**Section 1. Identification**

<table>
<thead>
<tr>
<th>Product name</th>
<th>Spent Catalyst (Various)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>Not available.</td>
</tr>
<tr>
<td>Synonyms</td>
<td>Zeolitic Silica, Alumina Catalyst</td>
</tr>
</tbody>
</table>

**Relevant identified uses of the substance or mixture and uses advised against**

<table>
<thead>
<tr>
<th>Product use</th>
<th>By-Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of application</td>
<td>Industrial applications.</td>
</tr>
</tbody>
</table>

**Manufacturer**

HollyFrontier Refining & Marketing LLC  
2828 North Harwood  
Suite 1300  
Dallas, Texas 75201  
USA  
Customer Service: (888) 286-8836

**Emergency telephone number**

CHEMTREC® (800) 424-9300  
CCN 201319

**Section 2. Hazards identification**

**OSHA/HCS status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Classification of the substance or mixture**

- H302 - ACUTE TOXICITY (oral) - Category 4  
- H331 - ACUTE TOXICITY (inhalation) - Category 3  
- H319 - EYE IRRITATION - Category 2A  
- H334 - RESPIRATORY SENSITIZATION - Category 1  
- H317 - SKIN SENSITIZATION - Category 1  
- H350 - CARCINOGENICITY - Category 1A  
- H335 - SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3  
- H372 - SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (heart, kidneys, liver, lungs) - Category 1

Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 82.5%  
Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 50%

**GHS label elements**

**Signal word**

Danger

**Hazard pictograms**

- ![](image)

**Hazard statements**

- H331 - Toxic if inhaled.  
- H302 - Harmful if swallowed.  
- H319 - Causes serious eye irritation.  
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
- H317 - May cause an allergic skin reaction.  
- H350 - May cause cancer.  
- H335 - May cause respiratory irritation.  
- H372 - Causes damage to organs through prolonged or repeated exposure. (heart, kidneys, liver, lungs)

**Precautionary statements**
Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Wear respiratory protection. Use only outdoors or in a well-ventilated area. Do not breathe dust. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.

Response: Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician. IF experiencing respiratory symptoms: Call a POISON CENTER or physician. IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage: Not applicable.

Disposal: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified: Powder: May form combustible dust concentrations in air.

Section 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Other names</th>
<th>%</th>
<th>CAS number</th>
</tr>
</thead>
<tbody>
<tr>
<td>silicon dioxide</td>
<td>-</td>
<td>0 - 50</td>
<td>7631-86-9</td>
</tr>
<tr>
<td>Aluminium oxide</td>
<td>-</td>
<td>0 - 50</td>
<td>1344-28-1</td>
</tr>
<tr>
<td>magnesium oxide</td>
<td>-</td>
<td>0 - 50</td>
<td>1309-48-4</td>
</tr>
<tr>
<td>molybdenum trioxide</td>
<td>-</td>
<td>0 - 20</td>
<td>1313-27-5</td>
</tr>
<tr>
<td>cobalt oxide</td>
<td>-</td>
<td>0 - 10</td>
<td>1307-96-6</td>
</tr>
<tr>
<td>nickel monoxide</td>
<td>-</td>
<td>0 - 5</td>
<td>1313-99-1</td>
</tr>
</tbody>
</table>

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention. Continue to rinse for at least 15 minutes.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In the event of any complaints or symptoms, avoid further exposure.

Skin contact: Wash with plenty of soap and water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion: Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact: Causes serious eye irritation.
Inhalation: Toxic if inhaled. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin contact: May cause an allergic skin reaction.
Ingestion: Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact: pain or irritation; watering; redness
Inhalation: respiratory tract irritation; coughing; wheezing and breathing difficulties; asthma
Skin contact: irritation; redness
Ingestion: No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments: No specific treatment.
Protection of medical responders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media: Do not use water jet.

