# 1. Product and Company Identification

<table>
<thead>
<tr>
<th>Material name</th>
<th>Nickelous Oxide, Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version #</td>
<td>02</td>
</tr>
<tr>
<td>Revision date</td>
<td>01-18-2012</td>
</tr>
<tr>
<td>CAS #</td>
<td>1313-99-1</td>
</tr>
</tbody>
</table>
| Product Codes          | J.T.Baker: 2795, 2796, 5309  
                         | Macron: IM5309, IM9005  |
| Synonym(s)             | Nickel (II) Oxide; Nickel Monoxide |
| Manufacturer           | Avantor Performance Materials, Inc. |
| Address                | 3477 Corporate Parkway  
                         | Suite #200              
                         | Center Valley, PA 18034 |
| US                     | 855-282-6867           |
| Customer Service       | 800-424-9300           |
| 24 Hour Emergency      | 908-859-2151           |
| Chemtrec               | 800-424-9300           |

# 2. Hazards Identification

## Emergency overview
DANGER
Cancer hazard - can cause cancer. Harmful if inhaled. May cause an allergic skin reaction. Product dust may be irritating to eyes, skin and respiratory system. Prolonged or repeated exposure may cause lung injury.

## OSHA regulatory status
This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

## Potential health effects

<table>
<thead>
<tr>
<th>Routes of exposure</th>
<th>Inhalation. Skin contact. Eye contact. Ingestion.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>Dust or powder may irritate eye tissue. If irritation should occur, it is expected to be transient.</td>
</tr>
<tr>
<td>Skin</td>
<td>Dust or powder may irritate the skin. This product may cause an allergic skin reaction.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Harmful if inhaled. Inhalation of dusts may cause respiratory irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Expected to be a low ingestion hazard. May cause temporary irritation of the throat, stomach, and gastrointestinal tract.</td>
</tr>
</tbody>
</table>

## Target organs
Skin. Respiratory system.

## Chronic effects
Contains nickel, which can cause lung or nasal cancer. Long-term breathing of this material may cause chronic lung disease.

## Potential environmental effects
May cause long-term adverse effects in the aquatic environment.

# 3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>NICKEL OXIDE</td>
<td>1313-99-1</td>
<td>90 - 100</td>
</tr>
</tbody>
</table>

# 4. First Aid Measures

## First aid procedures

### Eye contact
Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if irritation develops and persists.

### Skin contact
Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse.
Inhalation
Ingestion
Notes to physician
General advice

5. Fire Fighting Measures

Flammable properties
This product is not flammable.

Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
None known.

Protection of firefighters

Firefighting measures
Firefighters should wear full protective gear. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Special protective equipment for fire-fighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Personal precautions
Keep unnecessary personnel away. Keep upwind. Ventilate the area. Avoid inhalation of dust from the spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental precautions
Prevent further leakage or spillage if safe to do so.

Methods for containment
If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up
Avoid dust formation.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal.

Large Spills: Collect dust or particulates using a vacuum cleaner with a HEPA filter. Reduce airborne dust and prevent scattering by moistening with water.

Never return spills in original containers for re-use. Clean contaminated surface thoroughly. Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling
Keep formation of airborne dusts to a minimum. Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.

Storage
Keep container tightly closed. Store in a well-ventilated place.

8. Exposure Controls / Personal Protection

ACGIH

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickelous Oxide, Green (1313-99-1)</td>
<td>TWA</td>
<td>0.2000 mg/m³</td>
<td>Inhalable fraction</td>
</tr>
</tbody>
</table>

Occupational exposure limits

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickelous Oxide, Green (1313-99-1)</td>
<td>TWA</td>
<td>1.0000 mg/m³</td>
</tr>
</tbody>
</table>
Engineering controls
Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn.

Personal protective equipment

Eye / face protection
Use tight fitting goggles if dust is generated.

Skin protection
Wear suitable protective clothing and gloves.

Respiratory protection
Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

General hygiene considerations
Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Crystalline.</td>
</tr>
<tr>
<td>Color</td>
<td>Green.</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not available.</td>
</tr>
<tr>
<td>Physical state</td>
<td>Solid.</td>
</tr>
<tr>
<td>Form</td>
<td>Solid.</td>
</tr>
<tr>
<td>pH</td>
<td>Not available.</td>
</tr>
<tr>
<td>Melting point</td>
<td>3551 °F (1955 °C)</td>
</tr>
<tr>
<td>Freezing point</td>
<td>3551 °F (1955 °C)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>4946 °F (2730 °C)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limits in air, upper, % by volume</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limits in air, lower, % by volume</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>6.72</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility (water)</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-Ignition temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>74.69 g/mol</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>Ni-O</td>
</tr>
</tbody>
</table>

