SECTION 1: Identification

1.1. Product identifiers

Product Code: kumi9F01
Substance name: N-Chloromethyl-N'-fluorotriethylenediammonium bis(tetrafluoroborate)
Synonym: 1-Chloromethyl-4-fluoro-1,4-diazoniabicyclo[2.2.2]octane bis(tetrafluoroborate), Selectfluor
Trademark: Fluora
CAS No: 140681-55-6
Formula: C7H14B2ClF9N2
Reach No.: Exempted from registration

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

Identified Uses:
- Laboratory chemicals
- Manufacture of substances
- Scientific research and development

1.3. Details of the supplier of the safety data sheet

Kumidas SA
Avenue Louise 279, 1050, Brussels, Belgium
T: +32(0) 2 699 82 36  F: +32(0) 2 699 82 40
E: info@kumidas.com  W: www.kumidas.com

1.4. Emergency telephone number

Emergency Phone#: +32(0)484 58 71 75

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
- Self-heating substances (Category 2), H252
- Acute toxicity, Oral (Category 4), H302
- Serious eye damage (Category 1), H318
- Skin sensitisation (Category 1), H317
- Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2. Label elements

Labeling according to Regulation (EC) No 1272/2008

Signal word: Danger

Hazard statements:
- H252 – Self-heating in large quantities; may catch fire.
- H302 – Harmful if swallowed.
- H317 – May cause an allergic skin reaction.
- H318 – Causes serious eye damage.
- H412 – Harmful to aquatic life with long lasting effects.

Precautionary statements:
- P235+P240 – Keep cool. Protect from sunlight.
- P372 – Avoid release to the environment.
- P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310-Immediately call a POISON CENTER/doctor.

Supplemental Hazard Statements (EU):
- None

2.3. Other hazards

Strong hydrogen fluoride - releaser
Reacts violently with water.
**SECTION 3: Composition/information on ingredients**

### 3.1. Substances

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Formula</th>
<th>Molecular weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono-constituent</td>
<td>C₆H₁₂BiClF₉N₂</td>
<td>354.26 g/mol</td>
</tr>
</tbody>
</table>

Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Component</th>
<th>Product identifier</th>
<th>Concentration</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Chloromethyl-N'-fluorotriethylene diammonium bis(tetrafluoroborate) (Main constituent)</td>
<td>(CAS No.) 140681-55-6</td>
<td>≤ 100%</td>
<td>Self-heat 2, H252 Acute Tox. 4, H302 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412</td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16

### 3.2. Mixture

Not applicable

**SECTION 4: First aid measures**

### 4.1. Description of first aid measures

#### General advice

Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungal areas and should be considered when undergoing decontamination. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesemia and cardiac arrhythmias should be monitored for, since they can occur after exposure. Consult a physician. Show this safety data sheet to the doctor in attendance.

Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungal areas and should be considered when undergoing decontamination. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesemia and cardiac arrhythmias should be monitored for, since they can occur after exposure.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician. First treatment with calcium gluconate paste.

#### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

#### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

Treat symptomatically.

**SECTION 5: Firefighting measures**

### 5.1. Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
**N-Chloromethyl-N'-fluorotriethylenediammonium bis(tetrafluoroborate)**

**Safety Data Sheet**


5.2. Special hazards arising from the substance or mixture

No data available.

5.3. Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4. Further information

Use water spray to cool unopened containers.

**SECTION 6: Accidental release measures**

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).

6.4. Reference to other sections

For disposal see section 13.

**SECTION 7: Handling and storage**

7.1. Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition. No smoking. For precautions see section 2.2.

7.2. Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature 2-8 °C. Handle and store under inert gas.

7.3. Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

**SECTION 8: Exposure controls/personal protection**

8.1. Control parameters

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

8.2. Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Full contact**

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

**Splash contact**

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)
data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body protection
Complete suit protecting against chemicals, Flame retardant protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environment exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>powder</td>
</tr>
<tr>
<td>Color</td>
<td>White to Slightly pale yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>210°C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 ºC</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>354.26 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water insoluble</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other safety information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
The product is stable at normal handling and recommended storage conditions.

