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

1.1. Product identifier

Product Code
PM005

Product Name
Titanium Alloy With Cobalt Non-Respirable Powder

Synonyms
Titanium Alloy With Cobalt Non-Respirable Powder: - TNM Co Powder

Contains Cobalt, Nickel

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

Recommended Use
Titanium alloy product manufacture

Uses advised against

1.3. Details of the supplier of the safety data sheet

Manufacturer
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>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory sensitisation</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Skin sensitisation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Chronic aquatic toxicity</td>
<td>Category 3</td>
</tr>
</tbody>
</table>

2.2. Label elements

Hazard statements
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
May cause cancer
Harmful to aquatic life with long lasting effects

Emergency Overview

Danger

Exclamation mark with a skull and crossbones
PM005 Titanium Alloy With Cobalt Non-Respirable Powder

Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wear protective gloves
Avoid breathing dust/fume
In case of inadequate ventilation wear respiratory protection
Avoid release to the environment

Precautionary Statements - Response
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician

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:: Titanium dioxide, an IARC Group 2B carcinogen, Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer, Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms
Titanium Alloy With Cobalt Non-Respirable Powder: - TNM Co Powder.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC No</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>231-142-3</td>
<td>7440-32-6</td>
<td>50 - 100</td>
</tr>
<tr>
<td>Aluminium</td>
<td>231-072-3</td>
<td>7429-90-5</td>
<td>0 - 40</td>
</tr>
<tr>
<td>Niobium</td>
<td>231-113-5</td>
<td>7440-03-1</td>
<td>0 - 27</td>
</tr>
<tr>
<td>Tungsten</td>
<td>231-143-9</td>
<td>7440-33-7</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>231-107-2</td>
<td>7439-98-7</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Chromium</td>
<td>231-157-5</td>
<td>7440-47-3</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Zirconium</td>
<td>231-176-9</td>
<td>7440-67-7</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Cobalt</td>
<td>213-158-0</td>
<td>7440-48-4</td>
<td>0.1 - 2</td>
</tr>
<tr>
<td>Boron</td>
<td>231-151-2</td>
<td>7440-42-8</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation
If excessive amounts of smoke, fume, or particulate 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 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.

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

Note to doctors

Treat symptomatically.

---

**Section 5: FIREFIGHTING MEASURES**

5.1. Extinguishing media

**Suitable extinguishing media**

Product not flammable in the form as distributed, flammable as finely divided particles or pieces resulting from processing of this product. Isolate large fires and allow to burn out. Smother small fires 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**

Titanium dioxide, an IARC Group 2B carcinogen, Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer, Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

5.3. Advice for firefighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

---

**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 uncontrolled 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 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. Ignites in the presence of fluorine. When heated above 200°C, reacts exothermically with the following: Chlorine, bromine, halocarbons, carbon tetrachloride, carbon tetrafluoride, and freon.

#### 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>
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<tr>
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<td>TWA: 5 mg/m³</td>
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<tr>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7440-03-1</td>
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<td>TWA: 2 mg/m³</td>
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<td>TWA: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
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<td>TWA: 0.1 mg/m³</td>
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<td>-</td>
<td>-</td>
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<td>TWA: 0.1 mg/m³</td>
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<td>Skin</td>
</tr>
<tr>
<td>Boron</td>
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<td>7440-42-8</td>
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<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Italy</th>
<th>Portugal</th>
<th>Netherlands</th>
<th>Finland</th>
<th>Denmark</th>
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</thead>
<tbody>
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<td>TWA: 5 mg/m³</td>
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<td>TWA: 1.5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>Niobium</td>
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<td>7440-03-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>TWA: 5 mg/m³</td>
</tr>
</tbody>
</table>

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EU; English
### Section 8.2: Exposure controls

#### Engineering Controls
Avoid generation of uncontrolled particles.

#### 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 protective gloves. Fire/flame resistant/retardant clothing may be appropriate during hot work with the product.

**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 contaminate concentrations. Respiratory protection must be provided in accordance with current local regulations.