10. Chemical Stability & Reactivity Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability</td>
<td>Stable under normal temperature conditions.</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>Excessive heat.</td>
</tr>
<tr>
<td>Hazardous decomposition</td>
<td>Decomposition may yield Nickel carbonyl.</td>
</tr>
<tr>
<td>products</td>
<td></td>
</tr>
<tr>
<td>Possibility of hazardous</td>
<td>Hazardous polymerization does not occur.</td>
</tr>
<tr>
<td>reactions</td>
<td></td>
</tr>
</tbody>
</table>
11. Toxicological Information

**Sensitization**
May cause sensitization by skin contact.

**Acute effects**
Harmful if inhaled.

**Local effects**
May cause eye irritation. May cause skin irritation. May cause irritation to the respiratory system.

**Chronic effects**
Prolonged or repeated exposure may cause lung injury.

**Carcinogenicity**
Cancer Hazard. Contains nickel, which can cause lung or nasal cancer. Long-term breathing of this material may cause chronic lung disease.

**ACGIH Carcinogens**
NICKEL OXIDE (CAS 1313-99-1)  
A1 Confirmed human carcinogen.

**IARC Monographs. Overall Evaluation of Carcinogenicity**
NICKEL OXIDE (CAS 1313-99-1)  
1 Carcinogenic to humans.

**US NTP Report on Carcinogens: Known carcinogen**
NICKEL OXIDE (CAS 1313-99-1)  
Known carcinogen.

**Skin corrosion/irritation**
May irritate and cause redness and pain.

**Epidemiology**
Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.

**Mutagenicity**
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Neurological effects**
None known.

**Reproductive effects**
Contains no ingredient listed as toxic to reproduction

**Teratogenicity**
No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

**Symptoms and target organs**
Irritant effects. Sensitization.

12. Ecological Information

**Ecotoxicity**
May cause long lasting harmful effects to aquatic life.

**Environmental effects**
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

**Persistence and degradability**
The product is not biodegradable.

**Partition coefficient**
(n-octanol/water)
Not available

13. Disposal Considerations

**Disposal Instructions**
Dispose of contents/container in accordance with local/regional/national/international regulations.
Incinerate the material under controlled conditions in an approved incinerator.

**Contaminated packaging**
Offer rinsed packaging material to local recycling facilities. Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

**DOT**
Not regulated as dangerous goods.

**IATA**
Not regulated as dangerous goods.

**IMDG**
Not regulated as dangerous goods.
15. Regulatory Information

**US federal regulations**
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration**
NICKEL OXIDE (CAS 1313-99-1) 0.1 % N495

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance**
NICKEL OXIDE (CAS 1313-99-1) Listed. N495

**CERCLA (Superfund) reportable quantity**
None

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**
- Immediate Hazard - Yes
- Delayed Hazard - Yes
- Fire Hazard - No
- Pressure Hazard - No
- Reactivity Hazard - No

**Section 311 hazardous chemical**
Yes

**Clean Air Act (CAA)**
- HAPS list
- Urban HAPS list

**Clean Water Act (CWA)**
- Priority pollutant
- Toxic pollutant

**Inventory status**

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**State regulations**
WARNING: This product contains a chemical known to the State of California to cause cancer.

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**
NICKEL OXIDE (CAS 1313-99-1) Listed.

**US - California Proposition 65 - CRT: Listed date/Carcinogenic substance**

**US - New Jersey Community RTK (EHS Survey): Reportable threshold**
NICKEL OXIDE (CAS 1313-99-1) 500 LBS

**US - Pennsylvania RTK - Hazardous Substances: Listed substance**
NICKEL OXIDE (CAS 1313-99-1) Listed.

**US - Pennsylvania RTK - Hazardous Substances: Special hazard**
NICKEL OXIDE (CAS 1313-99-1) Special hazard.
**Label Hazard Warning**

DANGER

Cancer hazard - can cause cancer. Harmful if inhaled. May cause an allergic skin reaction. Product dust may be irritating to eyes, skin and respiratory system. Prolonged or repeated exposure may cause lung injury.

**Label Precautions**

Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.

**Label First Aid**

Immediately flush eyes with plenty of water for at least 15 minutes. Flush skin thoroughly with water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention if symptoms occur. If ingestion of a large amount does occur, call a poison control center immediately.

**17. Other Information**

**NFPA ratings**

Health: 2
Flammability: 0
Instability: 0

**Disclaimer**

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**Issue date**

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