric analysis, no ignitable.	
Lower inflammability limit	Not flammable substance	
Upper inflammability limit	Not flammable substance	
Lower explosive limit	In accordance with column 2 of REACH (Regulation (EC) No 1907/2006) Annex VII, the explosiveness study (required in section 7.11) does not need to be conducted as there are no chemical groups associated with explosive properties present in the molecule.	
Upper explosive limit	In accordance with column 2 of REACH (Regulation (EC) No 1907/2006) Annex VII, the explosiveness study (required in section 7.11) does not need to be conducted as there are no chemical groups associated with explosive properties present in the molecule.	
Vapour pressure	Not available	
Vapour density	Not applicable as the physical state	
Relative density	Not applicable as the physical state	
Solubility	3.1 g/cm <sup>3</sup> - 20°C	CRC Handbook of Chemistry and Physics (81st Ed.)
Partition coefficient: n-octanol/water	In accordance with column 2 of REACH (Regulation (EC) No 1907/2006) Annex VII, the partition coefficient study (required in section 7.8) does not need to be conducted as the substance is inorganic.	
Auto-ignition temperature	In accordance with column 2 of REACH (REGULATION (EC) No 1907/2006) Annex VII, the auto flammability study (required in section 7.12) does not need to be conducted as the preliminary results exclude self-heating of the substance up to 400°C.	
Decomposition temperature	Not available	
Viscosity	In accordance with section 2 of REACH (Regulation (EC) No 1907/2006) Annex XI, the viscosity study (required in Annex IX section 7.17) does not need to be conducted as the substance is a solid.	
Explosive properties	In accordance with column 2 of REACH (Regulation (EC) No 1907/2006) Annex VII, the explosiveness study (required in section 7.11) does not need to be conducted as there are no chemical groups associated with explosive properties present in the molecule.	
Oxidising properties	In accordance with column 2 of REACH (Regulation (EC) No 1907/2006) Annex VII, the oxidising properties study (required in section 7.13) does not need to be conducted as the substance is incapable of reacting exothermically with combustible materials, for example on the basis of the chemical structure (e.g. organic substances not containing oxygen or halogen atoms and these elements are not chemically bonded to nitrogen or oxygen).	

#### 9.2. Other information

## ALUMINIUM FLUORIDE

---

Molecular weight	83,980
Total solids (250°C / 482°F)	100,00 %

### SECTION 10. Stability and reactivity

#### 10.1. Reactivity

Aluminium fluoride may dissolve slowly in strong sulphuric acid with the liberation of hydrogen fluoride and in strong aqueous alkalis with the formation of aluminate.

#### 10.2. Chemical stability

The product is stable in normal conditions of use and storage.

#### 10.3. Possibility of hazardous reactions

The product may evolve toxic hydrogen fluoride gas when heated until decomposition, especially in presence of water.

#### 10.4. Conditions to avoid

Avoid high temperatures (above 600 °C when dry, 300 °C in the presence of water), unless when in professional use.

#### 10.5. Incompatible materials

Aluminium fluoride is slowly attacked by fused alkalis, with formation of fluoride and aluminate.

#### 10.6. Hazardous decomposition products

The compound can evolve toxic gases when heated above 600 °C during fire (HF)

### SECTION 11. Toxicological information

#### 11.1. Information on toxicological effects

##### ACUTE TOXICITY

##### ALUMINIUM FLUORIDE

LD50 (Oral) > 2000 mg/kg Rat (OECD TG 420)

LC50 (Inhalation/dust) > 0,53 mg/l/4h Rat (OECD TG 403)

In accordance with column 2 of REACH (Regulation (EC) No 1907/2006) Annex VIII, the acute toxicity by dermal exposure study (required in section 8.5.3) does not need to be conducted as acute toxicity studies are available for the oral and inhalation routes of exposure.

##### SKIN CORROSION / IRRITATION

Does not meet the classification criteria for this hazard class

Method: OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Reliability (Klimisch score): 1

Species: Rabbit (New Zealand White)

Results: Not irritating

##### SERIOUS EYE DAMAGE / IRRITATION

Does not meet the classification criteria for this hazard class

Method: OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Reliability (Klimisch score): 1

Species: Rabbit (New Zealand White)



**ALUMINIUM FLUORIDE**

---

Results: Not irritating

**RESPIRATORY OR SKIN SENSITISATION**

Does not meet the classification criteria for this hazard class

Method: OECD Guideline 406 (Skin Sensitization)

Reliability (Klimisch score): 1

Species: guinea pig (Dunkin Hartley)

Results: non sensitizing for the skin.