#### 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>Physical state</th>
<th>Appearance</th>
<th>Odour</th>
<th>Odour threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>Powder</td>
<td>Odourless</td>
<td>Not applicable</td>
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<tr>
<td>Colour</td>
<td>metallic grey or Silver</td>
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<td></td>
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</table>

#### Table of Hazardous Chemicals

<table>
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<tr>
<th>Chemical Name</th>
<th>Austria</th>
<th>Switzerland</th>
<th>Poland</th>
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<th>Ireland</th>
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</tr>
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<td>TWA: 2.5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 1 mg/m³</td>
</tr>
<tr>
<td>Niobium</td>
<td>STEL 10 mg/m³</td>
<td>STEL 1 mg/m³</td>
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<td>TWA: 0.5 mg/m³</td>
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<tr>
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<td>STEL 10 mg/m³</td>
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<td>TWA: 5 mg/m³</td>
<td>STEL 10 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>STEL 20 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>STEL 10 mg/m³</td>
<td>-</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>STEL 1.5 mg/m³</td>
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<tr>
<td>Zirconium</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>STEL 10 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td>Cobalt</td>
<td>Skin</td>
<td>Skin</td>
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<td>TWA: 0.02 mg/m³</td>
<td>STEL 0.06 mg/m³</td>
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<tr>
<td>Boron</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</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.
PM005 Titanium Alloy With Cobalt Non-Respirable

Revision Date 03-Jan-2019

Property | Values | Remarks • Method
--- | --- | ---
pH | - | 
Melting point/freezing point | 1400 - 1540 °C / 2560-2800 °F | 
Boiling point / boiling range | - | 
Flash point | - | 
Evaporation rate | - | 
Flammability (solid, gas) | - | Product not flammable in the form as distributed, flammable as finely divided particles or pieces resulting from processing of this product

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

9.2. Other information
- Softening point: -
- Molecular weight: -
- VOC Content (%): Not applicable
- Density: -
- Bulk density: -

Section 10: STABILITY AND REACTIVITY

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 and dust accumulation.

10.5. Incompatible materials
Dissolves in hydrofluoric acid. Ignites in the presence of fluorine. When heated above 200°C, reacts exothermically with the
following: Chlorine, bromine, halocarbons, carbon tetrachloride, carbon tetrafluoride, and freon.

10.6. Hazardous decomposition products

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: Titanium dioxide, an IARC Group 2B carcinogen. Hexavalent Chromium (Chromium VI) may cause lung, nasal, and/or sinus cancer. Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

Inhalation
Cobalt-containing alloys may cause sensitization by inhalation. May cause cancer by inhalation.

Eye contact
Product not classified.

Skin Contact
Nickel or Cobalt containing alloys may cause sensitisation by skin contact.

Ingestion
Product not classified.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>&gt; 5000 mg/kg bw</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aluminium</td>
<td>15,900 mg/kg bw</td>
<td>-</td>
<td>&gt; 1 mg/L</td>
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<tr>
<td>Niobium</td>
<td>&gt; 10,000 mg/kg bw</td>
<td>&gt; 2000 mg/kg bw</td>
<td>-</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>
<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>
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<td>Chromium</td>
<td>&gt; 3400 mg/kg bw</td>
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<td>&gt; 5.41 mg/L</td>
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<tr>
<td>Zirconium</td>
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<td>&gt; 4.3 mg/L</td>
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<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>Boron</td>
<td>&gt; 2000 mg/kg bw</td>
<td>-</td>
<td>&gt; 5.08 mg/L</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Symptoms
Nickel or Cobalt containing alloys may cause sensitisation by skin contact. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

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

Acute toxicity
Cobalt-containing powders may be harmful if inhaled.

Skin corrosion/irritation
Product not classified.

Serious eye damage/eye irritation
Product not classified.

Sensitisation
Nickel or Cobalt containing alloys 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>
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<tr>
<td>Chromium 7440-47-3</td>
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<td>Group 3</td>
<td></td>
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<tr>
<td>Cobalt 7440-48-4</td>
<td>A3</td>
<td>Group 2A</td>
<td>Known</td>
<td>X</td>
</tr>
</tbody>
</table>

Reproductive toxicity
Product not classified.

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

Aspiration hazard
Product not classified.

