SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name
Nickel-Base Alloys

Other means of identification
Product Code
SM001

Synonyms
Non-powder forms of A905L™ Alloy, ATI 10242™ Alloy, ATI 120™ Alloy, Rene 88DT, ATI 188™ Alloy, ATI 200™ Alloy, ATI 201™ Alloy, ATI 22™ Alloy, ATI 235™ Alloy, ATI 2535™ Alloy, ATI 2550™ Alloy, ATI 35N LoTi™ Alloy, ATI 35N™ Alloy, ATI 400™ Alloy, ATI 42™ Alloy, ATI 500 ZB™ Alloy, ATI 520™ Alloy, ATI 600™ Alloy, ATI 617™ Alloy, ATI 6230™ Alloy, ATI 625 Lo-Fe™ Alloy, ATI 625™ Alloy, ATI 690™ Alloy, ATI 700™ Alloy, ATI 706™ Alloy, ATI 718-OP® Alloy, ATI 718Plus® Alloy, ATI 718™ Alloy, ATI 720™ Alloy, ATI 800™ Alloy, ATI 80A™ Alloy, ATI 825™ Alloy, ATI 901™ Alloy, ATI 903™ Alloy, ATI 909™ Alloy, ATI 925™ Alloy, ATI A286™ Alloy, ATI ASTROLOY™ Alloy, ATI C-263™ Alloy, ATI C-276™ Alloy, ATI Gator Waspaloy* Alloy ( * a Trademark of Pratt & Whitney), ATI GTD-222™ Alloy, ATI HB-2™ Alloy, ATI HG™ Alloy, ATI HN™ Alloy, ATI HS™ Alloy, ATI HX™ Alloy, ATI K-500™ Alloy, ATI L-605™ Alloy, ATI M-252™ Alloy, ATI MOLY PERMALLOY™ Alloy, ATI N-90™ Alloy, ATI P-31™ Alloy, ATI PE-16™ Alloy, ATI R26™ Alloy, ATI Super Waspaloy* Alloy (* a Trademark of Pratt & Whitney), ATI W-722™ Alloy, ATI X-750™ Alloy, ATI X-751™ Alloy, ATI X-849™ Alloy, Rene 41™ Alloy, Rene 65™ Alloy, RENE 88 DT Alloy, RR1000° (* a Trademark of Rolls-Royce plc), TJA-1537® Hi-Carb Alloy, TJA-1537® Lo-Carb Alloy, Waspaloy* Alloy ( * a Trademark of Pratt & Whitney)

Recommended use of the chemical and restrictions on use.

Recommended Use
Nickel alloy product manufacture.

Uses advised against

Details of the supplier of the safety data sheet

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

Emergency telephone number
Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is an article and, as such, does not present a hazard to human health by inhalation or ingestion.

Acute toxicity - Oral  Category 4
Respiratory sensitization  Category 1B
Skin sensitization  Category 1
Carcinogenicity  Category 1B
Reproductive toxicity  Category 2
Specific target organ toxicity (repeated exposure)  Category 1
Chronic aquatic toxicity  Category 4

Label elements

Emergency Overview
Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wear protective gloves
If skin irritation or rash occurs: Get medical advice/attention
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 - Disposal
Dispose of contents/container to an approved waste disposal plant

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, Zinc, copper, magnesium, or cadmium fumes may cause metal fumes fever, Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms
Alloy, RENE 88 DT Alloy, RR1000* (* a Trademark of Rolls-Royce plc), TJA-1537® Hi-Carb Alloy, TJA-1537® Lo-Carb Alloy, Waspaloy® Alloy (* a Trademark of Pratt & Whitney).

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>7440-02-0</td>
<td>30 - 100</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>0 - 42</td>
</tr>
<tr>
<td>Chromium</td>
<td>7440-47-3</td>
<td>0 - 35</td>
</tr>
<tr>
<td>Cobalt</td>
<td>7440-48-4</td>
<td>0 - 35</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>0 - 35</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>7439-98-7</td>
<td>0 - 26</td>
</tr>
<tr>
<td>Tungsten</td>
<td>7440-33-7</td>
<td>0 - 16</td>
</tr>
<tr>
<td>Niobium (Columbium)</td>
<td>7440-03-1</td>
<td>0 - 6</td>
</tr>
<tr>
<td>Tantalum</td>
<td>7440-25-7</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Titanium</td>
<td>7440-32-6</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures

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

Skin Contact
In the case of skin irritation or allergic reactions see a physician.

Inhalation
If excessive amounts of smoke, fume, or particulate are inhaled during processing, remove to fresh air and consult a qualified health professional.

Ingestion
Not an expected route of exposure.

Most important symptoms and effects, both acute and delayed

Symptoms
May cause allergic skin reaction. May cause acute gastrointestinal effects if swallowed.

Indication of any immediate medical attention and special treatment needed

Note to physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Not flammable in the form of this product as distributed, flammable as finely divided particles or pieces resulting from processing of this product.

Small Fire
Smother with salt (NaCl) or class D dry powder fire extinguisher.

Large Fire
Isolate fire and allow to burn out.

