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

- **Product identifier**: Glass enamel powder
- **Trade name**: UNLEADED ONGLAZE GREEN
- **Product ID#**: 94K1002
- **Product Use**: Glass enamel powder
  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 Hazards identification

- **Classification of the substance or mixture**: The product is not classified according to the Globally Harmonized System (GHS).

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**
  - **Harmful**
  - Harmful by inhalation.

- **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**

  - **Labelling according to EU guidelines**: Observe the general safety regulations when handling chemicals. The product has been marked in accordance with national laws.

- **Code letter and hazard designation of product**: Xn Harmful

- **Hazard-determining components of labelling**: cobalt compounds, n.o.s. (calculated as CoO) frits, chemicals

- **Risk phrases**: Harmful by inhalation.

- **Safety phrases**: Do not breathe dust.

(Contd. on page 2)
Wear suitable protective clothing and eye/face protection.

**Hazard description:**

- **American Hazard Description** Based upon the components the following hazards may exist:
- **Classification system:**
  - **NFPA ratings (scale 0 - 4)**
    - Health = 2
    - Fire = 0
    - Reactivity = 0
  - **HMIS ratings (scale 0 - 4)**
    - Health = 2
    - Fire = 0
    - 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

- **Hazardous components:**
  - CAS: 65997-18-4  EINECS: 266-047-6  frits, chemicals  25-100%
  - chromium (III) compounds, n.o.s. (calculated as Cr2O3) ≤10%
  - cobalt compounds, n.o.s. (calculated as CoO)  1-5%
  - aluminium compounds n.o.s. (calculated as Al2O3)  1-5%

- **Main components:**
  - CAS: 65997-18-4  EINECS: 266-047-6  frits, chemicals  25-100%
  - chromium (III) compounds, n.o.s. (calculated as Cr2O3) ≤10%
  - cobalt compounds, n.o.s. (calculated as CoO)  1-5%
  - aluminium compounds n.o.s. (calculated as Al2O3)  1-5%

- **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.

- 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 Firefighting 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
  Wear protective equipment. Keep unprotected persons away.

- 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:
  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

- 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.
36.0.1 Conditions for safe storage, including any incompatibilities

· Conditions for 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:
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.

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<th>65997-18-4 frits, chemicals</th>
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· 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.
9 Physical and chemical properties

- Information on basic physical and chemical properties
  - General Information
  - Appearance:
    - Form: Powder
    - Color: Green
    - Odor: Odorless
  - pH-value: Neutral
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: Undetermined.
- Flash point: Not applicable.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product does not present an explosion hazard.
- Density: Not determined.
- Solubility in / Miscibility with
  - Water: Insoluble.
- Viscosity: Not applicable.
  - Dynamic: Not applicable.
  - Kinematic: Not applicable.
- Solvent content:
  - Organic solvents: 0.0 %
  - Water: 0.0 %
  - Solvent (USA): 0.0 %
- Solids content: 100.0 %
- 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.
- Incompatible materials: No further relevant information available.
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:
    The product shows the following dangers according to internally approved calculation methods for preparations: Harmful

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    - cobalt compounds, n.o.s. (calculated as CoO) 2B
  - NTP (National Toxicology Program)
    - 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.
  - 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.
      - 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**: Void
- **DOT, ADR, ADN, IMDG, IATA**: Void
- **UN proper shipping name**: Void
- **DOT, ADR, ADN, IMDG, IATA**: Void
- **Transport hazard class(es)**
  - **DOT, ADR, ADN, IMDG, IATA**: Void
- **Packing group**
  - **DOT, ADR, IMDG, IATA**: Void
- **Environmental hazards**:
  - **Marine pollutant**: No
- **Special precautions for user**: Not applicable.
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**: Not applicable.
- **Transport/Additional information**: Not dangerous according to the above specifications.
- **DOT**
  - **Remarks**: Not regulated
- **ADR**
  - **Remarks**: Not regulated
- **ADN**
  - **Remarks**: Not regulated
- **IMDG**
  - **Remarks**: Not regulated
- **IATA**
  - **Remarks**: Not regulated
- **UN "Model Regulation"**: -

**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)**:
      - chromium (III) compounds, n.o.s. (calculated as Cr2O3) *
      - cobalt compounds, n.o.s. (calculated as CoO) *
  - **TSCA (Toxic Substances Control Act)**: All ingredients are listed.
**Product ID#: UNLEADED ONGLAZE GREEN 94K1002**

- **Proposition 65**

  - **Warning:** This product contains a chemical known to the State of California to cause cancer
    cobalt compounds, n.o.s. (calculated as CoO) *

  - **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)**
    aluminium compounds n.o.s. (calculated as Al2O3) 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.

  - **OSHA-Ca (Occupational Safety & Health Administration)**
    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.

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**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.

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

- **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)
  IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
  ICAO: International Civil Aviation Organization
  ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
Product ID#: **UNLEADED ONGLAZE GREEN**

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
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)

* Data compared to the previous version altered.