### Section 12: ECOLOGICAL INFORMATION

#### 12.1. Toxicity

This product as shipped is classified for aquatic chronic toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>The 72 h EC50 of titanium dioxide to Pseudokirchneriella subcapitata was 61 mg of TiO2/L.</td>
<td>The 96 h LC50 of titanium dioxide to Cyprinodon variegatus was greater than 10,000 mg of TiO2/L. The 96 h LC50 of titanium dioxide to Pimephales promelas was greater than 1,000 mg of TiO2/L.</td>
<td>The 3 h EC50 of titanium dioxide for activated sludge were greater than 1000 mg/L.</td>
<td>The 48 h EC50 of titanium dioxide to Daphnia Magna was greater than 1000 mg of TiO2/L.</td>
</tr>
<tr>
<td>Aluminium</td>
<td>The 96 h EC50 values for reduction of biomass of Pseudokirchneriella subcapitata in AAP-Medium at pH 6, 7, and 8 were estimated as 20.1, 5.4, and 150.6 µg/L respectively, for dissolved Al.</td>
<td>The 96 h LC50 of aluminum to Oncorhynchus mykiss was 7.4 mg of Al/L at pH 6.5 and 14.6 mg of Al/L at pH 7.5.</td>
<td>-</td>
<td>The 48-hr LC50 for Ceriodaphnia dubia exposed to Aluminium chloride increased from 0.72 to greater than 99.6 mg/L with water hardness increasing from 25 to 200 mg/L.</td>
</tr>
<tr>
<td>Niobium</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</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>
<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>Chromium</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Zirconium</td>
<td>The 14 d NOEC of zirconium dichloride oxide to Chlorella vulgaris was greater than 102.5 mg of Zr/L.</td>
<td>The 96 h LL50 of zirconium to Danio rerio was greater than 74.03 mg/L.</td>
<td>-</td>
<td>The 48 h EC50 of zirconium dioxide to Daphnia magna was greater than 74.03 mg of Zr/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 96h 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>Boron</td>
<td>The 72-h EC50 value for reduction of biomass of Pseudokirchneriella subcapitata exposed to Boric acid at pH 7.5 to 8.3 was 40.2 mg/L.</td>
<td>The 96-hr LC50 for Pimephales promelas exposed to Boric acid (82%)/borax (18%) mixture was 79.7 mg/L with water hardness of 91 mg/L and water pH of 8.0.</td>
<td>The 3 h NOEC of boric acid for activated sludge ranged from 17.5 to 20 mg/L.</td>
<td>The 48-hr LC50 for Ceriodaphnia dubia exposed to Boric acid/borax mixture ranged from 91 to 165 mg/L with pH ranging from 6.7 to 8.4.</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability
Bioaccumulative potential

Mobility in soil

Results of PBT and vPvB assessment

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

Other adverse effects

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues/unused products
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14: TRANSPORT INFORMATION

IMDG
14.1 UN/ID no Not regulated
14.2 Proper shipping name Not regulated
14.3 Hazard Class Not regulated
14.4 Packing Group Not regulated
14.5 Marine pollutant Not applicable
14.6 Special Provisions None
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code Not applicable

RID
14.1 UN/ID no Not regulated
14.2 Proper shipping name Not regulated
14.3 Hazard Class Not regulated
14.4 Packing Group Not regulated
14.5 Environmental hazard Not applicable
14.6 Special Provisions None

ADR
14.1 UN/ID no Not regulated
14.2 Proper shipping name Not regulated
14.3 Hazard Class Not regulated
14.4 Packing Group Not regulated
14.5 Environmental hazard Not applicable
14.6 Special Provisions None

ICAO (air)
14.1 UN/ID no Not regulated
14.2 Proper shipping name Not regulated
14.3 Hazard Class Not regulated
14.4 Packing Group Not applicable
14.5 Environmental hazard
Not applicable

14.6 Special Provisions
None

IATA

14.1 UN/ID no
Not regulated

14.2 Proper shipping name
Not regulated

14.3 Hazard Class
Not regulated

14.4 Packing Group
Not regulated

14.5 Environmental hazard
Not applicable

14.6 Special Provisions
None

### 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>
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<tbody>
<tr>
<td>Titanium</td>
<td>-</td>
<td>RG 7440-32-6</td>
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<tr>
<td>Aluminium</td>
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<td>RG 7429-90-5</td>
</tr>
<tr>
<td>Niobium</td>
<td>-</td>
<td>RG 7440-03-1</td>
</tr>
<tr>
<td>Tungsten</td>
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<td>RG 7440-33-7</td>
</tr>
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<td>Molybdenum</td>
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<td>RG 7439-98-7</td>
</tr>
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<td>Chromium</td>
<td>RG 10</td>
<td>RG 7440-47-3</td>
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<tr>
<td>Zirconium</td>
<td>-</td>
<td>RG 7440-67-7</td>
</tr>
<tr>
<td>Cobalt</td>
<td>RG 65,RG 70,RG 70bis,RG 70ler</td>
<td>RG 7440-48-4</td>
</tr>
<tr>
<td>Boron</td>
<td>-</td>
<td>RG 7440-42-8</td>
</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>
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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>
</tr>
<tr>
<td>IECSC</td>
<td>Complies</td>
</tr>
<tr>
<td>KECL</td>
<td>Complies</td>
</tr>
<tr>
<td>PICCS</td>
<td>Not Listed</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
15.2. Chemical safety assessment

No chemical safety assessment has been performed for this product.

Section 16: OTHER INFORMATION

Issue Date: 17-Jul-2014
Revision Date: 03-Jan-2019
Revision Note: Updated Section(s): 2, 3, 4, 5, 7, 8, 9, 15.

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.

End of Safety Data Sheet

Additional information available from:
Safety data sheets and labels available at ATImetals.com