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

1.1. Product identifier

Product Code
SAC011

Product Name
Zirconium and Zirconium Alloy Scrap: Borings, Clippings, Shavings, Turnings and Scalpings, Fines

UN/ID no
3089 (dry), 1358 (wet)

Synonyms
Includes all dry and wetted (not less than 25% water) zirconium scrap including: borings, clippings, shavings, turnings and scalpings, fines, dust, swarf

Contains Cobalt, Nickel

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

Recommended Use
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

This material is classified per Regulation (EC) No 1272/2008.

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

H228 - Flammable solid

Category 1

2.2. Label elements

Emergency Overview

Danger

Hazard statements
H228 - Flammable solid
SAC011 Zirconium and Zirconium Alloy Scrap: Borings, Clippings, Shavings, Turnings and Scalpings, Fines

Revision Date 22-Nov-2019

Precautionary Statements - Prevention
Wear protective gloves/protective clothing/eye protection
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Ground/bond container and receiving equipment
If dust clouds can occur, use explosion-proof electrical/ventilating/lighting/equipment

Precautionary Statements - Response
In case of fire: Use salt (NaCl) or class D dry powder for extinction

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. Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Synonyms
Includes all dry and wetted (not less than 25% water) zirconium scrap including: borings, clippings, shavings, turnings and scalpings, fines, dust, swarf.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC No</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium</td>
<td>231-178-9</td>
<td>7440-67-7</td>
<td>90- &gt;99</td>
</tr>
<tr>
<td>Hafnium</td>
<td>231-166-4</td>
<td>7440-58-6</td>
<td>0-10</td>
</tr>
<tr>
<td>Niobium</td>
<td>231-113-5</td>
<td>7440-03-1</td>
<td>0-4</td>
</tr>
<tr>
<td>Tin</td>
<td>231-141-8</td>
<td>7440-31-5</td>
<td>0-3</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>231-107-2</td>
<td>7439-98-7</td>
<td>0-2</td>
</tr>
<tr>
<td>Iron</td>
<td>231-096-4</td>
<td>7439-89-6</td>
<td>0-1</td>
</tr>
<tr>
<td>Chromium</td>
<td>231-157-5</td>
<td>7440-47-3</td>
<td>0-1</td>
</tr>
<tr>
<td>Nickel</td>
<td>231-111-4</td>
<td>7440-02-0</td>
<td>0-0.1</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.

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

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.

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  
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 processing this product may ignite spontaneously at room temperature. WARNING: Fine particles 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. 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
Use personal protective equipment as required. Follow Emergency Response Guidebook, Guide No. 170.

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 using non-sparking tools. 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 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). For long-term storage, keep sealed in argon-filled steel drums.

**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>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium 7440-67-7</td>
<td>-</td>
<td>TWA: 5 mg/m³</td>
<td>-</td>
<td>STEL: 10 mg/m³</td>
<td>TWA: 1 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TWA: 5 mg/m³</td>
<td>Ceiling / Peak: 1 mg/m³</td>
</tr>
<tr>
<td>Hafnium 7440-58-6</td>
<td>-</td>
<td>-</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Niobium 7440-03-1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tin 7440-31-5</td>
<td>-</td>
<td>TWA 2 mg/m³ as Sn</td>
<td>TWA: 2 mg/m³</td>
<td>-</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Molybdenum 7439-98-7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>TWA: 10 mg/m³</td>
<td>TWA: 3 mg/m³</td>
</tr>
<tr>
<td>Iron 7439-89-6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chromium 7440-47-3</td>
<td>TWA: 2 mg/m³</td>
<td>STEL: 1.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Nickel 7440-02-0</td>
<td>-</td>
<td>STEL: 1.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 1 mg/m³</td>
<td>TWA: 1 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>
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<tbody>
<tr>
<td>Zirconium 7440-67-7</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>STEL: 10 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>STEL: 10 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STEL: 10 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

---

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EU; English
SAC011 Zirconium and Zirconium Alloy Scrap: Borings, Clippings, Shavings, Turnings and Scalpings, Fines