There are no data on respiratory sensitization.

**GERM CELL MUTAGENICITY**

Does not meet the classification criteria for this hazard class

Method: equivalent or similar to OECD Guideline 471 (Bacterial Reverse Mutation Assay)

Reliability (Klimisch score): 3

In vitro test

Species: S. typhimurium TA 1535, TA 1537, TA 98, TA 100, S. typhimurium TA 1538

Results: negative with metabolic activation - negative without metabolic activation

No in vivo tests have been performed

**CARCINOGENICITY**

In accordance with column 2 of REACH (Regulation (EC) No 1907/2006) Annex X, the carcinogenicity study (required in section 8.9.1) does not need to be conducted as there is no evidence from the 28-day and 5-month inhalational repeat dose toxicity study findings that exposure to the test compound results in hyperplasia or pre-neoplastic lesions and the current classification as a non-genotoxic compound.

**REPRODUCTIVE TOXICITY**

Does not meet the classification criteria for this hazard class

Adverse effects on sexual function and fertility

Method: equivalent or similar to OECD Guideline 416 (Two-Generation Reproduction Toxicity Study), read across

Reliability (Klimisch score): 2

Species: rat (Sprague-Dawley Male / Female)

Routes of exposure: oral

NOAEL results: 600 ppm, 42 mg / kg bw / day

Adverse effects on development of the offspring

Method: equivalent or similar to OECD Guideline 414 (Prenatal Developmental Toxicity Study), read across

Reliability (Klimisch score): 2

Species: rat (CD-1)

Routes of exposure: oral

NOAEL (maternal) results: 30 mg / kg bw / day

The RAC has reviewed the data from this study and others and has noted the following: "RAC is of the view that the maternal mortality in the two "positive" mouse studies is too high to allow any meaningful conclusions on developmental toxicity to be drawn from these studies (CLP Regulation, Annex I §3.7.2.4.4 "Maternal mortality greater than 10% is considered excessive and the data for that dose level shall not normally be considered for further evaluation").

**STOT - SINGLE EXPOSURE**

Does not meet the classification criteria for this hazard class

**STOT - REPEATED EXPOSURE**

Does not meet the classification criteria for this hazard class

Method: equivalent or similar to OECD Guideline 452 (Chronic Toxicity Studies), read across

Reliability (Klimisch score): 2

Species: dog (Beagle Male / Female)

Routes of exposure: oral

**ALUMINIUM FLUORIDE**

LOAEL results = 95 mg / kg bw / day (male)  
LOAEL results = 105 mg / kg bw / day (female)

Method: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study)  
Reliability (Klimisch score): 1  
Species: rat (Wistar Male / Female)  
Routes of exposure: inhalation  
NOAEL results = 7 mg / m<sup>3</sup> air

**ASPIRATION HAZARD**

Does not meet the classification criteria for this hazard class

**SECTION 12. Ecological information**

Use this product according to good working practices. Avoid littering. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation.

**12.1. Toxicity****ALUMINIUM FLUORIDE**

LC50 - for Fish	> 100 mg/l/96h ZebraFish (OECD TG 203)
EC50 - for Crustacea	> 7,6 mg/l/48h Daphnia magna (OECD TG 202)
EC50 - for Algae / Aquatic Plants	> 7,6 mg/l/72h Pseudokirchneriella subcapitata (OECD TG 201)

All chronic studies for species:

Fishes  
Algae / aquatic plants  
Crustacea

According to 'Annex IX, column 2 of REACH (Regulation (EC) no. 1907/2006), should not be conducted on the basis of the results found in the chemical safety assessment

**12.2. Persistence and degradability****ALUMINIUM FLUORIDE**

Solubility in water  $\geq 5.3 - \leq 9.4$  mg/L (OECD TG 105)

Degradability: information not available.  
Inorganic substance, Annex IX, sez. 9.2.1, column 2 REACH.