Specific hazards arising from the chemical: Powder: May form combustible dust concentrations in air.
Hazardous thermal decomposition products: Decomposition products may include the following materials: metal oxide/oxides

Special protective actions for fire-fighters: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Section 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel**
- No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

**For emergency responders**
- If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions**
- Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**Methods and materials for containment and cleaning up**

**Small spill**
- Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

**Large spill**
- Move containers from spill area. Approach release from upwind. Prevent entry into sewers, waterways, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

**Precautions for safe handling**

**Protective measures**
- Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Advice on general occupational hygiene**
- Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

**Conditions for safe storage, including any incompatibilities**
- Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

**Control parameters**

**Occupational exposure limits**
<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>silicon dioxide</td>
<td>NIOSH REL (United States, 10/2016). TWA: 6 mg/m³ 10 hours.</td>
</tr>
<tr>
<td>Aluminium oxide</td>
<td>NIOSH REL (United States, 10/2016). TWA: 5 mg/m³, (as Al) 10 hours. Form: PYRO POWDERS AND WELDING FUMES ACGIH TLV (United States, 3/2017). TWA: 1 mg/m³ 8 hours. Form: Respirable fraction OSHA PEL (United States, 6/2016). TWA: 5 mg/m³ 8 hours. Form: Respirable fraction TWA: 15 mg/m³ 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>magnesium oxide</td>
<td>ACGIH TLV (United States, 3/2017). TWA: 10 mg/m³ 8 hours. Form: Inhalable fraction OSHA PEL (United States, 6/2016). TWA: 15 mg/m³ 8 hours. Form: Total particulates</td>
</tr>
<tr>
<td>molybdenum trioxide</td>
<td>ACGIH TLV (United States, 3/2017). TWA: 10 mg/m³, (as Mo) 8 hours. Form: Inhalable fraction TWA: 3 mg/m³, (as Mo) 8 hours. Form: Respirable fraction OSHA PEL (United States, 6/2016). TWA: 15 mg/m³, (as Mo) 8 hours. Form: Total dust</td>
</tr>
<tr>
<td>cobalt oxide</td>
<td>ACGIH TLV (United States, 3/2017). TWA: 0.02 mg/m³, (as Co) 8 hours.</td>
</tr>
<tr>
<td>nickel monoxide</td>
<td>NIOSH REL (United States, 10/2016). TWA: 0.015 mg/m³, (as Ni) 10 hours. ACGIH TLV (United States, 3/2017). TWA: 0.2 mg/m³, (as Ni) 8 hours. Form: Inhalable fraction OSHA PEL (United States, 6/2016). TWA: 1 mg/m³, (as Ni) 8 hours.</td>
</tr>
</tbody>
</table>

Appropriate engineering controls: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
Section 9. Physical and chemical properties

**Appearance**
- **Physical state**: Solid.
- **Color**: Various
- **Odor**: Not available.
- **Odor threshold**: Not available.
- **pH**: Not available.
- **Melting point**: Not available.
- **Boiling point**: Not available.
- **Flash point**: Not available.
- **Evaporation rate**: Not available.
- **Flammability (solid, gas)**: Not available.
- **Lower and upper explosive (flammable) limits**: Not available.
- **Vapor pressure**: Not available.
- **Vapor density**: Not available.
- **Specific gravity**: 0.9 to 1.1
- **Density**: Not available.
- **Solubility**: Not available.
- **Partition coefficient: n-octanol/water**: Not available.
- **Auto-ignition temperature**: Not available.
- **Decomposition temperature**: Not available.
- **Viscosity**: Not available.
- **Flow time (ISO 2431)**: Not available.

Section 10. Stability and reactivity

**Reactivity**
- No specific test data related to reactivity available for this product or its ingredients.

**Chemical stability**
- The product is stable.

**Possibility of hazardous reactions**
- Under normal conditions of storage and use, hazardous reactions will not occur.
- Under normal conditions of storage and use, hazardous polymerization will not occur.

