1 Identification

· This product is considered an article. This Safety Data Sheet is written based on the encapsulated substance or mixture in this article.
· Product identifier: Gas purifying filter
· Trade name: Restek Indicating Oxygen Trap
· Article number: 22010, 22011
· Application of the substance / the mixture Purifying gas.

2 Hazard(s) identification

· Classification of the substance or mixture

  GHS02
  Self-heat. 1  H251 Self-heating: may catch fire.

  GHS08
  Carc. 1A  H350 May cause cancer.
  STOT RE 2  H373 May cause damage to organs through prolonged or repeated exposure.

  GHS07
  Acute Tox. 4  H302 Harmful if swallowed.
  Acute Tox. 4  H332 Harmful if inhaled.
  Eye Irrit. 2B  H320 Causes eye irritation.

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

  GHS02  GHS07  GHS08

· Signal word Danger

· Hazard-determining components of labeling:
  Manganese dioxide
  Talc (Mg3H2(SiO3)4)
  Activated Copper oxide

(Contd. on page 2)
Barium oxide, obtained by calcining witherite

- **Hazard statements**
  - Self-heating: may catch fire.
  - Harmful if swallowed or if inhaled.
  - Causes eye irritation.
  - May cause cancer.
  - May cause damage to organs through prolonged or repeated exposure.

- **Precautionary statements**
  - Do not breathe dust/fume/gas/mist/vapors/spray.
  - Wear protective gloves / eye protection / face protection.
  - Keep cool. Protect from sunlight.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Use only outdoors or in a well-ventilated area.
  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - If swallowed: Call a poison center/doctor if you feel unwell.
  - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  - IF exposed or concerned: Get medical advice/attention.
  - If eye irritation persists: Get medical advice/attention.
  - If unwell: Get medical advice/attention.
  - Rinse mouth.
  - Store locked up.
  - Store bulk masses greater than 0.5 lbs at temperatures not exceeding 100°F.
  - Store away from other materials.
  - Maintain air gap between stacks/pallets.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
  - **NFPA ratings (scale 0 - 4)**
    - Health = 2
    - Fire = 4
    - Reactivity = 0
  - **HMIS-ratings (scale 0 - 4)**
    - Health = 1
    - Fire = 4
    - Reactivity = 0

- **Other hazards**
  - **Results of PBT and vPvB assessment**
    - **PBT:** Not applicable.
    - **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization:** Mixtures
- **Description:** Mixture of the substances listed below with nonhazardous additions.
Trade name: Restek Indicating Oxygen Trap

4 First-aid measures

· 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. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.
· After skin contact:
  Generally the product does not irritate the skin.
· After eye contact:
  Rinse opened eye for several minutes under running water. Then consult a doctor.
· After swallowing:
  Immediately call a 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:
  CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· Special hazards arising from the substance or mixture: No further relevant information available.
· Advice for firefighters
· Protective equipment: Mouth respiratory protective device.

6 Accidental release measures

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

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.

7 Handling and storage

Handling:
Precautions for safe handling
• Do not open. Becomes hot on exposure to air.
Thorough dedusting.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of dust.

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

Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Substance</th>
<th>PEL</th>
<th>REL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1313-13-9 Manganese dioxide</td>
<td>Ceiling</td>
<td>Short-term</td>
<td>Long-term value</td>
</tr>
<tr>
<td></td>
<td>limit value: 5 mg/m³</td>
<td>3 mg/m³</td>
<td>1 mg/m³ as Mn</td>
</tr>
<tr>
<td>14807-96-6 Talc (Mg₃H₂(SiO₃)₄)</td>
<td>Long-term value: 20 mppcf ppm (containing &lt;1% Quartz)</td>
<td>2* mg/m³ *respirable dust</td>
<td>2* mg/m³ *as respirable fraction; E</td>
</tr>
<tr>
<td>1304-28-5 Barium oxide, obtained by calcining witherite</td>
<td>Long-term value: 0.5 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Contd. on page 5)
### Trade name: Restek Indicating Oxygen Trap

<table>
<thead>
<tr>
<th>REL</th>
<th>Long-term value: 0.5 mg/m³ as Ba</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV</td>
<td>Long-term value: 0.5 mg/m³ as Ba</td>
</tr>
</tbody>
</table>

