FLUORSPAR (Acid Grade)
Material Safety Data Sheet

SECTION 1 – PRODUCT IDENTIFICATION
Product Trade Name: Fluorspar
Chemical Name/Synonyms: Calcium Fluoride
Chemical Formula: CaF2
Chemical Family: Calcium Fluoride salt
Utilization: Flux in ferrous metallurgy; Production of glass and hydrofluoric acid, Portland cement.

SECTION 2 – HAZARDOUS INGREDIENTS / IDENTITY INFORMATION
WHMIS (Canada) Not controlled
Classification (EEC) Not controlled (See section 15). Pictogram: None
Other hazards No known effects from chronic exposure. Possibility of irritation, silicosis. Avoid dusty conditions.
Environmental hazards No known effects.

SECTION 3 – PHYSICAL/CHEMICAL CHARACTERISTICS
Name | CAS No. | Percent (%) | CE No. | R-Phases
--- | --- | --- | --- | ---
Calcium Fluoride | 7789-75-5 | 94-97.5 | 238-575-7 | Not applicable
Amorphous Silica | 7631-86-9 | 09-2.8 | 231-545-4 | Not applicable
Calcium Carbonate | 1317-65-3 | 1.0-2.9 | 215-279-6 | Not applicable

Note 1: See Section 15 for the complete wording of risk phrases.

SECTION 4 – FIRST-AID MEASURES
Eye Contact — Remove contact lenses if present. Immediately rinse eyes with plenty of water, while holding eyelids open for at least 15 minutes. Consult a physician. Dust: Possibility of irritation to the eyes.
Skin Contact — Remove contaminated clothing. Flush exposed skin gently and thoroughly with running water and non-abrasive soap. Dust: Possibility of skin irritation.
Inhalation — Remove the person from exposure. Bring to fresh air. Difficult breathing: Give oxygen. Get immediate medical attention. Possibility of irritation: Mucous membranes, upper respiratory tract, lungs.
Ingestion — Induce vomiting. Drink a lot of water or milk. UNCONSCIOUS person: DO NOT induce vomiting or give any liquid. Consult a physician.

SECTION 5 – FIRE-FIGHTING MEASURES
Flash Point Not applicable
Flammable Limits Not applicable
Auto-Ignition Temperature Not applicable
Products of Combustion Calcium oxide; Carbon dioxide; Hydrogen fluoride
Fire Hazard NOT flammable. Dust: Flammable when exposed to heat or
SECTION 6 – ACCIDENTAL RELEASE MEASURES

Measures
Use appropriate tools to minimize dust generation. Put the spilled solid in a convenient recycling container. Finish cleaning by spreading water on the contaminated surface and dispose of, according to local and regulatory requirements.

Protective Equipment
Firefighters must wear self-contained breathing apparatus (SCBA).

SECTION 7 – HANDLING AND STORAGE

Handling
DO NOT ingest or inhale dust. Keep away from incompatible substances (acids). Ingestion or inhalation: Seek medical advice immediately and provide medical personnel with a copy of this MSDS.

Conditions for storage
Away from incompatible substances.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Name | CAS No. | Control Parameters
---|---|---
Calcium Fluoride | 7789-75-5 | United Kingdom
| | | OEL-TWA (mg/m³)
| | | 2.5 (F)
| Amorphous Silica | 7631-86-9 | Not established
| Calcium Carbonate | 1317-65-3 | 10 (total inhalable dust)
| | | 4 (respirable dust)

Note:

Calcium Fluoride
Belgium, Denmark, EU (Directive 2000/39/EC)**, Finland, France, Greece, Ireland, Italy, Luxembourg, Mexico, Portugal, South Africa: OEL (as F): 2.5 mg/m³.
Bulgaria: ACGIH TLV-TWA (as F): 2.5 mg/m³.
Hungary: OEL (as F): 2.5 mg/m³; STEL (as F): 2.5 mg/m³.
Austria: OEL (as F): 2.5 mg/m³; STEL (as F): 12.5 (Frequency x Duration in minutes/shift: 2 x 30).
Estonia, Netherlands, Sweden: OEL (as F): 2 mg/m³.
Germany: OEL (as F) (Inhalable fraction): 1 * mg/m³; STEL (as F, 15 min.) (Inhalable fraction) : 4 (multiplication factor).
Poland: MAC (as HF): 1 mg/m³; MAC-STLV (as HF): 3 mg/m³.
Switzerland: OEL (as F) (Inhalable dust): 1 mg/m³; STEL (as F) (Inhalable dust): 4 (Freq. x Duration in minutes/shift: 4 x 15).
Iceland, Norway: OEL (as F): 0.6 mg/m³.
USA: ACGIH TLV-TWA and OSHA PEL-TWA (as F): 2.5 mg/m³.
*If the OEL value is complied with, there should be no risk of reproductive damage.