**Conditions to avoid**
- No specific data.

**Incompatible materials**
- No specific data.

**Hazardous decomposition products**
- Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

**Information on toxicological effects**

**Acute toxicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>molybdenum trioxide</td>
<td>LC50 Inhalation Dusts and mists</td>
<td>Rat - Male, Female</td>
<td>&gt;5.05 mg/l</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rat - Male, Female</td>
<td>&gt;2000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rat</td>
<td>188 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female Rat</td>
<td>0.06 mg/l</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>202 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td>cobalt oxide</td>
<td>LD50 Dermal</td>
<td>Rat</td>
<td>188 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LC50 Oral</td>
<td>Female</td>
<td>0.06 mg/l</td>
<td>4 hours</td>
</tr>
<tr>
<td></td>
<td>LC50 Inhalation Dusts and mists</td>
<td>Female</td>
<td>202 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

Date of issue/Date of revision: 12/14/2017  Date of previous issue: 12/29/2014  Version: 2
nickel monoxide  LC50 Inhalation Dusts and mists  Rat - Male, Female  >5.08 mg/l  4 hours  
LD50 Oral  9990 mg/kg  -  

**Irritation/Corrosion**
Not available.

**Carcinogenicity**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cobalt oxide</td>
<td>-</td>
<td>2B</td>
<td>-</td>
<td>Reasonably anticipated to be a human carcinogen.</td>
</tr>
<tr>
<td>nickel monoxide</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>Known to be a human carcinogen.</td>
</tr>
</tbody>
</table>

**Specific target organ toxicity (single exposure)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
<tr>
<td>molybdenum trioxide</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

**Specific target organ toxicity (repeated exposure)**

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide</td>
<td>Category 2</td>
<td>Not determined</td>
<td>lungs</td>
</tr>
<tr>
<td>molybdenum trioxide</td>
<td>Category 2</td>
<td>Not determined</td>
<td>kidneys and liver</td>
</tr>
<tr>
<td>cobalt oxide</td>
<td>Category 2</td>
<td>Not determined</td>
<td>heart and liver</td>
</tr>
<tr>
<td>nickel monoxide</td>
<td>Category 1</td>
<td>Not determined</td>
<td>lungs</td>
</tr>
</tbody>
</table>

**Aspiration hazard**

<table>
<thead>
<tr>
<th>Name</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spent Catalyst (Various)</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

**Information on the likely routes of exposure**
Routes of entry anticipated: Oral, Dermal, Inhalation.

**Delayed and immediate effects and also chronic effects from short and long term exposure**

**Short term exposure**

- Potential immediate effects: Not available.
- Potential delayed effects: Not available.

**Long term exposure**

- Potential immediate effects: Not available.
- Potential delayed effects: Not available.

**Potential chronic health effects**

**General**
Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity**
May cause cancer. Risk of cancer depends on duration and level of exposure.

**Mutagenicity**
No known significant effects or critical hazards.

**Teratogenicity**
No known significant effects or critical hazards.

**Developmental effects**
No known significant effects or critical hazards.

**Fertility effects**
No known significant effects or critical hazards.

**Numerical measures of toxicity**

**Acute toxicity estimates**
### Section 12. Ecological information

#### Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide</td>
<td>Acute EC50 114.357 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td>molybdenum trioxide</td>
<td>Acute LC50 203.2 mg/l Fresh water</td>
<td>Daphnia - Daphnia magna - Neonate</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 70000 µg/l Fresh water</td>
<td>Fish - Pimephales promelas</td>
<td>96 hours</td>
</tr>
</tbody>
</table>

#### Persistence and degradability

Not available.

#### Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP_{ow}</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>cobalt oxide</td>
<td>-</td>
<td>15600</td>
<td>high</td>
</tr>
<tr>
<td>nickel monoxide</td>
<td>-</td>
<td>5613</td>
<td>high</td>
</tr>
</tbody>
</table>

#### Mobility in soil

- Soil/water partition coefficient (K_{oc}): Not available.

#### Other adverse effects

No known significant effects or critical hazards.

### Section 13. Disposal considerations

**Disposal methods**: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

### Section 14. Transport information

<table>
<thead>
<tr>
<th>DOT Classification</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN number</td>
<td>Not regulated.</td>
<td>UN3077</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>-</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (cobalt oxide)</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>
Section 15. Regulatory information

U.S. Federal regulations
- United States inventory (TSCA 8b): All components are listed or exempted.
- Clean Water Act (CWA) 307: nickel monoxide

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)
- Listed

SARA 302/304
Composition/information on ingredients
- Not applicable.