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.

Specific hazards arising from the chemical
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 minimize 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, Zinc, copper, magnesium, or cadmium fumes may cause metal fumes fever, Soluble molybdenum compounds such as molybdenum trioxide may cause lung irritation.

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

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Personal precautions: Use personal protective equipment as required.
For emergency responders: Use personal protective equipment as required.

Environmental precautions
Environmental precautions: Not applicable to massive product.

Methods and material for containment and cleaning up
Methods for containment: Not applicable to massive product.
Methods for cleaning up: Not applicable to massive product.

7. HANDLING AND STORAGE

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 minimize combustible dust hazard.

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. 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel</td>
<td>TWA: 1.5 mg/m³ inhalable fraction</td>
<td>TWA: 1 mg/m³</td>
</tr>
<tr>
<td>7440-02-0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7439-89-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>TWA: 0.2 mg/m³ fume TWA: 1 mg/m³ Cu dust and mist</td>
<td>TWA: 0.1 mg/m³ fume TWA: 1 mg/m³ dust and mist</td>
</tr>
<tr>
<td>7440-50-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cobalt</td>
<td>TWA: 0.02 mg/m³ TWA: 0.02 mg/m³ Co</td>
<td>TWA: 0.1 mg/m³ dust and fume</td>
</tr>
<tr>
<td>7440-48-4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table: Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Various massive product forms</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>metallic Grey silver</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>1420 - 1450 °C / 2590 - 2650 °F</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>-</td>
<td>Not flammable in the form of this product as distributed, flammable as finely divided particles or pieces resulting from processing of this product Not applicable</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>Vapor pressure</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor density</td>
<td>-</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>7-9</td>
<td></td>
</tr>
</tbody>
</table>

### Appropriate engineering controls

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

#### Individual protection measures, such as 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.

#### General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.
10. STABILITY AND REACTIVITY

Reactivity
Not applicable

Chemical stability
Stable under normal conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization
Hazardous polymerization does not occur.

Conditions to avoid
Dust formation and dust accumulation.

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.

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.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation
Not an expected route of exposure for product in massive form.

Eye contact
Not an expected route of exposure for product in massive form.

Skin Contact
May cause sensitization by skin contact.

Ingestion
Not an expected route of exposure for product in massive form.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel 7440-02-0</td>
<td>&gt; 9000 mg/kg bw</td>
<td>-</td>
<td>&gt; 10.2 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>
</tbody>
</table>
### Information on toxicological effects

#### Symptoms

- May cause sensitization 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.

#### Sensitization

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

#### Germ cell mutagenicity

- Product not classified.

#### Carcinogenicity

- May cause cancer by inhalation.

#### 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.

### 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

This product as shipped is classified for aquatic chronic toxicity. This product contains a chemical which is listed as a severe marine pollutant according to IMDG/IMO.

<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>Nickel 7440-02-0</td>
<td>NOEC/EC10 values range from 12.3 µg/l for Scenedesmus accuminatus to 425 µg/l for Pseudokirchneriella</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>
</tbody>
</table>
**Iron**

7439-89-6

- The 96 h LC50 of 50% iron oxide black in water to Danio rerio was greater than 10,000 mg/L.
- The 3 h EC50 of iron oxide for activated sludge was greater than 10,000 mg/L.
- The 48 h EC50 of iron oxide to Daphnia magna was greater than 100 mg/L.

**Copper**

7440-50-8

- The 96 h LC50 of copper chloride to Pseudokirchneriella subcapitata ranged between 30 µg/L (pH 7.02, hardness 250 mg/L CaCO3, DOC 1.95 mg/L) and 824 µg/L (pH 6.22, hardness 100 mg/L CaCO3, DOC 15.8 mg/L).
- The 96h LC50 of copper dichloride ranged from 1.5 mg Co/L for Oncorhynchus mykiss to 85 mg Co/L for Danio rerio.
- The 3 h EC50 of cobalt dichloride for activated sludge was 120 mg of Co/L.
- The 48 h LC50 of cobalt dichloride ranged from 0.61 mg Co/L for Ceriodaphnia dubia tested in soft, DOM-free water to >1800 mg Co/L for Tubifex tubifex in very hard water.

**Cobalt**

7440-48-4

- The 72 h EC50 of cobalt dichloride to Pseudokirchneriella subcapitata was 144 µg of Co/L.
- 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.
- The 3 h EC50 of cobalt dichloride for activated sludge was 120 mg of Co/L.
- The 48 h LC50 of cobalt dichloride ranged from 0.61 mg Co/L for Ceriodaphnia dubia tested in soft, DOM-free water to >1800 mg Co/L for Tubifex tubifex in very hard water.

**Chromium**

7440-47-3

- The 72 h EC50 of sodium molybdate dihydrate to Pseudokirchneriella subcapitata was 362.9 mg of Mo/L.
- The 96 h LC50 of sodium molybdate dihydrate to Pimephales promelas was 644.2 mg/L.
- The 3 h EC50 of molybdenum trioxide for activated sludge was 820 mg/L.
- 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.

