Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Code  PM011
Product Name  Iron/Cobalt Alloy Respirable Powder
UN/ID no  3288
Synonyms  C200, C250, C300, C350, T200, T250, T300 and HWM
Contains Cobalt, Nickel

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use  Iron alloy product manufacture
Uses advised against

1.3. Details of the supplier of the safety data sheet

Manufacturer Address  ATI, 1000 Six PPG Place, Pittsburgh, PA 15222 USA

1.4. Emergency telephone number

Emergency Telephone  Chemtrec: +1-703-741-5970

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>4</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Dusts/Mists)</td>
<td>2</td>
</tr>
<tr>
<td>Respiratory sensitisation</td>
<td>1B</td>
</tr>
<tr>
<td>Skin sensitisation</td>
<td>1</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>1B</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>2</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>1</td>
</tr>
<tr>
<td>Acute aquatic toxicity</td>
<td>1</td>
</tr>
<tr>
<td>Chronic aquatic toxicity</td>
<td>1</td>
</tr>
</tbody>
</table>

2.2. Label elements

Emergency Overview

Danger

Hazard statements
Harmful if swallowed
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
May cause cancer
Suspected of damaging fertility or the unborn child
Causes damage to the respiratory tract through prolonged or repeated exposure if inhaled
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects
Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wear protective gloves
Wash hands thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapours/spray
Avoid release to the environment
Wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
IF ON SKIN: Wash with plenty of soap and water

Precautionary Statements - Response
Collect spillage
If inhaled: Immediately call a POISON CENTRE or doctor/physician
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

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

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

2.3 Hazards not otherwise classified (HNOC)
Not applicable

Other Information
When product is subjected to welding, burning, melting, sawing, brazing, grinding, buffing, polishing, or other similar heat-generating processes, the following potentially hazardous airborne particles and/or fumes may be generated: Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer, Vanadium pentoxide (V2O5) affects eyes, skin, respiratory system
Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC No</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>231-096-4</td>
<td>7439-89-6</td>
<td>50-80</td>
</tr>
<tr>
<td>Cobalt</td>
<td>213-158-0</td>
<td>7440-48-4</td>
<td>0-50</td>
</tr>
<tr>
<td>Nickel</td>
<td>231-111-4</td>
<td>7440-02-0</td>
<td>0-42</td>
</tr>
<tr>
<td>Chromium</td>
<td>231-157-5</td>
<td>7440-47-3</td>
<td>0-40</td>
</tr>
<tr>
<td>Vanadium</td>
<td>231-171-1</td>
<td>7440-62-2</td>
<td>0-15</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>231-107-2</td>
<td>7439-98-7</td>
<td>0-11</td>
</tr>
</tbody>
</table>
Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation
If excessive amounts of vapors, smoke, fume, or particles are inhaled during processing, remove to fresh air and consult a qualified health professional. In the case of asthma symptoms or breathing difficulties call a doctor.

Skin Contact
In the case of skin irritation or allergic reactions see a doctor. Wash off immediately with soap and plenty of water.

Eye contact
In the case of particles coming in contact with eyes during processing, treat as with any foreign object.

Ingestion
IF SWALLOWED. Call a POISON CENTER or doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms
May cause allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause acute gastrointestinal effects if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors
Treat symptomatically.

Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media
Smother with salt (NaCl) or class D dry powder fire extinguisher.

Unsuitable extinguishing media
Do not spray water on burning metal as an explosion may occur. This explosive characteristic is caused by the hydrogen and steam generated by the reaction of water with the burning material.

5.2. Special hazards arising from the substance or mixture

Intense heat Very fine, high surface area material resulting from grinding, buffing, polishing, or similar processes of this product may ignite spontaneously at room temperature WARNING: Fine particles resulting from grinding, buffing, polishing, or similar processes of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimise combustible dust hazard

Hazardous combustion products
Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer, Vanadium pentoxide (V2O5) affects eyes, skin, respiratory system. Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protective equipment as required.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions
Use personal protective equipment as required.
For emergency responders

6.2. Environmental precautions
Collect spillage to prevent release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep or shovel material into dry containers. Avoid creating dust.