SARA 304 RQ
- Listed

SARA 311/312
Classification
- ACUTE TOXICITY (oral) - Category 4
- ACUTE TOXICITY (inhalation) - Category 3
- EYE IRRITATION - Category 2A
- RESPIRATORY SENSITIZATION - Category 1
- SKIN SENSITIZATION - Category 1
- CARCINOGENICITY - Category 1A
- SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
- SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (heart, kidneys, liver, lungs) - Category 1

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>%</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium oxide</td>
<td>0 - 50</td>
<td>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (lungs) - Category 2</td>
</tr>
<tr>
<td>molybdenum trioxide</td>
<td>0 - 20</td>
<td>ACUTE TOXICITY (oral) - Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EYE IRRITATION - Category 2A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CARCINOGENICITY - Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys, liver) - Category 2</td>
</tr>
<tr>
<td>cobalt oxide</td>
<td>0 - 10</td>
<td>ACUTE TOXICITY (oral) - Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACUTE TOXICITY (inhalation) - Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RESPIRATORY SENSITIZATION - Category 1B</td>
</tr>
</tbody>
</table>
The following components are listed: DIATOMACEOUS EARTH; AMORPHOUS SILICA; ALUMINUM OXIDE; MOLYBDENUM TRIOXIDE; MAGNESIUM OXIDE FUME; NICKEL OXIDE

Massachusetts:
None of the components are listed.

New York:
None of the components are listed.

New Jersey:
The following components are listed: ALUMINUM OXIDE; alpha-ALUMINA; MOLYBDENUM TRIOXIDE; MOLYBDENUM OXIDE (MoO3); MAGNESIUM OXIDE; COBALT compounds; NICKEL OXIDE; NICKEL MONOXIDE

Pennsylvania:
The following components are listed: SILICA; ALUMINUM OXIDE; MOLYBDENUM TRIOXIDE; MAGNESIUM OXIDE; COBALT COMPOUNDS; NICKEL OXIDE

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts: The following components are listed: DIATOMACEOUS EARTH; AMORPHOUS SILICA; ALUMINUM OXIDE; MOLYBDENUM TRIOXIDE; MAGNESIUM OXIDE FUME; NICKEL OXIDE

New York: None of the components are listed.

New Jersey: The following components are listed: ALUMINUM OXIDE; alpha-ALUMINA; MOLYBDENUM TRIOXIDE; MOLYBDENUM OXIDE (MoO3); MAGNESIUM OXIDE; COBALT compounds; NICKEL OXIDE; NICKEL MONOXIDE

Pennsylvania: The following components are listed: SILICA; ALUMINUM OXIDE; MOLYBDENUM TRIOXIDE; MAGNESIUM OXIDE; COBALT COMPOUNDS; NICKEL OXIDE

California Prop. 65

WARNING: This product can expose you to chemicals including Cobalt [II] oxide, Nickel oxide, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>No significant risk level</th>
<th>Maximum acceptable dosage level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt [II] oxide</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nickel oxide</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals
Not listed.

Montreal Protocol (Annexes A, B, C, E)
Not listed.

Stockholm Convention on Persistent Organic Pollutants
Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)
Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals
Not listed.
Section 16. Other information

National Fire Protection Association (U.S.A.)

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 4, H302</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Acute Tox. 3, H331</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Eye Irrit. 2A, H319</td>
<td>Calculation method</td>
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<tr>
<td>Resp. Sens. 1, H334</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Skin Sens. 1, H317</td>
<td>Calculation method</td>
</tr>
<tr>
<td>Carc. 1A, H350</td>
<td>Calculation method</td>
</tr>
<tr>
<td>STOT SE 3, H335</td>
<td>Calculation method</td>
</tr>
<tr>
<td>STOT RE 1, H372 (heart, kidneys, liver, lungs)</td>
<td>Calculation method</td>
</tr>
</tbody>
</table>

Date of issue/Date of revision : 12/14/2017
Date of previous issue : 12/29/2014
Version : 2

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named manufacturer, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.