Amorphous silica: ACGIH TLV-TWA (USA): Not established; OSHA PEL-TWA (USA): 80% SiO₂; NIOSH REL-TWA (<10 hours): 6 mg/m³; IDLH: 3000 mg/m³.

Calcium carbonate: ACGIH TLV-TWA (USA): Not established; OSHA PEL-TWA (USA): 80% SiO₂; NIOSH REL-TWA (<10 hours): 5 mg/m³ (respirable fraction), 10 mg/m³ (total).

Consult local authorities for acceptable exposure limits.

**Engineering controls**
Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure limits.

**Individual protection**
Safety glasses. Coveralls. Work gloves and boots. Dust respirator. Be sure to use a NIOSH approved respirator or equivalent when concentrations exceed occupational exposure limits.

### SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State and Appearance</td>
<td>Solid (Crystalline powder 50 mesh-325 mesh approx.)</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>78.08</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>2 500°C (4 532°F)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>1 420°C (2 588°F)</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>3.18 (Water=1)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Practically insoluble: 0.0015 g/100 ml</td>
</tr>
</tbody>
</table>

### SECTION 10 - STABILITY AND REACTIVITY

**Stability**
Stable under normal conditions.

**Hazardous Decomposition**
Possibility of toxic release of hydrofluoric gases at temperatures above 1000°C in the presence of moist air.

**Conditions to avoid**
Strong acids and high temperatures (above 1000°C).

**Hazardous Polymerization**
Will not occur

**Materials to avoid**
Reactive with: Acids.

**Calcium fluoride:** Acids, chemically active metals, reducing agents, water. Contact with hot concentrated sulfuric acid: Possibility of production of hydrofluoric acid (Hydrogen fluoride).

**Amorphous silica:** Violent reaction with: Fluoride, oxygen difluoride, chlorine trifluoride.

**Calcium carbonate:** Alum, ammonium salts, mercury and hydrogen, fluorine, magnesium, acids.

**NOTE:** This list of products is not exhaustive. Verify technical documents to determine any incompatibilities with your process.

**Corrosivity**
No

### SECTION 11 – TOXICOLOGICAL INFORMATION

**Routes of Entry**
Ingestion. Inhalation. Eye and skin contacts.

**Carcinogenicity**
Calcium carbonate; Calcium fluoride: NOT A CARCINOGEN (IARC); NOT CLASSIFIABLE (Human, A4, ACGIH).

Amorphous silica: NOT CLASSIFIABLE (Human, Group 3, IARC); NOT LISTED (ACGIH).

**Mutagenicity**
Not applicable.

**Teratogenicity**
Not applicable.

**Acute toxicity**
Calcium fluoride: ORAL acute (LD50): 4 250 mg/kg (Rat); INTRAPERITONEAL (LD50): >1 500 mg/kg (rat); 2 638 mg/kg (Mouse). (RTECS).

Amorphous silica: ORAL acute (LD50): 3 160 mg/kg (Rat); INTRAVENOUS acute (LD50): 15 mg/kg (Rat). (RTECS).

Calcium carbonate: ORAL acute (LD50): 6 450 mg/kg (Rat). (RTECS).
Acute Effects
Solid form: No health hazards. Conditions and work practices which generate dust or fumes should be avoided or controlled. Ingestion and inhalation: Possibility of diffuse abdominal pain, nausea, vomiting, diarrhea, thirst, saliva, albuminuria, shock.

Chronic Effects
No known effects from chronic exposure. Repeated or prolonged exposure (Normal work conditions): Do not aggravate medical conditions.

Calcium fluoride: Chronic overexposure: May cause increased bone density. Irritant for: Skin, eyes, nose, throat, and respiratory tract. May cause: coughing, chest discomfort.

