1 Identification

· **Product name**

· **Trade name**: Antimony Tin Oxide/Iridium Het-WOC core/shell nanopowder, 20 nm (conductive and acid-stable)

· **Item number**: 77-0030

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier**: Strem Chemicals, Inc.
  7 Mulliken Way
  NEWBURYPORT, MA 01950
  USA
  info@strem.com

· **Information department**: Technical Department

· **Emergency telephone number**: 
  EMERGENCY: CHEMTREC: +1 (800) 424-9300
  During normal opening times: +1 (978) 499-1600

2 Hazard(s) identification

· **Classification of the substance or mixture**

![GHS07]

Skin Irrit. 2  H315 Causes skin irritation.
Eye Irrit. 2A  H319 Causes serious eye irritation.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**

![GHS07]

· **Signal word** Warning

· **Hazard-determining components of labeling**: dianitmony pentoxide

· **Hazard statements**
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.

· **Precautionary statements**

  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.
  P321  Specific treatment (see on this label).
  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.

(Contd. on page 2)
3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.
- Dangerous components:
  - 18282-10-5 tin dioxide 89.0%
  - 1314-60-9 diantimony pentoxide 11.0%

4 First-aid measures

- Description of first aid measures
- General information: Immediately remove any clothing soiled by the product.
- After inhalation: 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. If symptoms persist, consult a doctor.
- After swallowing: If symptoms persist consult doctor.
- Information for doctor:
  - Most important symptoms and effects, both acute and delayed: No further relevant information available.
  - Indication of any immediate medical attention and special treatment needed: No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents: Use fire fighting measures that suit the environment.
  - Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.
6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up: Dispose contaminated material as waste according to item 13.
- 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.
- Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th>PAC</th>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAC-1:</td>
<td>18282-10-5 tin dioxide</td>
<td>7.6 mg/m³</td>
</tr>
<tr>
<td>PAC-2:</td>
<td>18282-10-5 tin dioxide</td>
<td>85 mg/m³</td>
</tr>
<tr>
<td>PAC-3:</td>
<td>18282-10-5 tin dioxide</td>
<td>510 mg/m³</td>
</tr>
</tbody>
</table>

7 Handling and storage

- Handling:
  - Precautions for safe handling: No special precautions are necessary if used correctly.
  - Information about protection against explosions and fires: No special measures required.
- 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 receptacle tightly sealed.
- Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>18282-10-5 tin dioxide</td>
<td></td>
</tr>
<tr>
<td>REL Long-term value: 2 mg/m³ as Sn</td>
<td></td>
</tr>
<tr>
<td>TLV Long-term value: 2 mg/m³ as Sn</td>
<td></td>
</tr>
<tr>
<td>1314-60-9 diantimony pentoxide</td>
<td></td>
</tr>
<tr>
<td>PEL Long-term value: 0.5 mg/m³ as Sb</td>
<td></td>
</tr>
<tr>
<td>REL Long-term value: 0.5 mg/m³ as Sb</td>
<td></td>
</tr>
<tr>
<td>TLV Long-term value: 0.5 mg/m³ as Sb</td>
<td></td>
</tr>
</tbody>
</table>
Additional information: The lists that were valid during the creation were used as basis.

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.
    Avoid contact with the eyes and skin.
  - Breathing equipment: Not required.
  - 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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- 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 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    Form: Powder
    Color: Black
  - Odor: Characteristic
  - Odor threshold: Not determined.
  - pH-value: Not applicable.

- Change in condition
  Melting point/Melting range: Undetermined.
  Boiling point/Boiling range: Undetermined.

- Flash point: Not applicable.
- Flammability (solid, gaseous): Not determined.
### 4.1. Ignition temperature:
- **Decomposition temperature:** Not determined.

### 4.2. Auto igniting:
- **Product is not selfigniting.**

### 4.3. Danger of explosion:
- **Product does not present an explosion hazard.**

### 4.4. Explosion limits:
- **Lower:** Not determined.
- **Upper:** Not determined.

### 4.5. Vapor pressure:
- **Not applicable.**

### 4.6. Density at 20 °C (68 °F):
- **7 g/cm³ (58.415 lbs/gal)**
- **Relative density:** Not determined.
- **Vapor density:** Not applicable.
- **Evaporation rate:** Not applicable.

### 4.7. Solubility in / Miscibility with Water:
- **Insoluble.**

### 4.8. Partition coefficient (n-octanol/water):
- **Not determined.**

### 4.9. Viscosity:
- **Dynamic:** Not applicable.
- **Kinematic:** Not applicable.

### 4.10. Solvent content:
- **Organic solvents:** 0.0 %
- **VOC content:** 0.0 g/l / 0.00 lb/gl
- **Other information** No further relevant information available.

