SECTION 1: Identification of the substance/mixture and of the company/undertaking

· 1.1 Product identifier
  · Trade name: Potassium hexafluoronickelate(IV), 99%
  · Item number: 19-2000
  · CAS Number: 17218-47-2

· 1.2 Relevant identified uses of the substance or mixture and uses advised against
  No further relevant information available.

· 1.3 Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: Strem Chemicals, Inc.
    7 Mulliken Way
    NEWBURYPORT, MA 01950
    USA
    info@strem.com
  · Further information obtainable from: Technical Department
  · 1.4 Emergency telephone number:
    EMERGENCY: CHEMTREC: + 1 (800) 424-9300
    During normal opening times: +1 (978) 499-1600

SECTION 2: Hazards identification

· 2.1 Classification of the substance or mixture
  · Classification according to Regulation (EC) No 1272/2008
    GHS08 health hazard
    Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
    Carc. 1A H350 May cause cancer.

    GHS07
    Acute Tox. 4 H302 Harmful if swallowed.
    Acute Tox. 4 H312 Harmful in contact with skin.
    Acute Tox. 4 H332 Harmful if inhaled.
    Skin Sens. 1 H317 May cause an allergic skin reaction.

· 2.2 Label elements
  · Labelling according to Regulation (EC) No 1272/2008
    The substance is classified and labelled according to the CLP regulation.
  · Hazard pictograms
    GHS07 GHS08

· Signal word Danger
  · Hazard-determining components of labelling:
    Potassium hexafluoronickelate(IV), 99%
Hazard statements
H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H350 May cause cancer.

Precautionary statements
P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.
P262 Do not get in eyes, on skin, or on clothing.
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.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

RESULTS OF PBT AND vPvB ASSESSMENT
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Chemical characterisation: Substances
CAS No. Description
17218-47-2 Potassium hexafluoronickelate(IV), 99%

SECTION 4: First aid measures

4.1 Description of first aid measures
General information:
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
After inhalation:
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
After skin contact: Immediately wash with water and soap and rinse thoroughly.
After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing: Call for a doctor immediately.
4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.
4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents:
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
5.2 Special hazards arising from the substance or mixture No further relevant information available.
Safety data sheet
corresponding to 1907/2006/EC, Article 31

Trade name: Potassium hexafluoronickelate(IV), 99%

5.3 Advice for firefighters
- Protective equipment: Mouth respiratory protective device.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures: Not required.
- 6.2 Environmental precautions: No special measures required.
- 6.3 Methods and material for containment and cleaning up:
  Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.
- 6.4 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

- 7.1 Precautions for safe handling
  Thorough dedusting.
  Ensure good ventilation/exhaustion at the workplace.
- 7.2 Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles: No special requirements.
    - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: Keep container tightly sealed.
- 7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.
- 8.1 Control parameters
  - Ingredients with limit values that require monitoring at the workplace: Not required.
  - Additional information: The lists valid during the making were used as basis.
- 8.2 Exposure controls
  - Personal protective equipment:
    - General protective and hygienic measures:
      - Keep away from foodstuffs, beverages and feed.
      - Immediately remove all soiled and contaminated clothing.
      - Wash hands before breaks and at the end of work.
      - Store protective clothing separately.
      - Avoid contact with the eyes and skin.
    - Respiratory protection:
      - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

(Contd. on page 4)
**Trade name: Potassium hexafluoronicelate(IV), 99%**

- **Protection of hands:**
  - **Protective gloves**

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**
  - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Penetration time of glove material**
  - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**
  - **Tightly sealed goggles**

### 9.1 Information on basic physical and chemical properties

#### General Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
</tr>
<tr>
<td>Form</td>
<td>Powder</td>
</tr>
<tr>
<td>Colour</td>
<td>Violet</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>pH-value</strong></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

#### Change in condition

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point/Melting range</td>
<td>no data °C</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>no data °C</td>
</tr>
</tbody>
</table>

#### Flash point

- Not applicable.

#### Flammability (solid, gaseous)

- Not determined.

#### Ignition temperature

- Decomposition temperature: Not determined.
- Self-igniting: Not determined.

#### Danger of explosion

- Product does not present an explosion hazard.

#### Explosion limits

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>Not determined</td>
</tr>
<tr>
<td>Upper</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

#### Vapour pressure

- No data hPa

#### Density

- Not determined.

#### Relative density

- Not determined.

#### Vapour density

- Not applicable.

#### Evaporation rate

- Not applicable.

