SECTION 1. IDENTIFICATION

Product Identifier: (5N) 99.999% Cerium(III) Fluoride

Product Code: CE3-F-05

CAS Number: 7758-88-5

Relevant identified uses of the substance: Scientific research and development

Supplier details:

American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351
Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
GHS07
Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC
Xi; Irritant
R36/37/38: Irritating to eyes, respiratory system and skin.

Information concerning particular hazards for human and environment:
N/A
Hazards not otherwise classified
No data available

Label elements
Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labeled according to the CLP regulation.
Hazard pictograms
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances
CAS No. / Substance Name:
7758-88-5 Cerium (III) fluoride
Identification number(s):
EC number: 231-841-3

SECTION 4. FIRST AID MEASURES

Description of first aid measures
If inhaled:
Supply patient with fresh air. If not breathing, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
In case of skin contact:
Immediately wash with soap and water; rinse thoroughly.
Seek immediate medical advice.
In case of eye contact:
Rinse opened eye for several minutes under running water. Consult a physician.
If swallowed:
Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed
Gastric or intestinal disorders.
Nausea
Thirst
Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing agents
Product is not flammable. Use fire-fighting measures that suit the surrounding fire.
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Hydrogen fluoride (HF)
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Environmental precautions:
Do not allow material to be released to the environment without official permits.
Do not allow product to enter drains, sewage systems, or other water courses.
Do not allow material to penetrate the ground or soil.
Methods and materials for containment and cleanup:
Ensure adequate ventilation.
Prevention of secondary hazards:
No special measures required.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information

SECTION 7. HANDLING AND STORAGE

Handling
Precautions for safe handling
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Information about protection against explosions and fires:
The product is not flammable

Conditions for safe storage, including any incompatibilities
Requirements to be met by storerooms and receptacles:
No special requirements.

Information about storage in one common storage facility:
No data available

Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well-sealed containers.

Specific end use(s)
No data available

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters
Components with limit values that require monitoring at the workplace:

Fluorides (as F)

<table>
<thead>
<tr>
<th>Country</th>
<th>Limit Value (mg/m³ as F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH (USA)</td>
<td>2.5</td>
</tr>
<tr>
<td>Austria MAK</td>
<td>2.5</td>
</tr>
<tr>
<td>Belgium TWA</td>
<td>2.5</td>
</tr>
<tr>
<td>Finland TWA</td>
<td>2.5</td>
</tr>
<tr>
<td>France TWA</td>
<td>2.5</td>
</tr>
<tr>
<td>Germany MAK</td>
<td>2.5</td>
</tr>
<tr>
<td>Hungary TWA 1</td>
<td>2.5</td>
</tr>
<tr>
<td>Hungary TWA 2</td>
<td>1; 2-STEI</td>
</tr>
<tr>
<td>Netherlands MAC-K</td>
<td>3.5</td>
</tr>
<tr>
<td>Norway TWA</td>
<td>0.6</td>
</tr>
<tr>
<td>Poland TWA 1</td>
<td>3-STEI</td>
</tr>
<tr>
<td>Sweden NGV</td>
<td>2</td>
</tr>
<tr>
<td>Switzerland MAK-W</td>
<td>1.5; 3-KZG-W</td>
</tr>
<tr>
<td>United Kingdom TWA</td>
<td>2.5</td>
</tr>
<tr>
<td>Russia TWA</td>
<td>2</td>
</tr>
<tr>
<td>Denmark TWA</td>
<td>2.5</td>
</tr>
<tr>
<td>USA PEL</td>
<td>2.5</td>
</tr>
</tbody>
</table>

7758-88-5 Cerium (III) fluoride (100.0%)

PEL (USA) Long-term value: 2.5 mg/m³ as F
REL (USA) Long-term value: 2.5 mg/m³ as F
TLV (USA) Long-term value: 2.5 mg/m³ as F, BEI
EL (Canada) Long-term value: 2.5 mg/m³ as F

Ingredients with biological limit values:
7758-88-5 Cerium (III) fluoride (100.0%)

BEI (USA) 2 mg/L
Medium: urine
Time: prior to shift
Parameter: Fluoride (background, nonspecific)
3 mg/L
Medium: urine
Time: end of shift
Parameter: Fluoride (background, nonspecific)
Additional information: No data
Exposure controls
Personal protective equipment
Follow typical protective and hygienic practices for handling chemicals.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Breathing equipment:
Use suitable respirator when high concentrations are present.
Protection of hands:
Impervious gloves
Inspect gloves prior to use.
Suitability of gloves should be determined both by material and quality, the latter of which may vary by manufacturer.
Eye protection: Safety glasses
Body protection: Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
General Information
Appearance:
Form: Solid in various forms
Color: White
Odor: Odorless
Odor threshold: No data available.

