1 Identification

· Product identifier: Coloured glaze

· Trade name:

· Product ID#: **UNLEADED ONGLAZE YELLOW 94H1000**

· Product Use:
Coloured glaze
Preparation of ceramic parts and coatings

· Details of the supplier of the safety data sheet

· Manufacturer/Supplier:
Johnson Matthey Inc.
498 Acorn Lane
Downingtown, PA 19335
tel. 1 610 873-3200
fax. 1 610 873-3255

· Information department: Product Safety Department 1 (610) 873-3200 M-F 8am-5pm

· Emergency telephone number: 1 856 384-7050

2 Hazard(s) identification

· Classification of the substance or mixture

<table>
<thead>
<tr>
<th>GHS08 Health hazard</th>
</tr>
</thead>
</table>

Carc. 1A H350 May cause cancer.

· Classification according to Directive 67/548/EEC or Directive 1999/45/EC: Not applicable.

· Information concerning particular hazards for human and environment: Not applicable.

· Classification system:
The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

· Label elements

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

· Hazard pictograms: GHS08

· Signal word: Danger

· Hazard-determining components of labeling:
antimony nickel titanate yellow

· Hazard statements
H350 May cause cancer.

· Precautionary statements

<table>
<thead>
<tr>
<th>P280</th>
<th>Wear protective gloves/protective clothing/eye protection/face protection.</th>
</tr>
</thead>
<tbody>
<tr>
<td>P201</td>
<td>Obtain special instructions before use.</td>
</tr>
<tr>
<td>P202</td>
<td>Do not handle until all safety precautions have been read and understood.</td>
</tr>
<tr>
<td>P308+P313</td>
<td>IF exposed or concerned: Get medical advice/attention.</td>
</tr>
<tr>
<td>P405</td>
<td>Store locked up.</td>
</tr>
</tbody>
</table>
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard description:

- **American Hazard Description**
  Based upon the components the following hazards may exist:
  Antimony and Nickel are cancer hazards

Target Organs - Hair, Lungs

Classification system:

- **NFPA ratings (scale 0 - 4)**
  - Health = 1
  - Fire = 0
  - Reactivity = 0

- **HMIS ratings (scale 0 - 4)**
  - HEALTH Health = 1
  - FIRE Fire = 0
  - REACTIVITY 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 frits and/or raw materials of natural origin and inorganic pigments in powder form

<table>
<thead>
<tr>
<th>Hazardous components:</th>
<th>CAS: 65997-18-4 EINECS: 266-047-6</th>
<th>frits, chemicals</th>
<th>75-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 8007-18-9 EINECS: 232-353-3</td>
<td>antimony nickel titanate yellow</td>
<td>Carc. 1A, H350</td>
<td>10-25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main components:</th>
<th>CAS: 65997-18-4 EINECS: 266-047-6</th>
<th>frits, chemicals</th>
<th>75-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 8007-18-9 EINECS: 232-353-3</td>
<td>antimony nickel titanate yellow</td>
<td>Carc. 1A, H350</td>
<td>10-25%</td>
</tr>
</tbody>
</table>

SVHC -

Additional information:
For the wording of the listed risk phrases refer to section 16.
This product is partly or entirely the result of a melting, calcining or sintering process at high temperatures. It therefore does not necessarily exhibit the properties of the abovementioned metallic constituents. The mentioned metals are present in a complex matrix and are expressed as their oxides; it is however highly unlikely that these oxides are actually present in the product, unless explicitly specified.
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:
    If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult give oxygen. In case of unconsciousness place patient stably in side position for transportation.
  · After skin contact:
    Remove contaminated clothing and wash skin with soap and water. Wash or clean clothing before reuse.
  · After eye contact:
    Rinse opened eye for several minutes under running water.
  · 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: Wear full firefighting gear and SCBA

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures: Not required.
· Environmental precautions:
  Do not allow product to reach sewage system or any water course.
  Do not allow to enter sewers/surface or ground water.
· Methods and material for containment and cleaning up: Pick up mechanically.
· 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
    Thorough dedusting.
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of dust.
    Provide suction extractors if dust is formed.
  · 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.
8 Exposure controls/personal protection

- Additional information about design of technical systems:
  The application of this product requires well exhausted firing kilns and efficient ventilation of working areas.

- Control parameters
  - Components with limit values that require monitoring at the workplace:
    There is no PEL established for this mixture. Recommend monitoring based upon the components in the mixture.

**PEL**

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Designation of material</th>
<th>%</th>
<th>Type</th>
<th>Value Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>65997-18-4</td>
<td>frits, chemicals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PEL Long-term value: 15 mg/m³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>recommended PEL for nuisance dust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TLV Long-term value: 15 mg/m³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>recommended TLV for nuisance dust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8007-18-9</td>
<td>antimony nickel titanate yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PEL Long-term value: 1 mg/m³ as Ni</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>REL Long-term value: 0.015 mg/m³ as Ni; See Pocket Guide App. A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TLV Long-term value: 0.2 mg/m³ as Ni; inhalable fraction</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Additional Occupational Exposure Limit Values for possible hazards during processing:

**nickel compounds, n.o.s. (calculated as NiO)**

| PEL | Long-term value: 1 mg/m³ TWA is 1 mg/m³ |
| REL | Long-term value: 0.015 mg/m³ as Ni, TWA is 0.015 mg/m³ |
| TLV | Long-term value: 0.2 I mg/m³ as Ni |

**antimony compounds, n.o.s. (calculated as Sb2O3)**

| PEL | Long-term value: 0.5 mg/m³ as Sb |
| REL | Long-term value: 0.5 mg/m³ as Sb |

**titanium compounds, n.o.s. (calculated as TiO2)**

| PEL | Long-term value: * 15 mg/m³ * total dust |
| REL | LFC (LOQ 0.2 mg/m3) |

- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:
- General protective and hygienic measures: Wash hands before breaks and at the end of work.
- Breathing equipment: Not required.