**1314-13-2 Zinc oxide**

<table>
<thead>
<tr>
<th>PEL</th>
<th>Long-term value: 15* 5** mg/m³ *total dust **respirable fraction and fume</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>Short-term value: 10** mg/m³</td>
</tr>
<tr>
<td>Ceiling</td>
<td>Long-term value: 5* 5** mg/m³</td>
</tr>
<tr>
<td>limit</td>
<td>*dust only **fume</td>
</tr>
<tr>
<td>TLV</td>
<td>Short-term value: 10* mg/m³</td>
</tr>
<tr>
<td>Long-term</td>
<td>2* mg/m³ *as respirable fraction</td>
</tr>
<tr>
<td>Ceiling</td>
<td>5* mg/m³ *)</td>
</tr>
</tbody>
</table>

**14808-60-7 Quartz (SiO2)**

<table>
<thead>
<tr>
<th>PEL</th>
<th>see Quartz listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>Long-term value: 0.05* mg/m³ *respirable dust; See Pocket Guide App. A</td>
</tr>
<tr>
<td>TLV</td>
<td>Long-term value: 0.025* mg/m³ *as respirable fraction</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.
  - Wash hands before breaks and at the end of work.

· **Breathing equipment:**
  - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**

  ![Protective gloves](image)

  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:**
  - Safety glasses with side shields

(Contd. on page 6)
Trade name: Restek Indicating Oxygen Trap

(Contd. of page 5)

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    - Form: Solid
    - Color: According to product specification
  - Odor: Characteristic
  - Odour 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 ignitable, but may heat rapidly in air with risk of igniting combustible materials in contact with it.
- Ignition temperature: > 370 °C (> 698 °F)
- Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Not determined.
- Explosion limits:
  - Lower: Not determined.
  - Upper: Not determined.
- Vapor pressure: Not applicable.
- Density at 20 °C (68 °F): 0.8 g/cm³ (6.676 lbs/gal)
- Relative density: Not determined.
- Vapour density: Not applicable.
- Evaporation rate: Not applicable.
- Solubility in / Miscibility with Water: Insoluble.
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not applicable.
  - Kinematic: Not applicable.
- Solvent content:
  - Organic solvents: 0.0 %
- Other information: No further relevant information available.

10 Stability and reactivity

- Reactivity
  - Chemical stability
    - Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
    - Possibility of hazardous reactions: No dangerous reactions known.
    - Conditions to avoid: No further relevant information available.

(Contd. on page 7)
11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
    - LD/LC50 values that are relevant for classification:
      - 1314-13-2 Zinc oxide
        Oral LD50 > 5000 mg/kg (rat)
      - Primary irritant effect:
        - on the skin: No irritant effect.
        - on the eye: No irritating effect.
      - Sensitization: No sensitizing effects known.
      - Additional toxicological information:
        The product shows the following dangers according to internally approved calculation methods for preparations: Harmful
    - Carcinogenic categories
      - IARC (International Agency for Research on Cancer)
        - 1318-02-1 Zeolite 3
        - 7631-86-9 Silicon dioxide, chemically prepared 3
        - 14807-96-6 Talc (Mg3H2(SiO3)4) 2B
        - 14808-60-7 Quartz (SiO2) 1
      - NTP (National Toxicology Program)
        - 14808-60-7 Quartz (SiO2) K
      - OSHA-Ca (Occupational Safety & Health Administration)
        None of the ingredients is listed.

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: Not known to be hazardous to water.
    - 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.
- **Recommendation:** Do not open cartridge. Contents of cartridge should be treated as a RCRA characteristically hazardous waste (D001, Ignitability) unless all metallic fines are shown to be in the “oxidized” state. Dispose of this product in accordance with applicable local, state and federal regulations. Recover metal components by reprocessing whenever possible.

- **Uncleaned packagings:**
  - **Recommendation:** Disposal must be made according to official regulations.
  - **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- **UN-Number**
  - DOT, ADR, IMDG, IATA: UN3190

- **UN proper shipping name**
  - DOT: Self-heating solid, inorganic, n.o.s. (Activated Copper oxide)
  - ADR: 3190 Self-heating solid, inorganic, n.o.s. (Activated Copper oxide)
  - IMDG, IATA: SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated Copper oxide)

- **Transport hazard class(es)**
  - **DOT**
    - **Class:** 4.2 Substances liable to spontaneous combustion
    - **Label:** 4.2
  - **ADR, IMDG, IATA**
    - **Class:** 4.2 Substances liable to spontaneous combustion
    - **Label:** 4.2

- **Packing group**
  - DOT, ADR, IMDG, IATA: II

- **Environmental hazards:**
  - **Marine pollutant:** No
  - **Special marking (ADR):**
    - **Note:** EHS-Mark required (ADR 2.2.9.1.10) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.
  - **Special marking (IMDG):**
    - **Note:** EHS-Mark required (IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