6.4. Reference to other sections
See Section 12: ECOLOGICAL INFORMATION.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling
Very fine, high surface area material resulting from grinding, buffing, polishing, or similar processes of this product may ignite spontaneously at room temperature. WARNING: Fine particles resulting from grinding, buffing, polishing, or similar processes of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimise combustible dust hazard.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep chips, turnings, dust, and other small particles away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity).

Incompatible materials
Dissolves in hydrofluoric acid.

7.3. Specific end use(s)

Risk Management Methods (RMM)
The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>European Union</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cobalt</td>
<td>7440-48-4</td>
<td>STEL: 0.3 mg/m³</td>
<td>TWA: 0.1 mg/m³</td>
<td>TWA: 0.02 mg/m³</td>
<td>Skin</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>STEL: 1.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 1 mg/m³</td>
<td>Skin</td>
</tr>
<tr>
<td>Chromium</td>
<td>7440-47-3</td>
<td>TWA: 2 mg/m³</td>
<td>STEL: 1.5 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Vanadium</td>
<td>7440-62-2</td>
<td></td>
<td></td>
<td></td>
<td>Skin</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>7439-98-7</td>
<td></td>
<td></td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 3 mg/m³</td>
</tr>
<tr>
<td>Tungsten</td>
<td></td>
<td>STEL: 10 mg/m³</td>
<td></td>
<td>STEL: 10 mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>
### Derived No Effect Level (DNEL)

No DNELs are available for this product as a whole.

### Predicted No Effect Concentration (PNEC)

No PNECs are available for this product as a whole.

#### 8.2. Exposure controls

**Engineering Controls**

Avoid generation of particulates.

**Personal protective equipment**

**Eye/face protection**

When airborne particles may be present, appropriate eye protection is recommended. For example, tight-fitting goggles, foam-lined safety glasses or other protective equipment that shield the eyes from particles.

**Skin and body protection**

Wear flame-resistant/retardant clothing.

**Respiratory protection**

When particulates/fumes/gases are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations. Wear respiratory protection.

**Environmental exposure controls**

Section 6: ACCIDENTAL RELEASE MEASURES.

### Section 9: PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical state</strong></td>
<td>Solid</td>
<td>Odour</td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>Powder</td>
<td>Odour threshold</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>metallic grey Silver</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Italy</th>
<th>Portugal</th>
<th>Netherlands</th>
<th>Finland</th>
<th>Denmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cobalt</td>
<td>-</td>
<td>TWA: 0.02 mg/m³</td>
<td>TWA: 0.02 mg/m³</td>
<td>TWA: 0.02 mg/m³</td>
<td>TWA: 0.01 mg/m³</td>
</tr>
<tr>
<td>Nickel</td>
<td>-</td>
<td>TWA: 1.5 mg/m³</td>
<td>-</td>
<td>TWA: 1 mg/m³ TWA: 0.1 mg/m³</td>
<td>TWA: 0.05 mg/m³</td>
</tr>
<tr>
<td>Chromium</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
</tr>
<tr>
<td>Vanadium</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>-</td>
<td>TWA: 10 mg/m³ TWA: 3 mg/m³</td>
<td>-</td>
<td>TWA: 0.5 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Tungsten</td>
<td>-</td>
<td>STEL: 10 mg/m³ TWA: 5 mg/m³</td>
<td>-</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Austria</th>
<th>Switzerland</th>
<th>Poland</th>
<th>Norway</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cobalt</td>
<td>Skin</td>
<td>Skin TWA: 0.05 mg/m³ STEL: 0.2 mg/m³ TWA: 0.02 mg/m³ STEL: 0.06 mg/m³</td>
<td>TWA: 0.2 mg/m³ STEL: 0.15 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.1 mg/m³</td>
</tr>
<tr>
<td>Nickel</td>
<td>-</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.25 mg/m³</td>
<td>TWA: 0.05 mg/m³ STEL: 0.15 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
</tr>
<tr>
<td>Chromium</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³ STEL: 1.5 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Vanadium</td>
<td>STEL 1 mg/m³ TWA: 0.5 mg/m³</td>
<td>-</td>
<td>-</td>
<td>TWA: 0.2 mg/m³ Ceiling: 0.05 mg/m³ STEL: 0.6 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>STEL 20 mg/m³ TWA: 10 mg/m³</td>
<td>TWA: 10 mg/m³ STEL: 10 mg/m³ TWA: 4 mg/m³</td>
<td>-</td>
<td>TWA: 0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Tungsten</td>
<td>STEL 10 mg/m³ TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³ STEL: 10 mg/m³</td>
<td>TWA: 5 mg/m³ STEL: 10 mg/m³</td>
</tr>
</tbody>
</table>
9.2. Other information