(Contd. on page 5)
### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**
  - **Appearance:**
    - Form: Powder
    - Color: Yellow
  - **Odor:** Odorless
  - **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 determined.

- **Ignition temperature:**
  - **Decomposition temperature:** Not determined.
  - **Auto igniting:** Product is not selfigniting.
  - **Danger of explosion:** Product does not present an explosion hazard.

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

- **Vapor pressure at 20 °C (68 °F):** 0 hPa

- **Density:** Not determined.
  - **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 %
  - **Water:** 0.0 %
  - **Solvent (USA):** 0.0 %
  - **Solids content:** 100.0 %
**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.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

**11 Toxicological information**

- **Information on toxicological effects**
  - **Acute toxicity:**
    - **Primary irritant effect:**
      - **on the skin:** No irritant effect.
      - **on the eye:** No irritating effect.
    - **Sensitization:** No sensitizing effects known.
  - **Additional toxicological information:**

<table>
<thead>
<tr>
<th>Carcinogenic categories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IARC (International Agency for Research on Cancer)</strong></td>
<td></td>
</tr>
<tr>
<td>8007-18-9 antimony nickel titanate yellow</td>
<td>1</td>
</tr>
<tr>
<td><strong>NTP (National Toxicology Program)</strong></td>
<td></td>
</tr>
<tr>
<td>8007-18-9 antimony nickel titanate yellow</td>
<td>K</td>
</tr>
<tr>
<td><strong>OSHA-Ca (Occupational Safety &amp; Health Administration)</strong></td>
<td></td>
</tr>
<tr>
<td>None of the ingredients is listed.</td>
<td></td>
</tr>
</tbody>
</table>

**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 2 (Self-assessment): hazardous for water
      Do not allow product to reach ground water, water course or sewage system.
      Danger to drinking water if even small quantities leak into the ground.
    - **Results of PBT and vPvB assessment**
      - **PBT:** Not applicable.
      - **vPvB:** Not applicable.

* (Contd. on page 5)
### 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

<table>
<thead>
<tr>
<th><strong>UN-Number</strong></th>
<th>DOT, ADR, ADN, IMDG, IATA</th>
<th>Not regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UN proper shipping name</strong></td>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td>Not regulated</td>
</tr>
<tr>
<td><strong>Transport hazard class(es)</strong></td>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td></td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>Not regulated</td>
<td></td>
</tr>
<tr>
<td><strong>Packing group</strong></td>
<td>DOT, ADR, IMDG, IATA</td>
<td>Not regulated</td>
</tr>
<tr>
<td><strong>Environmental hazards:</strong></td>
<td>Marine pollutant: No</td>
<td></td>
</tr>
<tr>
<td><strong>Special precautions for user</strong></td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</strong></td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td><strong>Transport/Additional information:</strong></td>
<td>Not dangerous according to the above specifications</td>
<td></td>
</tr>
<tr>
<td><strong>DOT</strong></td>
<td>Remarks: Not regulated</td>
<td></td>
</tr>
<tr>
<td><strong>ADR</strong></td>
<td>Remarks: Not regulated</td>
<td></td>
</tr>
<tr>
<td><strong>ADN</strong></td>
<td>Remarks: Not regulated</td>
<td></td>
</tr>
<tr>
<td><strong>IMDG</strong></td>
<td>Remarks: Not regulated</td>
<td></td>
</tr>
<tr>
<td><strong>IATA</strong></td>
<td>Remarks: Not regulated</td>
<td></td>
</tr>
<tr>
<td><strong>UN &quot;Model Regulation&quot;:</strong></td>
<td>USA</td>
<td></td>
</tr>
</tbody>
</table>

(Contd. on page 8)
### 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):**
    - 8007-18-9 antimony nickel titanate yellow *
  - **TSCA (Toxic Substances Control Act):** All ingredients are listed.
  - **Proposition 65**
    - **Warning:** This product contains a chemical known to the State of California to cause cancer
    - 8007-18-9 antimony nickel titanate yellow *
    - **Warning:** This product contains a chemical known to the State of California to cause female reproductive hazards.
    - None of the ingredients is listed.
    - **Warning:** This product contains a chemical known to the State of California to cause male reproductive hazards
    - None of the ingredients is listed.
    - **Warning:** This product contains a chemical known to the State of California to cause development toxicity
    - None of the ingredients is listed.
- **Canadian Ingredient disclosure list**
  - **Limit 0,1%** None of the ingredients is listed.
  - **Limit 1%** None of the ingredients is listed.
- **Cancerogenity categories**
  - **EPA (Environmental Protection Agency)** None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    - 8007-18-9 antimony nickel titanate yellow A4
  - **MAK (German Maximum Workplace Concentration)** None of the ingredients is listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)** None of the ingredients is listed.
- **National regulations:** The product is subject to be labeled according with the prevailing version of the regulations on hazardous substances.
- **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.
Product ID#: **UNLEADED ONGLAZE YELLOW** 94H1000

- **Relevant phrases**
  - H350 May cause cancer.

- **Contact:**
  - J. Rose
  - EHS Specialist

- **Date of preparation / last revision** 04/10/2015 / 4

- **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
  - 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)
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)
  - VOC: Volatile Organic Compounds (USA, EU)
  - Carc. 1A: Carcinogenicity, Hazard Category 1A

- * Data compared to the previous version altered.*