

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

SYNTHETIC CALCIUM FLUORIDE

1. Substance/mixture and company identification

1.1 Product identification

Chemical name	:	SYNTHETIC CALCIUM FLUORIDE WITH CALCIUM SULFATE AND CALCIUM CARBONATE
Commercial name	:	SYNTHETIC CALCIUM FLUORIDE OR REACTION MASS OF CALCIUM FLUORIDE AND CALCIUM SULFATE AND CALCIUM CARBONATE
C.A.S. Number	:	CaF ₂ : 7789-75-5; CaSO ₄ : 7778-18-9 CaCO ₃ : 1317-65-3
EINECS number	:	232 – 188 – 7 for CaF ₂ 231 – 900 – 3 for CaSO ₄ 215 – 279 – 6 for CaCO ₃
Chemical formula	:	CaF ₂ - CaSO ₄ - CaCO ₃
Molecular weight	:	CaF ₂ = 78,08 g/mol; CaSO ₄ = 136,14 g/mol; CaCO ₃ = 100,09 g/mol.
Registration number CaF ₂	:	01-2119491248-30-0011
Registration number CaSO ₄	:	01-2119444918-26-0141

1.2 Application fields

Synthetic calcium fluoride is used in the cement industry as a flux in the blast.

1.3 Company identification

Company name	:	Fluorsid S.p.A.
Address	:	2 ^a Strada Macchiareddu 09032 ASSEMINI (CA) - Italy
Phone Nr.	:	+ 39 070 246321
Fax Nr.	:	+39 070 2463235
E-mail	:	msds@fluorsid.com
Website	:	www.fluorsid.com

1.4 Emergency phone number

Poison centre number (Niguarda (MI) Hospital)	+39 02 66101029 (24h)
Emergencies	+39 070 246321

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

2. Hazard identification

2.1 Classification of the substance/mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:

This substance/mixture is not classified as hazardous according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

2.2 Label elements

Labelling according Regulation (EC) N° 1272/2008 [CLP]

This substance/mixture is not labelled according to Regulation (EC) N° 1272/2008 [CLP]

2.3 Other hazards

No special remarkable hazards.

3. Product composition

Nr.	Name of compound	Chemical Formula	CAS-number	EINECS number	Content (weight % on dry basis)	Classification
						Regulation (EC) 1272/2008
1	Synthetic calcium fluoride	CaF ₂	7789 - 75 - 5	232 - 188 - 7	45-50 %	
2	Calcium sulphate	CaSO ₄	7778 - 18 - 9	231 - 900 - 3	10-30 %	
3	Calcium carbonate	CaCO ₃	1317 - 65 - 3	215 - 279 - 6	1,5-20 %	
4	Silicon dioxide	SiO ₂	7631 - 86 - 9	231 - 545 - 4	0,7-10 %	
5	Aluminum oxide	Al ₂ O ₃	1344 - 28 - 1	215 - 691 - 6	1-1,5 %	
6	Iron trioxide	Fe ₂ O ₃	1309 - 37 - 1	215 - 168 - 2	0,4-0,6 %	
7	Magnesium Hydroxide	Mg(OH) ₂	1309 - 42 - 8	215 - 170 - 3	0,5-1 %	
8	Water	H ₂ O	7732 - 18 - 5	231 - 791 - 2	8-10 %	

4. First aid

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

4.1. Description of first aid measures

Inhalation

In case of symptoms owing to dust inhalation, seek medical attention.

Skin contact

Rinse with plenty of water. Wash exposed area thoroughly with soap and water.

Eyes contact

Wash immediately and abundantly with water keeping the eyelids well open. Seek medical attention if irritation develops and persists.

Swallowing

In the case of accidental swallowing if any symptom appears seek medical attention.

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

not available

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

not available

5. Fire fighting measures

The product is not flammable

5.1. Extinguishing media

Advised extinguishing agents:

CO₂, nebulized water, foam, chemical powder

Unappropriate extinction methods:

none

5.2. Special hazards arising from the substance or mixture

The product under fire condition may develop irritant/toxic gas

The compound can evolve toxic fluoride gases when heated during fire.

5.3. Advice for firefighters

Wear the fire equipment all the time.

Wear self-contained breathing apparatus and full protective clothing.

6. Measure in case of accidental spillage

6.1. Personal precautions, protective equipment and emergency procedures

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

Avoid dusting. Wear personal protective equipment for dust handling. Avoid the contact with skin and eyes

6.2. Environmental precautions

Collect the product in suitable container for disposal. Notify authorities if product enters sewer or public waters.

6.3. Methods and material for containment and cleaning up

Pick up the product using the normal mechanical or manual means.

Disposal must be done according to national legislation.