Softening point  
Molecular weight  
VOC Content (%)  
Density  
Bulk density  

Explosive properties  Not applicable
Oxidising properties  Not applicable

9.3. Flammability limit in air

Upper flammability limit:  Not Applicable
Lower flammability limit  Not Applicable
Vapour pressure  -
Vapour density  -
Specific Gravity  8.0-8.5
Water solubility  Insoluble
Solubility(ies)  -
Partition coefficient  -
Autoignition temperature  -
Decomposition temperature  -
Kinematic viscosity  -
Dynamic viscosity  -
Explosive properties  Not applicable
Oxidising properties  Not applicable

10.1. Reactivity

Not applicable

10.2. Chemical stability

Stable under normal conditions.

Explosion data
Sensitivity to Mechanical Impact  None.
Sensitivity to Static Discharge  None.

10.3. Possibility of hazardous reactions

Hazardous polymerisation
Hazardous polymerisation does not occur.

Possibility of Hazardous Reactions
None under normal processing.

10.4. Conditions to avoid

dust formation.

10.5. Incompatible materials

Dissolves in hydrofluoric acid.

10.6. Hazardous decomposition products

When product is subjected to welding, burning, melting, sawing, brazing, grinding, buffing, polishing, or other similar

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Section 10: STABILITY AND REACTIVITY

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heat-generating processes, the following potentially hazardous airborne particles and/or fumes may be generated. Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer. Vanadium pentoxide (V2O5) affects eyes, skin, respiratory system. Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

### Section 11: TOXICOLOGICAL INFORMATION

#### 11.1. Information on toxicological effects

**Product Information**

**Inhalation**
May cause cancer by inhalation. Causes damage to respiratory tract through prolonged or repeated exposure if inhaled. Cobalt-containing alloys may cause sensitization by inhalation. Cobalt-containing powders may be fatal if inhaled.

**Eye contact**
Product not classified.

**Skin Contact**
May cause sensitisation by skin contact.

**Ingestion**
Harmful if swallowed.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>98,600 mg/kg bw</td>
<td>-</td>
<td>&gt; 0.25 mg/L</td>
</tr>
<tr>
<td>Cobalt</td>
<td>550 mg/kg bw</td>
<td>&gt;2000 mg/kg bw</td>
<td>&lt;0.05 mg/L</td>
</tr>
<tr>
<td>Nickel</td>
<td>&gt; 9000 mg/kg bw</td>
<td>-</td>
<td>&gt; 10.2 mg/L</td>
</tr>
<tr>
<td>Chromium</td>
<td>&gt; 3400 mg/kg bw</td>
<td>-</td>
<td>&gt; 5.41 mg/L</td>
</tr>
<tr>
<td>Vanadium</td>
<td>&gt; 2000 mg/kg bw</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>&gt; 2000 mg/kg bw</td>
<td>&gt; 2000 mg/kg bw</td>
<td>&gt; 5.10 mg/L</td>
</tr>
<tr>
<td>Tungsten</td>
<td>&gt; 2000 mg/kg bw</td>
<td>&gt; 2000 mg/kg bw</td>
<td>&gt; 5.4 mg/L</td>
</tr>
</tbody>
</table>

**Information on toxicological effects**

**Symptoms**
May cause sensitisation by skin contact. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause acute gastrointestinal effects if swallowed.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Acute toxicity**
Harmful if swallowed. Cobalt-containing powders may be fatal if inhaled.

**Skin corrosion/irritation**
Product not classified.

**Serious eye damage/eye irritation**
Product not classified.

**Sensitisation**
May cause sensitisation by skin contact. Cobalt-containing alloys may cause sensitization by inhalation.