#### Solubility in / Miscibility with water

- Insoluble.
Safety data sheet  
according to 1907/2006/EC, Article 31

Printing date 29.07.2016  
Revision: 29.07.2016

Trade name: Potassium hexafluoronickelate(IV), 99%

- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**  
  - Dynamic: Not applicable.  
  - Kinematic: Not applicable.
- **Solvent content:**  
  - Organic solvents: 0.0 %  
  - VOC (EC) 0.00 %
- **Solids content:** 100.0 %
- **9.2 Other information**  
  - No further relevant information available.

**SECTION 10: Stability and reactivity**

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**  
  - Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
  - 10.3 Possibility of hazardous reactions No dangerous reactions known.
  - 10.4 Conditions to avoid No further relevant information available.
  - **10.5 Incompatible materials:** No further relevant information available.
  - **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

**SECTION 11: Toxicological information**

- **11.1 Information on toxicological effects**  
  - Acute toxicity  
    Harmful if swallowed, in contact with skin or if inhaled.
  - **Primary irritant effect:**  
    - Skin corrosion/irritation Based on available data, the classification criteria are not met.
    - Serious eye damage/irritation Based on available data, the classification criteria are not met.
  - Respiratory or skin sensitisation  
    May cause allergy or asthma symptoms or breathing difficulties if inhaled.
    May cause an allergic skin reaction.
  - CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)  
    - Germ cell mutagenicity Based on available data, the classification criteria are not met.
    - Carcinogenicity May cause cancer.
  - Reproductive toxicity Based on available data, the classification criteria are not met.
  - **STOT-single exposure** Based on available data, the classification criteria are not met.
  - **STOT-repeated exposure** Based on available data, the classification criteria are not met.
  - Aspiration hazard Based on available data, the classification criteria are not met.

**SECTION 12: Ecological information**

- **12.1 Toxicity**  
  - Aquatic toxicity: No further relevant information available.
  - **12.2 Persistence and degradability** No further relevant information available.
  - **12.3 Bioaccumulative potential** No further relevant information available.
  - **12.4 Mobility in soil** No further relevant information available.
**Trade name: Potassium hexafluoronickelate(IV), 99%**

- Additional ecological information:
  - General notes: Not known to be hazardous to water.
  - 12.5 Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.
  - 12.6 Other adverse effects: No further relevant information available.

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**SECTION 13: Disposal considerations**

- 13.1 Waste treatment methods
  - Recommendation
    Must not be disposed together with household garbage. Do not allow product to reach sewage system.
  - Uncleaned packaging:
    - Recommendation: Disposal must be made according to official regulations.

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**SECTION 14: Transport information**

- 14.1 UN-Number
  - ADR, IMDG, IATA: UN3288

- 14.2 UN proper shipping name
  - ADR: 3288 TOXIC SOLID, INORGANIC, N.O.S.
  - IMDG: TOXIC SOLID, INORGANIC, N.O.S.
  - IATA: Toxic solid, inorganic, n.o.s.

- 14.3 Transport hazard class(es)
  - ADR, IMDG
    - Class: 6
    - Label: 6.1

  - IATA
    - Class: 6.1 Toxic substances.
    - Label: 6.1

  - 14.4 Packing group
    - ADR, IMDG, IATA: III

  - 14.5 Environmental hazards:
    - Marine pollutant: No

  - 14.6 Special precautions for user
    - EMS Number: F-A,S-A
    - Stowage Category: A

(Contd. on page 7)
Trade name: Potassium hexafluoronickelate(IV), 99%

- **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**
  - Not applicable.

- **Transport/Additional information:**
  - **ADR**
    - Limited quantities (LQ): 5 kg
      - Code: E1
      - Maximum net quantity per inner packaging: 30 g
      - Maximum net quantity per outer packaging: 1000 g
  - **IMDG**
    - Limited quantities (LQ): 5 kg
      - Code: E1
      - Maximum net quantity per inner packaging: 30 g
      - Maximum net quantity per outer packaging: 1000 g
  - **UN "Model Regulation":**
    - UN 3288 TOXIC SOLID, INORGANIC, N.O.S., 6.1, III

### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Directive 2012/18/EU**
  - Named dangerous substances - ANNEX I Substance is not listed.
  - **National regulations:**
    - Additional classification according to Decree on Hazardous Materials, Annex II:
      - Carcinogenic hazardous material group I (extremely dangerous).
      - Carcinogenic hazardous material group II (very dangerous).
      - Carcinogenic hazardous material group III (dangerous).
  - **Information about limitation of use:**
    - Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

- **15.2 Chemical safety assessment:**
  - A Chemical Safety Assessment has not been carried out.

### SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing MSDS:** Technical Department.
- **Contact:** Technical Director
- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - VOC: Volatile Organic Compounds (USA, EU)
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - Acute Tox. 4: Acute toxicity, Hazard Category 4
  - Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
  - Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
  - Carc. 1A: Carcinoogenicity, Hazard Category 1A