6.4. Reference to other sections

Refer to paragraphs 8 and 13 for more information

7. Handling and Storage

No special measures are required if used correctly.

7.1 Precautions for safe handling

Install local aspiration and ventilation system in the every working areas.

Where it is not possible to limit the exposure and the contact with the skin, use PPE such as overalls, gloves, glasses and anti dust masks.

Do not smoke or take food and drink in places at risk of exposure / contact with the product.

7.2 Conditions for safe storage, including any incompatibilities

Store the product separated from the other working areas, covered, protected from the atmosphere and in particular from wind.

The product has to be kept in closed bags, to avoid spreading.

7.3. Specific end use(s)

For particular uses of the product, is necessary to refer to the specific information or contact the technical service of the Company.

8. Personal protection and exposure control

8.1 Exposure limit values

Limits of professional exposure

TLV - TWA = 2,5 mg/m³ (as F) (IOELV for inorganic fluoride)

Biological index of exposure (B.I.E.) according to A.C.G.I.H.

Indicators	Checking time	B.I.E. Method
Fluorine in the urine	before the shift	3 mg/g creatinine

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

Fluorine in the urine after the shift 10 mg/g creatinine

DNEL

Long term systemic effects – Inhalation 5 mg/m³ (IOELV equivalent for Calcium difluoride)

8.2 Control of the exposure

8.2.1 Control of the professional exposure

Provide sufficient ventilation. If this measure is not sufficient to keep the particle concentration below the exposure limit value, it will be necessary to use suitable respiratory protection apparatus. Observe the normal personal health measures.

Respiratory protection

Half mask with filter FFP2/FFP3.

Hand protection

Wear protective gloves of textile/leather.

Eye protection

Anti dust protective glasses

Skin protection

Normal protective dresses with long sleeves and safety boots/shoes.

8.2.2 Control of the environmental exposure

Do not disperse the product in the environment

9. Chemical and physical properties

9.1 Information on basic physical and chemical properties

Physical and chemical properties	Value
Appearance	Solid light brown
Odour	Odourless
Odour threshold	not available
pH	8 - 9 in sat. sol.
Melting point/freezing point	1403° C CaF ₂ 1450° C CaCO ₃
Initial boiling point and boiling range	2500° C CaF ₂
Flash point	not pertinent
Evaporation rate	not pertinent
Flammability (solid, gas)	not pertinent
Upper/lower flammability or explosive limits	not pertinent

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

Vapour pressure	not available
Vapour density	not available
Density	3.18 g/cm ³ CaF ₂ 2.96 g/cm ³ CaCO ₃
Solubility/ Water solubility	0.015 g/L CaF ₂ 2 g/L CaSO ₄
Partition coefficient: n-octanol/water	not available
Auto-ignition temperature	not available
Decomposition temperature	not available
Viscosity	not available
Bulk density	1,1 kg/dm ³
Explosive properties	not explosive
Oxidising properties	not oxidising

9.2. Other information

VOC (Directive 1999/13/CE): 0%

10. Stability and reactivity

10.1 Reactivity

Calcium difluoride can dissolve slowly in concentrated solutions of hot sulfuric acid with liberation of hydrogen fluoride.

10.2 Chemical stability

The product is stable under normal conditions.

10.3 Possibility of hazardous reactions

It reacts with hot concentrated sulphuric acid, giving vapours of hydrogen fluoride.

10.4 Conditions to avoid

Avoid contact with sulphuric acid.

10.5 Incompatible materials

No incompatible materials known.

10.6 Hazardous decomposition products

If exposed to free flames or very high temperatures it can react developing toxic vapours of fluorine.

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

11. Toxicological informations

11.1 Information on toxicological effects

Calcium Difluoride		
Relevant hazard class	Effect dose	Remark
Acute oral toxicity	LD50 > 1581 mg/kg bw	
Acute dermal toxicity	n/a	Dermal absorption is likely to be insignificant for this inorganic salt of low solubility
Acute inhalative toxicity	LC50 > 5070 mg/m3	Maximum attainable dose
Skin corrosion/irritation	n/a	Not irritating
Serious eye damage/irritation	n/a	Not irritating
Respiratory or skin sensitization	n/a	A modern LLNA demonstrates that calcium difluoride does not have skin sensitisation potential. There is no indication that the substance is a respiratory sensitiser.
Mutagenicity (in vitro / in vivo)	n/a	A negative Ames test, a negative study of cytogenicity in V79 cells in vitro and a negative study of gene mutation in V79 cells in vitro are available for calcium difluoride
Carcinogenicity oral	n/a	High quality NTP studies in the rat and mouse are available for sodium fluoride The EU RAR for hydrogen fluoride concludes that the data are sufficient to suggest that fluoride is not carcinogenic in animals.
Carcinogenicity dermal	n/a	
Carcinogenicity inhalation	n/a	