## 10 Stability and reactivity

### 10 Reactivity
- **No further relevant information available.**

### 10 Chemical stability
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

### 10 Possibility of hazardous reactions
- **No dangerous reactions known.**

### 10 Conditions to avoid
- **No further relevant information available.**

### 10 Incompatible materials
- **No further relevant information available.**

### 10 Hazardous decomposition products
- **No dangerous decomposition products known.**

## 11 Toxicological information

### 11 Information on toxicological effects
- **Acute toxicity:**
  - **Primary irritant effect:**
    - **on the skin:** Irritant to skin and mucous membranes.
    - **on the eye:** Irritating effect.
  - **Sensitization:** No sensitizing effects known.

### 11 Additional toxicological information:
- **The product shows the following dangers according to internally approved calculation methods for preparations:**
  - **Irritant**

(Contd. on page 6)
### 12 Ecological information

- **Toxicity**
  - **Aquatic toxicity:** No further relevant information available.
  - **Persistence and degradability** No further relevant information available.
  - **Behavior in environmental systems:**
    - **Bioaccumulative potential** No further relevant information available.
    - **Mobility in soil** No further relevant information available.
  - **Additional ecological information:**
    - **General notes:**
      - Water hazard class 1 (Self-assessment): slightly hazardous for water
      - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
    - **Results of PBT and vPvB assessment**
      - **PBT:** Not applicable.
      - **vPvB:** Not applicable.
    - **Other adverse effects** No further relevant information available.

### 13 Disposal considerations

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

### 14 Transport information

- **UN-Number**
- **DOT, IMDG, IATA** UN1549
- **UN proper shipping name**
- **DOT** Antimony compounds, inorganic, solid, n.o.s.
- **IMDG, IATA** ANTIMONY COMPOUND, INORGANIC, SOLID, N.O.S.
### Transport hazard class(es)

- **DOT**
  - Class 6.1 Toxic substances
  - Label 6.1

- **IMDG, IATA**
  - Class 6.1 Toxic substances
  - Label 6.1

### Packing group

- **DOT, IMDG, IATA**
  - Packing group III

### Environmental hazards:

- Not applicable.

### Special precautions for user

- Warning: Toxic substances
- **EMS Number:** F-A.S-A
- **Stowage Category** A

### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

- Not applicable.

### Transport/Additional information:

- **DOT**
  - Quantity limitations
    - On passenger aircraft/rail: 100 kg
    - On cargo aircraft only: 200 kg

- **IMDG**
  - Limited quantities (LQ) 5 kg
  - Excepted quantities (EQ)
    - Code: E1
    - Maximum net quantity per inner packaging: 30 g
    - Maximum net quantity per outer packaging: 1000 g

### UN "Model Regulation":

- UN 1549 ANTIMONY COMPOUNDS, INORGANIC, SOLID, N.O.S., 6.1, III

### 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - **Sara**
  - **Section 355 (extremely hazardous substances):**
    - None of the ingredients is listed.
  - **Section 313 (Specific toxic chemical listings):**
    - 1314-60-9 diantimony pentoxide

(Contd. on page 8)
Trade name: Antimony Tin Oxide/Iridium Het-WOC core/shell nanopowder, 20 nm (conductive and acid-stable)

- **TSCA (Toxic Substances Control Act):**
  All ingredients are listed.

- **Proposition 65**

- **Chemicals known to cause cancer:**
  None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for females:**
  None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for males:**
  None of the ingredients is listed.

- **Chemicals known to cause developmental toxicity:**
  None of the ingredients is listed.

- **Carcinogenic categories**

  - **EPA (Environmental Protection Agency)**
    None of the ingredients is listed.

  - **TLV (Threshold Limit Value established by ACGIH)**
    None of the ingredients is listed.

  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    None of the ingredients is listed.

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**

  ![GHS07](image)

- **Signal word** Warning

- **Hazard-determining components of labeling:**
  diantimony pentoxide

- **Hazard statements**
  H315 Causes skin irritation.
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- **Precautionary statements**
  P262 Do not get in eyes, on skin, or on clothing.
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  P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P321 Specific treatment (see on this label).
  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.

- **National regulations:**

  - **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.
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 SDS: Technical Department.
· Contact: Technical Director
· Date of preparation / last revision 07/19/2021 / -

· 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
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists
  EINECS: European Inventory of Existing Commercial Chemical Substances
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFFA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  VOC: Volatile Organic Compounds (USA, EU)
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A