- **Special precautions for user**
  - **Warning:** Substances liable to spontaneous combustion

- **Danger code (Kemler):**
  - 40
### 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):**
  
<table>
<thead>
<tr>
<th>US Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1304-28-5</td>
<td>Barium oxide, obtained by calcining witherite</td>
</tr>
<tr>
<td>1314-13-2</td>
<td>Zinc oxide</td>
</tr>
</tbody>
</table>

- **TSCA (Toxic Substances Control Act):**
  
<table>
<thead>
<tr>
<th>US Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1313-13-9</td>
<td>Manganese dioxide</td>
</tr>
<tr>
<td>7631-86-9</td>
<td>Silicon dioxide, chemically prepared</td>
</tr>
<tr>
<td>14807-96-6</td>
<td>Talc (Mg3H2(SiO3)4)</td>
</tr>
<tr>
<td>1317-38-0</td>
<td>Activated Copper oxide</td>
</tr>
<tr>
<td>1327-43-1</td>
<td>Magnesium aluminosilicate clay</td>
</tr>
<tr>
<td>1304-28-5</td>
<td>Barium oxide, obtained by calcining witherite</td>
</tr>
<tr>
<td>1314-13-2</td>
<td>Zinc oxide</td>
</tr>
</tbody>
</table>
Safety Data Sheet
acc. to OSHA HCS

Trade name: Restek Indicating Oxygen Trap

14808-60-7 Quartz (SiO2)

· Proposition 65

· Chemicals known to cause cancer:
  14808-60-7 Quartz (SiO2)

· 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)
    1313-13-9 Manganese dioxide D
    1304-28-5 Barium oxide, obtained by calcining witherite D, CBD(inh), NL(oral)
    1314-13-2 Zinc oxide D, I, H

  · TLV (Threshold Limit Value established by ACGIH)
    14807-96-6 Talc (Mg3H2(SiO3)4) A4
    1304-28-5 Barium oxide, obtained by calcining witherite A4
    14808-60-7 Quartz (SiO2) A2

  · NIOSH-Ca (National Institute for Occupational Safety and Health)
    14808-60-7 Quartz (SiO2)

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

· Hazard pictograms

  GHS02 GHS07 GHS08

· Signal word Danger

· Hazard-determining components of labeling:
  Manganese dioxide
  Talc (Mg3H2(SiO3)4)
  Activated Copper oxide
  Barium oxide, obtained by calcining witherite

· Hazard statements
  Self-heating: may catch fire.
  Harmful if swallowed or if inhaled.
  Causes eye irritation.
  May cause cancer.
  May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements
  Do not breathe dust/fume/gas/mist/vapors/spray.
  Wear protective gloves / eye protection / face protection.
  Keep cool. Protect from sunlight.
  Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Use only outdoors or in a well-ventilated area.

(Contd. on page 11)
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If swallowed: Call a poison center/doctor if you feel unwell.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF exposed or concerned: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

Rinse mouth.

Store locked up.

Store bulk masses greater than 0.5 lbs at temperatures not exceeding 100°F.

Store away from other materials.

Maintain air gap between stacks/pallets.

Dispose of contents/container in accordance with local/regional/national/international regulations.

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

16 Other information

RESTEK CORPORATION PROVIDES THE DESCRIPTIONS, DATA AND INFORMATION CONTAINED HEREIN IN GOOD FAITH BUT MAKES NO REPRESENTATION AS TO ITS COMPREHENSIVENESS OR ACCURACY. IT IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, RESTEK CORPORATION RECOMMENDS YOU PERFORM AN ASSESSMENT TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED, DATA OR INFORMATION SET FORTH. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, OR DATA PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, THE DESCRIPTIONS, DATA AND INFORMATION FURNISHED HEREUNDER ARE GIVEN GRATIS. NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DATA AND INFORMATION GIVEN ARE ASSUMED. ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK.

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.

Date of preparation / last revision: 12/11/2015 / -

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

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

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)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

Self-heat. 1: Self-Heating Substances and Mixtures, Hazard Category 1

Acute Tox. 4: Acute toxicity, Hazard Category 4

Acute Tox. 3: Acute toxicity, Hazard Category 3

Eye Irrit. 2B: Serious eye damage/eye irritation, Hazard Category 2B

Carc. 1A: Carcinogenicity, Hazard Category 1A

Carc. 2: Carcinogenicity, Hazard Category 2

STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

(Contd. on page 12)
Trade name: Restek Indicating Oxygen Trap

Aquatic Acute 1: Hazardous to the aquatic environment - Acute Hazard, Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1

* Data compared to the previous version altered.