Amorphous silica: Target organ for acute and chronic overexposure (NIOSH 90-117): Respiratory system. Chronic overexposure: Possibility of shortness of breath. Prolonged dust inhalation can cause silicosis (Fibrosis of the lungs).

Calcium carbonate: No chronic effects of exposure have been reported. Irritant for: skin, eyes, nose, throat, respiratory tract. Can cause: sneezing and coughing, use an antacid (small quantity); calcium supplement.

Toxicity
Workers with the following pre-existing conditions warrant particular attention.

Amorphous silica: Tuberculosis.
Calcium carbonate: Respiratory diseases.

Eating, drinking, and smoking must be prohibited in areas where this material is handled and processed. Wash hands and face before eating, drinking, and smoking.

SECTION 12 – ECOLOGICAL INFORMATION
Ecotoxicity
Not available.

Toxicity to Animals
Amorphous silica: ORAL acute (LD50): 3 160 mg/kg (Rat). INTRAVENOUS acute (LD50): 15 mg/kg (Rat). (RTECS).

Biodegradation Products
Not applicable

Biodegradation Products (Toxicity)
Not applicable

Remarks on Environment
Calcium fluoride: Used to fluoridate drinking water.

BOD5 and COD
Not available

SECTION 13 – DISPOSAL CONSIDERATIONS
Disposal methods
Recycle to process, if possible. Consult local or regional authorities. If the product becomes a waste, material should be tested to determine if it must be classified as a hazardous waste under the Resource Conservation Recovery Act (RCRA 40CFR261.3). Discard in full compliance with Federal, Provincial and local regulations.

RCRA P-Series and RCRA U-Series: Not listed.

SECTION 14 – TRANSPORT INFORMATION
ADR
Not applicable.

PIN
Not applicable.

Special Provisions (Transport)
Not applicable.

SECTION 15 – REGULATORY INFORMATION
Labeling (EEC)
EU: Consolidated Inventories: Listed.
Calcium fluoride: EU Consolidated Inventories: numero EC 232-188-7
Amorphous silica: EU Consolidated Inventories: EC Number 231-545-4
Calcium carbonate: EU Consolidated Inventories: numero EC 215-279-6
Not listed in the Annex I of Council Regulation No (EC) 304/2003
Not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93

Risk Phrases (EEC)
None

Safety Phrases (EEC)
None

CEPA DSL (CANADA)
CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): On the Domestic Substances List (DSL); Acceptable for use under the provisions of CEPA.
Calcium fluoride; Calcium carbonate.
DOT Classification (USA) Not regulated.
Classifications HCS (USA) Calcium fluoride; Amorphous silica.

NFPA (National Fire Protection Association) (USA)
Fire Hazard 0 Reactivity 0 Health 2 Special Hazard

OVERVIEW:
Commercially available Fluorspar contains about 0.8 to 1.5% SiO2 plus minor trace impurities. The product is minimally hazardous when in its delivered state combined with about 10% maximum water as a filtercake. Dust hazards exist when the product is either dried intentionally or through prolonged open storage.

DOT (USA) (Pictograms) DSCL (Europe) (Pictograms) ADR (Europe) Pictograms

SECTION 16 – OTHER INFORMATION
-ESIS: C&L (Classification and Labeling), substances or preparations in accordance with Directive 67/548/EEC (substances) and 1999/45/EC (preparations),
-ESIS: EINECS (European Inventory of Existing Commercial Chemical Substances) O.J. C 146A, 15.6.1990
-Patty’s Industrial Hygiene and Toxicology, 3rd Revised Edition
-Reglement sur les produits controles (Canada)
-RTECS (2009). Registry of Toxic Effects of Chemical Substances, NIOSH, CDC
-Toxicologie industrielle & intoxication professionnelle, 3e edition, Lauwerys

Glossary ACGIH: American Conference of Governmental Industrial Hygienists.
HSDB: Hazardous Substances Data Bank.
IARC: International Agency for Research on Cancer.
NIOSH: National Institute of Occupational Safety and Health.
NTP: US National Toxicology Program.
OSHA: Occupational Safety and Health Administration.
RTECS: Registry of Toxic Effects of Chemical Substances.

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