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

Reproductive toxicity: fertility impairment oral	n/a	No data are available for the substance, however a number of studies (including high quality FDA data) are available for sodium fluoride. The more reliable studies do not indicate that the substance is a specific developmental or reproductive toxin.
Reproductive toxicity: fertility impairment dermal	n/a	
Reproductive toxicity: fertility impairment inhalation	n/a	
Reproductive toxicity: developmental toxicity oral	n/a	A number of studies (including high quality FDA data) are available for sodium fluoride. The much greater water solubility of sodium fluoride (41300 mg/L) compared to calcium difluoride (15 mg/L) means that the bioavailability of fluoride from sodium fluoride is likely to be much greater than that of fluoride from calcium difluoride and therefore represents a worst case.
Reproductive toxicity: developmental toxicity oral	n/a	
Reproductive toxicity: developmental toxicity oral	n/a	
Repeat dose toxicity: sub-acute/sub-chronic/chronic (oral)	-	The results of studies of repeated dose oral toxicity indicate that calcium difluoride exhibits typical fluoride toxicity, however the low water solubility of the substance indicates that the oral bioavailability of fluoride from the substance is less than other salts such as sodium fluoride, thereby limiting its toxicity. The results of a 28-day inhalation study with the insoluble salt aluminium fluoride did not show any evidence of fluoride toxicity at the highest exposure concentration of 50 mg/m ³ . The results of this study therefore indicate the low bioavailability of fluoride following inhalation exposure.
Repeat dose toxicity: sub-acute/sub-chronic/chronic (dermal)	-	
Repeat dose toxicity: sub-acute/sub-chronic/chronic (inhalation)	LOAEC: 50 mg/m ³ (subacute)	

Calcium Sulfate		
Relevant hazard class	Effect dose	Remark
Acute oral toxicity	LD50 > 1581 mg/kg bw	
Acute dermal toxicity	n/a	No dermal toxicity envisaged due to low potential for absorption
Acute inhalative toxicity	LC50 > 2.61 mg/L	Maximum attainable dose
Skin corrosion/irritation	n/a	Not irritating
Serious eye damage/irritation	n/a	Not irritating
Respiratory or skin sensitization	n/a	Not a skin sensitizer
Germ cell mutagenicity	n/a	Not mutagenic Not mutagenic
Carcinogenicity	n/a	No risk of carcinogenicity posed by calcium sulphate
Reproductive toxicity	NOAEL 790 mg/kg bw	No signs of reproductive toxicity observed
STOT single exposure	n/a	No organ toxicity observed in acute tests
STOT repeated exposure	n/a	It is considered to classify based on RCS content . STOT RE 2 (If calcium sulfate contains crystalline silica in respirable form >1 % - < 10 %.)
Aspiration hazard	n/a	No aspiration hazard envisaged

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

12. Ecological information

12.1 Toxicity

Calcium Difluoride

Fish

Short-term toxicity

LC₁₀₀ (48 h): >30000 mg/L

Long-term toxicity

NOEC (21 d): 4 mg/L (test material sodium fluoride)

Aquatic invertebrates

Short-term toxicity

EC₅₀ (96 h): 26-48 mg/L freshwater (test material sodium fluoride)

EC₅₀ (96 h): 10,5-39 mg/L marine water (test material sodium fluoride)

Long-term toxicity

NOEC (21 d): 8.9 mg/L arithmetic mean (test material sodium fluoride)

Algae and aquatic plants

EC₅₀ (96 h): 43 mg/L for freshwater algae (test material sodium fluoride)

EC₅₀ (96 h): 80 mg/L for marine water algae (test material sodium fluoride)

NOEC: 50 mg/L for freshwater algae (test material sodium fluoride)

NOEC: 50 mg/L for marine water algae (test material sodium fluoride)

Micro-organism soil

NOEC (63d): 106 mg/kg soil dw (test material potassium and sodium fluoride)

Micro-organism aquatic

NOEC (3 h): 510 mg/L (test material hydrogen fluoride)

PNEC

PNEC freshwater: 0,9 mg/L

PNEC soil: 11 mg/kg

PNEC STP: 51 mg/L

Calcium Sulfate

Acute fish toxicity LC₅₀ (96h) > 79 mg / L

Acute daphnia toxicity EC₅₀ (48h) > 79 mg / L

Acute algae toxicity EC₅₀ > (72h) 79 mg / L

Toxicity to STP microorganisms EC₅₀ > (3h) 790 mg / L

12.2 Persistence and degradability

Calcium Difluoride

none data available

Calcium Sulfate

Abiotic Degradation

Physical- and photo-chemical elimination:

The product hydrolyses quickly in the presence of water to:

Calcium and Sulfate Ions

The individual components are poorly eliminated from water.