<table>
<thead>
<tr>
<th>Element</th>
<th>CAS Number</th>
<th>STEL 5 mg/m³</th>
<th>TWA: 0.5 mg/m³</th>
<th>TWA: 0.5 mg/m³</th>
<th>TWA: 0.5 mg/m³</th>
<th>STEL: 1.5 mg/m³</th>
<th>TWA: 0.5 mg/m³</th>
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</thead>
<tbody>
<tr>
<td>Hafnium</td>
<td>7440-58-6</td>
<td>STEL 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>STEL: 1.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
</tr>
<tr>
<td>Niobium</td>
<td>7440-03-1</td>
<td>STEL 10 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>-</td>
<td>-</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Tin</td>
<td>7440-31-5</td>
<td>STEL 4 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>Skin: 4 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>STEL: 4 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>7439-98-7</td>
<td>STEL 20 mg/m³</td>
<td>TWA: 10 mg/m³</td>
<td>ST: 10 mg/m³</td>
<td>TWA: 4 mg/m³</td>
<td>-</td>
<td>TWA: 0.5 mg/m³</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>-</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
<td>STEL: 1.5 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Chromium</td>
<td>7440-47-3</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</td>
<td>STEL: 1.5 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>-</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 0.25 mg/m³</td>
<td>TWA: 0.05 mg/m³</td>
<td>STEL: 0.15 mg/m³</td>
<td>TWA: 0.5 mg/m³</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 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
Fire/flame resistant/retardant clothing may be appropriate during hot work with the product. Cut-resistant gloves and/or protective clothing may be appropriate when sharp surfaces are present.

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.

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>pH</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>1830-1870 °C / 3330-3400 °F</td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>-</td>
<td>Flammable</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour density</td>
<td>-</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
9.2. Other information

- Softening point
- Molecular weight
- VOC Content (%)
- 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: May be ignited by heat, sparks or flames.

**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: 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 Product not classified.
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>Zirconium</td>
<td>&gt; 5000 mg/kg bw</td>
<td>-</td>
<td>&gt;4.3 mg/L</td>
</tr>
<tr>
<td>Hafnium</td>
<td>&gt; 5000 mg/kg bw</td>
<td>-</td>
<td>&gt;4.3mg/L</td>
</tr>
<tr>
<td>Niobium</td>
<td>&gt; 10,000 mg/kg bw</td>
<td>&gt; 2000 mg/kg bw</td>
<td>-</td>
</tr>
<tr>
<td>Tin</td>
<td>&gt; 2000 mg/kg bw</td>
<td>&gt; 2000 mg/kg bw</td>
<td>&gt; 4.75 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>
<tr>
<td>Iron</td>
<td>98,600 mg/kg bw</td>
<td>-</td>
<td>&gt; 0.25 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>Nickel</td>
<td>&gt; 9000 mg/kg bw</td>
<td>-</td>
<td>&gt; 10.2 mg/L</td>
</tr>
</tbody>
</table>

Information on toxicological effects

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

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

Acute toxicity Product not classified.
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.
Germ cell mutagenicity Product not classified.
Carcinogenicity Product not classified.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium 7440-47-3</td>
<td></td>
<td>Group 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel 7440-02-0</td>
<td>Group 1</td>
<td>Group 1B</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 not classified for aquatic 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>
</table>
| Zirconium     | The 14 d NOEC of zirconium dichloride oxide to Chlorella vulgaris was greater than 102.5 mg of Zr/L. | The 96 h LL50 of zirconium to Danio rerio was greater than 74.03 mg/L. | - | The 48 h EC50 of zirconium dioxide to Daphnia magna was greater than 74.03 mg of Zr/L.
### SAC011 Zirconium and Zirconium Alloy Scrap:

**Borings, Clippings, Shavings, Turnings and Scalpings, Fines**

<table>
<thead>
<tr>
<th>Metal</th>
<th>72 h EC50 of metal to <em>Pseudokirchneriella subcapitata</em> (mg/L)</th>
<th>96 h LC50 of metal to <em>Daphnia magna</em> (mg/L)</th>
<th>48 h LC50 of metal to <em>Daphnia magna</em> (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hafnium</td>
<td>The 72 h EC50 of hafnium to <em>Pseudokirchneriella subcapitata</em> was greater than 8 ug of Hf/L (100% saturated solution).</td>
<td>The 96 h LC50 of Hafnium dioxide in water to Danio rerio was greater than the solubility limit of 0.007 mg Hf/L.</td>
<td>The 48 h EC50 of Hafnium dioxide to <em>Daphnia magna</em> was greater than the solubility limit of 0.007 mg Hf/L.</td>
</tr>
<tr>
<td>Niobium</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tin</td>
<td>The 72 h EC50 of tin chloride pentahydrate to <em>Pseudokirchneriella subcapitata</em> was 9,846 ug of Sn/L.</td>
<td>The 7 d LOEC of tin chloride pentahydrate to <em>Pimephales promelas</em> was 827.9 ug of Sn/L.</td>
<td>The 7 d LC50 of tin chloride pentahydrate to <em>Ceriodaphnia dubia</em> was greater than 3,200 ug of Sn/L.</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>The 72 h EC50 of sodium molybdate dihydrate to <em>Pseudokirchneriella subcapitata</em> was 362.9 mg of Mo/L.</td>
<td>The 96 h LC50 of sodium molybdate dihydrate to <em>Pimephales promelas</em> was 644.2 mg/L.</td>
<td>The 48 h LC50 of sodium molybdenum trioxide for activated sludge was 820 mg/L.</td>
</tr>
<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 48 h EC50 of iron oxide for activated sludge was greater than 10,000 mg/L.</td>
</tr>
<tr>
<td>Chromium</td>
<td>NOEC/EC10 values range from 12.3 μg/L for <em>Scenedesmus acuminate</em> to 425 μg/L for <em>Pseudokirchneriella subcapitata</em>.</td>
<td>The 96h LC50 values range from 0.4 mg Ni/L for <em>Pimephales promelas</em> to 320 mg Ni/L for <em>Brachydianio rerio</em>.</td>
<td>The 48h LC50s values range from 0.013 mg Ni/L for <em>Ceriodaphnia dubia</em> to 4970 mg Ni/L for <em>Daphnia magna</em>.</td>
</tr>
<tr>
<td>Nickel</td>
<td>-</td>
<td>The 30 min EC50 of nickel for activated sludge was 33 mg Ni/L.</td>
<td>-</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability

#### 12.3. Bioaccumulative potential

#### 12.4. Mobility in soil

Mobility

#### 12.5. Results of PBT and vPvB assessment

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

#### 12.6. 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 3089 (dry), 1358 (wet)
14.2 Proper shipping name Metal powders, flammable, n.o.s. (Zirconium) [dry]; Zirconium powder, wetted with not less than 25% water [wet]
14.3 Hazard Class 4.1
14.4 Packing Group II
14.5 Marine pollutant Not applicable
14.6 Special Provisions IB8, IP2, IP4, T3, TP33 (dry); A19, A20, IB6, IP2, N34, T3, TP33 (wet)
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code Not applicable

### RID

14.1 UN/ID no 3089 (dry), 1358 (wet)
14.2 Proper shipping name Metal powders, flammable, n.o.s. (Zirconium) [dry]; Zirconium powder, wetted with not less than 25% water [wet]
14.3 Hazard Class 4.1
14.4 Packing Group II
14.5 Environmental hazard Not applicable
14.6 Special Provisions IB8, IP2, IP4, T3, TP33 (dry); A19, A20, IB6, IP2, N34, T3, TP33 (wet)

### ADR

14.1 UN/ID no 3089 (dry), 1358 (wet)
14.2 Proper shipping name Metal powders, flammable, n.o.s. (Zirconium) [dry]; Zirconium powder, wetted with not less than 25% water [wet]
14.3 Hazard Class 4.1
14.4 Packing Group II
14.5 Environmental hazard Not applicable
14.6 Special Provisions IB8, IP2, IP4, T3, TP33 (dry); A19, A20, IB6, IP2, N34, T3, TP33 (wet)

### ICAO (air)

14.1 UN/ID no 3089 (dry), 1358 (wet)
14.2 Proper shipping name Metal powders, flammable, n.o.s. (Zirconium) [dry]; Zirconium powder, wetted with not less than 25% water [wet]
14.3 Hazard Class 4.1
14.4 Packing Group II
14.5 Environmental hazard Not applicable
14.6 Special Provisions IB8, IP2, IP4, T3, TP33 (dry); A19, A20, IB6, IP2, N34, T3, TP33 (wet)

### IATA

14.1 UN/ID no 3089 (dry), 1358 (wet)
14.2 Proper shipping name Metal powders, flammable, n.o.s. (Zirconium) [dry]; Zirconium powder, wetted with not less than 25% water [wet]
14.3 Hazard Class 4.1
14.4 Packing Group II
14.5 Environmental hazard Not applicable
14.6 Special Provisions IB8, IP2, IP4, T3, TP33 (dry); A19, A20, IB6, IP2, N34, T3, TP33 (wet)

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### 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></td>
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<td>ERG Code</td>
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</tbody>
</table>

Page 9 / 11 EU; English
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>International Inventories</th>
</tr>
</thead>
</table>
| DSL/NDSL                  | Complies  
| EINECS/ELINCS             | Complies  
| ENCS                      | Complies  
| IECSC                     | Complies  
| KECL                      | Complies  
| PICCS                     | Not Listed  
| AICS                      | Not Listed  

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

Issue Date 28-May-2015
Revision Date 22-Nov-2019
Revision Note SDS sections updated: 2, 4, 5, 6, 7, 9, 10, 11, 12, 16.

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