pH: N/A
Melting point/Melting range: 1460 °C (2660 °F)
Boiling point/Boiling range: 2300 °C (4172 °F) ((approx))
Sublimation temperature / start: No data available
Flash point: N/A
Flammability (solid, gas): No data available.
Ignition temperature: No data available
Decomposition temperature: No data available
Autoignition: No data available.
Danger of explosion: Product does not present an explosion hazard.
Explosion limits:
Lower: No data available
Upper: No data available
Vapor pressure: N/A

Density at 20 ºC (68 ºF): 6.16 g/cm³ (51.405 lbs/gal)
Relative density: No data available.
Vapor density: N/A
Evaporation rate: N/A
Solubility in Water (H₂O): Insoluble
Partition coefficient (n-octanol/water): No data available.
Viscosity:
Dynamic: N/A
Kinematic: N/A
Other information
SECTION 10. STABILITY AND REACTIVITY

Reactivity
No data available
Chemical stability
Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions
No dangerous reactions known
Conditions to avoid
No data available
Incompatible materials:
No data available
Hazardous decomposition products:
Hydrogen fluoride
Metal oxide fume

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity: No effects known.
LD/LC50 values that are relevant for classification: No data
Skin irritation or corrosion: Causes skin irritation.
Eye irritation or corrosion: Causes serious eye irritation.
Sensitization: No sensitizing effects known.
Germ cell mutagenicity: No effects known.
Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
Reproductive toxicity: No effects known.
Specific target organ system toxicity - repeated exposure: No effects known.
Specific target organ system toxicity - single exposure: May cause respiratory irritation.
Aspiration hazard: No effects known.
Subacute to chronic toxicity:
Cerium salts increase the blood coagulation rate. Exposure to cerium salts may increase sensitivity to heat, itching and skin lesions. Large doses to experimental animals have caused writhing, ataxia, labored respiration, sedation, hypotension and death by cardiovascular collapse.
Fluorides may cause salivation, nausea, vomiting, diarrhea and abdominal pain, followed by weakness, tremors, shallow respiration, convulsions and coma. May cause brain and kidney damage. Chronic fluoride poisoning can cause severe bone changes, loss of weight, anorexia, anemia and dental defects.
Subacute to chronic toxicity: No effects known.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity:  
No data available  
Persistence and degradability  
No data available  
Bioaccumulative potential  
No data available  
Mobility in soil  
No data available  
Additional ecological information:  
Do not allow material to be released to the environment without official permits.  
Avoid transfer into the environment.  
Results of PBT and vPvB assessment  
PBT: N/A  
vPvB: N/A  
Other adverse effects  
No data available

SECTION 13. DISPOSAL CONSIDERATIONS  
Waste treatment methods  
Recommendation  
Consult official regulations to ensure proper disposal.  
Uncleaned packagings:  
Recommendation:  
Disposal must be made according to official regulations.

SECTION 14. TRANSPORT INFORMATION  
Not a hazardous material for transportation.  
UN-Number  
DOT, IMDG, IATA  
None  
UN proper shipping name  
DOT, IMDG, IATA  
None  
Transport hazard class(es)  
DOT, IMDG, IATA  
Class  
None  
Class  
None  
Label  
6.1  
Packing group  
DOT, IMDG, IATA  
None  
Environmental hazards:  
N/A  
Special precautions for user  
N/A  
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Transport/Additional information:
Not dangerous according to the above specifications.

DOT
Marine Pollutant (DOT):
No

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Inventory. All components of this product are listed on the Canadian Domestic Substances List (DSL). SARA Section 313 (specific toxic chemical listings) Substance is not listed. California Proposition 65 Prop 65 - Chemicals known to cause cancer Substance is not listed. Prop 65 - Developmental toxicity Substance is not listed. Prop 65 - Developmental toxicity, female Substance is not listed. Prop 65 - Developmental toxicity, male Substance is not listed.

Information about limitation of use:
For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed. The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed. Substance is not listed. Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed. REACH - Pre-registered substances Substance is listed. Chemical safety assessment:
A Chemical safety assessment has not been carried out.

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from