**Germ cell mutagenicity**
Product not classified.

**Carcinogenicity**
May cause cancer by inhalation.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt</td>
<td>A3</td>
<td>Group 2A</td>
<td>Known</td>
<td>X</td>
</tr>
<tr>
<td>Nickel</td>
<td></td>
<td>Group 1</td>
<td>Known</td>
<td>X</td>
</tr>
<tr>
<td>Chromium</td>
<td></td>
<td>Group 3</td>
<td>Reasonably Anticipated</td>
<td></td>
</tr>
</tbody>
</table>

**Reproductive toxicity**
Possible risk of impaired fertility.

**STOT - single exposure**
Product not classified.

**STOT - repeated exposure**
Causes disorder and damage to the respiratory system.

**Aspiration hazard**
Product not classified.

### Section 12: ECOLOGICAL INFORMATION
12.1. Toxicity

This product as shipped is classified for aquatic chronic toxicity. This product as shipped is classified for aquatic acute toxicity.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to Micro-organisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>-</td>
<td>The 96 h LC50 of 50% iron oxide black in water to Danio rerio was greater than 10,000 mg/L.</td>
<td>The 3 h EC50 of iron oxide for activated sludge was greater than 10,000 mg/L.</td>
<td>The 48 h EC50 of iron oxide to Daphnia magna was greater than 100 mg/L.</td>
</tr>
<tr>
<td>Cobalt</td>
<td>The 72 h EC50 of cobalt dichloride to Pseudokirchneriella subcapitata was 144 μg of Co/L.</td>
<td>The 96 h LC50 of cobalt dichloride ranged from 1.5 mg Co/L for Oncorhynchus mykiss to 85 mg Co/L for Danio rerio.</td>
<td>The 3 h EC50 of cobalt dichloride for activated sludge was 120 mg of Co/L.</td>
<td>The 48 h LC50 of cobalt dichloride ranged from 0.61 mg Co/L for Ceriodaphnia dubia tested in soft, DOM-free water to &gt;1800 mg Co/L for Tubifex tubifex in very hard water.</td>
</tr>
<tr>
<td>Nickel</td>
<td>NOEC/EC10 values range from 12.3 μg/l for Scenedesmus accuminatus to 425 μg/l for Pseudokirchneriella subcapitata.</td>
<td>The 96h LC50s values range from 0.4 mg Ni/L for Pimephales promelas to 320 mg Ni/L for Brachydanio rerio.</td>
<td>The 30 min EC50 of nickel for activated sludge was 33 mg Ni/L.</td>
<td>The 48h LC50s values range from 0.013 mg Ni/L for Ceriodaphnia dubia to 4970 mg Ni/L for Daphnia magna.</td>
</tr>
<tr>
<td>Chromium</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vanadium</td>
<td>The 72 h EC50 of vanadium pentoxide to Desmodesmus subspicatus was 2,907 μg of V/L.</td>
<td>The 96 h LC50 of vanadium pentoxide to Pimephales promelas was 1,850 μg of V/L.</td>
<td>The 3 h EC50 of sodium metavanadate for activated sludge was greater than 100 mg/L.</td>
<td>The 48 h EC50 of sodium vanadate to Daphnia magna was 2,661 μg of V/L.</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>The 72 h EC50 of sodium molybdate dihydrate to Pseudokirchneriella subcapitata was 362.9 mg of Mo/L.</td>
<td>The 96 h LC50 of sodium molybdate dihydrate to Pimephales promelas was 644.2 mg/L.</td>
<td>The 3 h EC50 of molybdenum trioxide for activated sludge was 820 mg/L.</td>
<td>The 48 h LC50 of sodium molybdate dihydrate to Ceriodaphnia dubia was 1,015 mg/L. The 48 h LC50 of sodium molybdate dihydrate to Daphnia magna was greater than 1,727.8 mg/L.</td>
</tr>
<tr>
<td>Tungsten</td>
<td>The 72 h EC50 of sodium tungstate to Pseudokirchneriella subcapitata was 31.0 mg of W/L.</td>
<td>The 96 h LC50 of sodium tungstate to Danio rerio was greater than 106 mg of W/L.</td>
<td>The 30 min EC50 of sodium tungstate for activated sludge were greater than 1000 mg/L.</td>
<td>The 48 h EC50 of sodium tungstate to Daphnia magna was greater than 96 mg of W/L.</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

12.3. Bioaccumulative potential

12.4. Mobility in soil

12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria do not apply to inorganic substances.