**12.3. Bioaccumulative potential**

Information not available

**12.4. Mobility in soil**

Information not available

**12.5. Results of PBT and vPvB assessment**

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

**12.6. Other adverse effects**

Information not available

## ALUMINIUM FLUORIDE

### SECTION 13. Disposal considerations

#### 13.1. Waste treatment methods

Reuse, when possible. Neat product residues should be considered special non-hazardous waste.  
Disposal must be performed by an authorised waste management enterprise in compliance with national and local regulations.  
The legal responsible for disposal is the producer / holder of the waste.  
Different EWC codes could be applied to this mixture according to the European Waste Catalogue based on the specific circumstances that generated the waste, possible alterations and / or possible contamination  
Disposal through wastewater discharge is not permitted.

#### CONTAMINATED PACKAGING

Contaminated packaging, properly labeled, shall be sent to recovery or disposal in compliance with national waste management regulations and they shall be classified with the following EWC code:

<b>NOT DANGEROUS</b>	<b>15 01 01</b> : paper and cardboard packaging
	<b>15 01 02</b> : plastic packaging
	<b>15 01 03</b> : wooden packaging
	<b>15 01 04</b> : metallic packaging
	<b>15 01 05</b> : composite packaging
	<b>15 01 06</b> : mixed packaging
	<b>15 01 07</b> : glass packaging
	<b>15 01 09</b> : textile packaging

### SECTION 14. Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

#### 14.1. UN number

Not applicabl

#### 14.2. UN proper shipping name

Not applicable

#### 14.3. Transport hazard class(es)

Not applicable

#### 14.4. Packing group

Not applicable

#### 14.5. Environmental hazards

Not applicable

#### 14.6. Special precautions for user

Not applicable

#### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Information not relevant

## ALUMINIUM FLUORIDE

Page: 12 of 13

### SECTION 15. Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Seveso Category - Directive 2012/18/EC: None

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

None

Substances in Candidate List (Art. 59 REACH)

On the basis of available data, the product does not contain any SVHC in percentage greater than 0,1%.

Substances subject to authorisation (Annex XIV REACH)

None

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:

None

Substances subject to the Rotterdam Convention:

None

Substances subject to the Stockholm Convention:

None

Healthcare controls

Information not available

#### 15.2. Chemical safety assessment

A chemical safety assessment has been performed for the substance. This assessment did not result in the creation of the exposure scenarios (article 14 paragraph 4 REACH)

### SECTION 16. Other information

LEGEND:

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level

## ALUMINIUM FLUORIDE

Page: 13 of 13

- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

### GENERAL BIBLIOGRAPHY

1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
  2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
  3. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
  4. Regulation (EU) 2015/830 of the European Parliament
  5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
  6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
  7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
  8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
  9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
  10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
  11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
  12. Regulation (EU) 2016/1179 (IX Atp. CLP)
  13. Regulation (EU) 2017/776 (X Atp. CLP)
  14. Regulation (EU) 2018/669 (XI Atp. CLP)
  15. Regulation (EU) 2018/1480 (XIII Atp. CLP)
  16. Regulation (EU) 2019/521 (XII Atp. CLP)
- The Merck Index. - 10th Edition
  - Handling Chemical Safety
  - INRS - Fiche Toxicologique (toxicological sheet)
  - Patty - Industrial Hygiene and Toxicology
  - N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
  - IFA GESTIS website
  - ECHA website
  - Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

### Note for the recipient of the Safety Data Sheet (SDS):

The recipient of this SDS shall make sure of reading and understanding the information included by all people who handle, store, use, or otherwise come into contact in any way with the substance or mixture to which this SDS is referred to. In particular, the recipient shall provide adequate training to the personnel for the use of hazardous substances and/or mixtures. The recipient shall verify the suitability and completeness of the provided information according to the specific use of the substance or mixture.

However, the substance or mixture referred to by this SDS shall not be used for uses other than those specified in Section 1. The Supplier don't assume responsibility for improper uses. Since the use of the product does not fall under the direct control of the Supplier, the user shall, under his own responsibility, fulfill national and EU regulations concerning health and safety.

The information included in this SDS are provided in good faith and are based on the current state of scientific and technical knowledge, at the revision date indicated, available to the Supplier indicated in Section 1 of this SDS. It shall not be meant that the SDS is a guarantee of any specific property of the substance or mixture. The information concern only to the substance or mixture specifically designated in Section 1 and it could not be valid for the substance or mixture used in combination with other materials or in any process not specified in the text.

Changes to previous review:

The following sections were modified: all.