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

No photo-chemical elimination.

Biodegradation:

The methods for determining the biological degradability are not applicable to inorganic substances.

Inorganic product which is not eliminable from water through biological cleaning processes.

12.3 Bioaccumulative potential

Calcium Difluoride

none data available

Calcium Sulfate

Based on the n-octanol/water partition coefficient significant accumulation in organisms is not expected.

No indication to bioaccumulation potential.

The ecological data were measured on the hydrolysed product.

According to experiences this product is inert and not degradable biologically.

12.4 Mobility in soil

Calcium Difluoride

none data available

Calcium Sulfate

Water-soluble solid.

Natural constituent in soils.

If product enters soil, it will be mobile and may contaminate groundwater

12.5 Results of PBT and vPvB assessment:

These substances does not meet the criteria for classification as PBT or vPvB.

12.6 Other adverse effects:

According to the criteria of the European classification and labelling system, the substance/the product has not to be labelled as "dangerous for the environment".

On the basis of existing data about the elimination/degradation and bioaccumulation potential longer term damage to the environment is unlikely.

The information about ecology refer to the main components.

13. Considerations on waste disposal

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

Unused product, waste deriving from its use and empty packages have to be disposed according to the rules in force.

During handling use the precaution measures indicated at the points 7 and 8.

14. Transport information

The product is not classified as dangerous goods and therefore does not need to comply with ADR, RID, IMDG and IATA regulations.

15. Information on the regulation

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

Labelling under directives 1272/2008 (EC) and 790/2009 and subsequent amendments;

Regolamento	Cas	Sostanza
428/2009 ex CE 1334/2000 Annex.1	-	-
273/04 Tab.1 Cat.1	-	-
273/04 Tab.1 Cat.2	-	-
273/04 Tab.1 Cat.3	-	-
1907/2006 Annex XIV	-	-
1907/2006 (Substance SVHC)	-	-
552/2009 (amending Annex XVII of EC Reg. 1907/2006)	-	-
276/2010 (amending Annex XVII of EC Reg. CE 1907/2006)	-	-
Dir. 96/82/CE e Dir 105/2003/CE Annex 1 part 1	-	-
Dir. 96/82/CE e Dir. 105/2003/CE Annex 1 part 2	-	-

15.2 Chemical Safety Assessment:

For these substances are not provided a chemical safety assessment

16. Further information

The product does not legally require an MSDS. This document has been prepared to fulfill the manufacturer duty to communicate information down the supply chain in accordance with Article 32 of Regulation EC 1907/2006.

Material Safety Data Sheet

In accordance with Regulation (EC) 1907/2006

Issued: 30-04-2019

Rev: 03

Caution advise

P270 – Do not eat, drink or smoke when using this product.

P260 – Do not breath dust

P262 – Do not get in eyes, on skin, or on clothing

P305 +P351 +P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Revision

Second revision that amends sections 1 and 3 that rename the product. This MSDS has been completely revised in accordance with regulation No. 1907/2006/EC.

Key to abbreviations and acronyms

ACIGH: American Conference of Governmental Industrial Hygienists

ADN: Accord européen relative au transport international des marchandises dangereuses par voies de navigation intérieures

ADR: Accord européen relative au transport international des marchandises dangereuses par route

CL 50: Lethal Concentration 50

CLP: Classification, Labelling and Packaging

CSR: Chemical Safety Report

DL 50: Lethal Dose 50

DNEL: Derived no effect level

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

IMDG: International Maritime Dangerous Goods code

PBT: Persistent, bioaccumulative and toxic

PNEC: Predicted no effect concentration

NOEC: No observed effect concentration

RID: Règlement concernent le transport International ferroviaire des marchandises Dangereuses

STEL: short term exposure limit

SCOEL: Scientific Committee on Occupational Exposure Limit Values

TWA: Time Weighted Average

UE: Unione Europea

vPvB: Very persistent very bioaccumulative

Main Bibliography

1. IUCLID (International Uniform Chemical Information Database) of Calcium difluoride.
2. CSR of Calcium difluoride
3. IUCLID (International Uniform Chemical Information Database) of Calcium sulfate.
4. CSR of Calcium sulfate

Informative Note

The product must not be used for applications other than those for which it is sold, without having obtained previous written instructions. The producer takes no responsibility for improper use.

Information supplied in this “Material Safety Data Sheet” is based on the best available knowledge and our experience, and it is not exhaustive. It is applied on the product exactly as it is, in case of mixture or compound make sure that no new danger can rise.

In any case people who handle the product must respect the current law and regulation related to the product, hygiene and security on work place.

The information contained in this form are a description of product characteristics for safety purpose, should not be considered as guarantee of the properties of the product itself.