**Tungsten**

7440-33-7

- The 72 h EC50 of sodium tungstate to Pseudokirchnerella subcapitata was 31.0 mg of W/L.
- The 96 h LC50 of sodium tungstate to Danio rerio was greater than 106 mg of W/L.
- The 30 min EC50 of sodium tungstate for activated sludge were greater than 1000 mg/L.
- The 48 h EC50 of sodium tungstate to Daphnia magna was greater than 96 mg of W/L.

**Niobium (Columbium)**

7440-03-1

- The 72 h EC50 of titanium dioxide to Pseudokirchnerella subcapitata was 61 mg of TiO2/L.
- 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 greater than 1,000 mg of TiO2/L.
- The 48 h EC50 of titanium dioxide to Daphnia magna was greater than 1000 mg of TiO2/L.

**Titanium**

7440-32-6

- The 72 h EC50 of titanium dioxide to Pseudokirchnerella subcapitata was 61 mg of TiO2/L.
- 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 greater than 1,000 mg of TiO2/L.
- The 48 h EC50 of titanium dioxide to Daphnia magna was greater than 1000 mg of TiO2/L.

**Manganese**

7439-96-5

- The 72 h EC50 of manganese to Desmodesmus subspicatus was 2.8 mg of Mn/L.
- The 96 h LC50 of manganese to Oncorhynchus mykiss was greater than 3.6 mg of Mn/L.
- The 3 h EC50 of manganese for activated sludge was greater than 1000 mg/L.
- The 48 h EC50 of manganese to Daphnia magna was greater than 1.6 mg/L.

**Aluminum**

7429-90-5

- The 96 h EC50 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.
- 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.

**Persistence and degradability**

- 

**Bioaccumulation**

- 

**Other adverse effects**

This product as shipped is not classified for acute environmental endpoints. However,
when subjected to sawing or grinding, particles may be generated that are classified for aquatic acute toxicity.

### 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

**Disposal of wastes**
Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated packaging**
None anticipated.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>RCRA - D Series Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium</td>
<td>5.0 mg/L regulatory level</td>
</tr>
</tbody>
</table>

This product contains one or more substances that are listed with the State of California as a hazardous waste.

### 14. TRANSPORT INFORMATION

**DOT**
Not regulated

### 15. REGULATORY INFORMATION

#### International Inventories
- **TSCA**
  - Complies
- **DSL/NDSL**
  - Complies
- **EINECS/ELINCS**
  - Complies
- **ENCS**
  - Complies
- **IECSC**
  - Complies
- **KECL**
  - Complies
- **PICCS**
  - Complies
- **AICS**
  - Complies

**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

#### US Federal Regulations

**SARA 313**
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel - 7440-02-0</td>
<td>7440-02-0</td>
<td>30 - 100</td>
<td>0.1</td>
</tr>
<tr>
<td>Copper - 7440-50-8</td>
<td>7440-50-8</td>
<td>0 - 35</td>
<td>1.0</td>
</tr>
<tr>
<td>Cobalt - 7440-48-4</td>
<td>7440-48-4</td>
<td>0 - 35</td>
<td>0.1</td>
</tr>
<tr>
<td>Chromium - 7440-47-3</td>
<td>7440-47-3</td>
<td>0 - 35</td>
<td>1.0</td>
</tr>
<tr>
<td>Manganese - 7439-96-5</td>
<td>7439-96-5</td>
<td>0 - 5</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**SARA 311/312 Hazard Categories**
- **Acute health hazard**
  - Yes
- **Chronic Health Hazard**
  - Yes
Fire hazard  No
Sudden release of pressure hazard  No
Reactive Hazard  No

CWA (Clean Water Act)
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel 7440-02-0</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper 7440-50-8</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium 7440-47-3</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel 7440-02-0</td>
<td>100 lb</td>
</tr>
<tr>
<td>Copper 7440-50-8</td>
<td>5000 lb</td>
</tr>
<tr>
<td>Chromium 7440-47-3</td>
<td>5000 lb</td>
</tr>
</tbody>
</table>

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel - 7440-02-0</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>Cobalt - 7440-48-4</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel 7440-02-0</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Copper 7440-50-8</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cobalt 7440-48-4</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Chromium 7440-47-3</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Molybdenum 7439-98-7</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tungsten 7440-33-7</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Titanium 7440-32-6</td>
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<td></td>
</tr>
<tr>
<td>Tantalum 7440-25-7</td>
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<td>X</td>
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<tr>
<td>Manganese 7439-96-5</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Aluminum 7429-90-5</td>
<td>X</td>
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</tbody>
</table>

U.S. EPA Label Information
EPA Pesticide Registration Number  Not applicable
16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical and Chemical Properties</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Health hazards</th>
<th>Flammability</th>
<th>Physical hazards</th>
<th>Personal protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2*</td>
<td>0</td>
<td>0</td>
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</tr>
</tbody>
</table>

Chronic Hazard Star Legend *

* = Chronic Health Hazard

Issue Date 28-May-2015
Revision Date 07-Mar-2017
Updated Section(s): 1, 3, 5

Note:
The information provided in this 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