10.3. Possibility of hazardous reactions
No additional information available
N-Chloromethyl-N'-fluoretriethylenediammonium bis(tetrafluoroborate)

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10.4. Conditions to avoid
Avoid moisture.

10.5. Incompatible materials
Strong oxidizing agents.

10.6. Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides(NOx), Hydrogen chloride gas, Hydrogen fluoride, Borane/boron oxides.
Other decomposition products – Gaseous hydrogen fluoride(HF)
In the event of fire: see section 5.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

| Acute toxicity | LD₅₀ Oral-Rat: 500 mg/kg |
|               | LD₅₀ Dermal-Rat: >2,000 mg/kg |

| Skin corrosion/irritation | No data available |
| Serious eye damage/irritation | Severe eye irritation |
| Respiratory or skin sensitization | No data available |
| Germ cell mutagenicity | No data available |
| Carcinogenicity | No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |

| Reproductive toxicity | No data available |
| Specific target organ toxicity (single exposure) | No data available |
| Specific target organ toxicity (repeated exposure) | No data available |
| Aspiration hazard | No data available |
| Additional information | RTECS: Not available |

Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1. Toxicity

| Toxicity to fish | LC₅₀- Oncorhynchus mykiss (rainbow trout): 100.0 mg/l-24.0 h |
| Toxicity to daphnia and other aquatic invertebrates | EC₅₀-Daphnia magna(Water flea): 25 mg/l-48 h |

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6. Other adverse effects
Harmful to aquatic life.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

Contaminated packaging
Dispose of as unused product.
N-Chloromethyl-N′-fluorotriethylene diammonium bis(tetrafluoroborate)

Safety Data Sheet

SECTION 14: Transport information

14.1. UN number
ADR/RID: 3088
IMDG: 3088
IATA: 3088

14.2. UN proper shipping name
ADR/RID: SELF-HEATING SOLID, ORGANIC, N.O.S. (1,4-Diazoniabicyclo[2.2.2]octane, 1-(chloromethyl)-4-fluoro-, tetrafluoroborate(1:2))
IMDG: SELF-HEATING SOLID, ORGANIC, N.O.S. (1,4-Diazoniabicyclo[2.2.2]octane, 1-(chloromethyl)-4-fluoro-, tetrafluoroborate(1:2))
IATA: Self-heating solid, organic, n.o.s. (1,4-Diazoniabicyclo[2.2.2]octane, 1-(chloromethyl)-4-fluoro-, tetrafluoroborate(1:2))

14.3. Transport hazard class(es)
ADR/RID: 4.2
IMDG: 4.2
IATA: 4.2

14.4. Packaging group
ADR/RID: II
IMDG: II
IATA: II

14.5. Environmental hazards
ADR/RID: no
IMDG: Marine pollutant: no
IATA: no

14.6. Special precautions for user
No data available

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety dataseet complies with the requirements of Regulation (EC) No. 1907/2006.
International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors: Neither banned nor restricted
Restrictions on the marketing and use of certain dangerous substances and preparations: Neither banned nor restricted
Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals: Neither banned nor restricted
REACH-Candidate list of Substances of Very High Concern for Authorisation(Article 59): This product does not contain substances of very High concern(Regulation(EC) No 1907/2006(REACH), Artcile 57).

15.2. Chemical safety assessment
For this product, a chemical safety assessment was not carried out.

SECTION 16: Other information

16.1. Full text of H-statements referred to under sections 2 and 3.

| H252  | Self-heating in large quantities; may catch fire. |
| H302  | Harmful if swallowed                               |
| H317  | May cause an allergic skin reaction.               |
| H318  | Causes serious eye damage.                         |
| H412  | Harmful to aquatic life with long lasting effects. |

16.2. Further information
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, therefore, does not represent any guarantee of the properties of the product. Kumidas shall not be held liable or any damage resulting from handling or from contact with the above product.