12.6. Other adverse effects

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Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
### Section 14: TRANSPORT INFORMATION

**IMDG**
- **14.1 UN/ID no:** 3288
- **14.2 Proper shipping name:** Toxic solid, inorganic, n.o.s. (Nickel/cobalt alloy powder)
- **14.3 Hazard Class:** 6.1
- **14.4 Packing Group:** I
- **14.5 Marine pollutant:** Not applicable

**RID**
- **14.1 UN/ID no:** 3288
- **14.2 Proper shipping name:** Toxic solid, inorganic, n.o.s. (Nickel/cobalt alloy powder)
- **14.3 Hazard Class:** 6.1
- **14.4 Packing Group:** I
- **14.5 Environmental hazard:** Not applicable

**ADR**
- **14.1 UN/ID no:** 3288
- **14.2 Proper shipping name:** Toxic solid, inorganic, n.o.s. (Nickel/cobalt alloy powder)
- **14.3 Hazard Class:** 6.1
- **14.4 Packing Group:** I
- **14.5 Environmental hazard:** Not applicable

**ICAO (air)**
- **14.1 UN/ID no:** 3288
- **14.2 Proper shipping name:** Toxic solid, inorganic, n.o.s. (Nickel/cobalt alloy powder)
- **14.3 Hazard Class:** 6.1
- **14.4 Packing Group:** I
- **14.5 Environmental hazard:** Not applicable

**IATA**
- **14.1 UN/ID no:** Not regulated
- **14.2 Proper shipping name:** Toxic solid, inorganic, n.o.s. (Nickel/cobalt alloy powder)
- **14.3 Hazard Class:** 6.1
- **14.4 Packing Group:** I
- **Description:**
- **14.5 Environmental hazard:** Not applicable

### Section 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>French RG number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>RG 44, RG 44bis, RG 94</td>
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</tr>
<tr>
<td>Cobalt</td>
<td>RG 65, RG 70, RG 70bis, RG 70ter</td>
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<tr>
<td>Nickel</td>
<td>RG 37ter</td>
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</tr>
<tr>
<td>Chromium</td>
<td>RG 10</td>
<td></td>
</tr>
<tr>
<td>Vanadium</td>
<td>RG 66</td>
<td></td>
</tr>
<tr>
<td>Molybdenum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tungsten</td>
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</tr>
</tbody>
</table>

**European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

**Authorisations and/or restrictions on use:**

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

**International Inventories**

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Status</th>
</tr>
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<tbody>
<tr>
<td>DSL/NDSL</td>
<td>Complies</td>
</tr>
<tr>
<td>EINECS/ELINCS</td>
<td>Complies</td>
</tr>
<tr>
<td>ENCS</td>
<td>Complies</td>
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<tr>
<td>IECSC</td>
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<td>KECL</td>
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<tr>
<td>PICCS</td>
<td>Complies</td>
</tr>
<tr>
<td>AICS</td>
<td>Complies</td>
</tr>
</tbody>
</table>

**Legend:**

- TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
- DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
- EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- ENCS - Japan Existing and New Chemical Substances
- IECSC - China Inventory of Existing Chemical Substances
- KECL - Korean Existing and Evaluated Chemical Substances
- PICCS - Philippines Inventory of Chemicals and Chemical Substances
- AICS - Australian Inventory of Chemical Substances

**15.2. Chemical safety assessment**

No chemical safety assessment has been performed for this product.

**Section 16: OTHER INFORMATION**

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue Date</td>
<td>28-May-2015</td>
</tr>
<tr>
<td>Revision Date</td>
<td>12-Jan-2016</td>
</tr>
<tr>
<td>Revision Note</td>
<td>Updated Section 14.</td>
</tr>
</tbody>
</table>

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

**Note:**

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage,
transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Additional information available from:

Safety data sheets and labels available at ATImetals.com

End of Safety Data Sheet