



# Material Safety Data Sheet

Product Name: STAINLESS STEEL

ID: 1105

## \*\*\* Section 1 - Chemical Product and Company Identification \*\*\*

**Chemical Formula:** Iron (Fe) with a variety of alloying elements  
**Product Use:** Sheet, plate, bar, rod, building, extruded or drawn products  
**Other Designations:** Stainless Steel - CPD

Alcoa Inc.  
201 Isabella Street  
Pittsburgh, PA 15212-5858

Phone: Health and Safety: 1-412-553-4649

### Emergency Information:

USA: Chemtrec: 1-800-424-9300 or 1-703-527-3887

Alcoa: 1-412-553-4001

### Website:

[www.alcoa.com](http://www.alcoa.com)

## \*\*\* Section 2 - Composition / Information on Ingredients \*\*\*

CAS #	Component	Percent
7439-89-6	Iron	>50
7440-02-0	Nickel	<35.1
7440-47-3	Chromium	<30.1
7439-96-5	Manganese	<13.1
7439-98-7	Molybdenum	<5.1
7440-50-8	Copper	<5.1
7440-21-3	Silicon	<5.1
7429-90-5	Aluminum	<2.1
7440-32-6	Titanium	<2.1
7440-48-4	Cobalt	<1.1
7440-25-7	Tantalum	<1.1

### Component Information

Additional compounds which can be formed are listed in Section 8.

## \*\*\* Section 3 - Hazards Identification \*\*\*

### Emergency Overview

Solid. Metallic appearance. Odorless. Non-combustible.

Explosion/fire hazards may be present when (See Sections 5, 7 and 10 for additional information):

\* Molten metal is in contact with water/moisture.

Dust and fume from processing can cause irritation of eyes, skin and upper respiratory tract, metal fume fever and lung damage.

### Potential Health Effects

(If dusts or fumes are generated by processing)

#### Eyes

Can cause irritation.

#### Skin

Can cause irritation, sensitization and allergic contact dermatitis.

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## Inhalation

Can cause irritation of upper respiratory tract, lung damage, metal fume fever and other health effects listed below. Cancer and reproductive hazard.

## Health Effects of Ingredients

**Nickel dust and fumes** Can cause irritation of eyes, skin and respiratory tract. Eye contact: Can cause inflammation of the eyes and eyelids (conjunctivitis). Skin contact: Can cause sensitization and allergic contact dermatitis. Chronic overexposures: Can cause perforation of the nasal septum, inflammation of the nasal passages (sinusitis), respiratory sensitization, asthma and scarring of the lungs (pulmonary fibrosis). **Nickel metal** IARC/NTP: Listed as "reasonably anticipated to be a human carcinogen" by the NTP. Listed as possibly carcinogenic to humans by IARC (Group 2B)\*.

**Chromium dust and mist** Can cause irritation of eyes, skin and respiratory tract. **Chromium and trivalent chromium** IARC/NTP: Not classified by IARC.

**Manganese dust or fumes** Chronic overexposures: Can cause inflammation of the lung tissue, scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

**Cobalt** Can cause irritation of eyes, skin and respiratory tract. Skin contact: Can cause allergic reactions. Acute and chronic overexposures: Can cause respiratory sensitization, asthma, scarring of the lungs (pulmonary fibrosis) and damage to the heart muscle (cardiomyopathy). **Cobalt and cobalt compounds** IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B)\*.

**Copper dust and mists** Can cause irritation of eyes, mucous membranes, skin and respiratory tract. Chronic overexposures: Can cause reduction in the number of red blood cells (anemia), skin abnormalities (pigmentation changes) and hair discoloration. **Copper fume** Can cause irritation of eyes, mucous membranes and respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever).

**Silicon, inert dusts** Chronic overexposures: Can cause chronic bronchitis and narrowing of the airways. Additional information: Studies with experimental animals by injection have found lesions on the lungs.

**Tantalum and tantalum oxide** Can cause mechanical irritation of eyes, skin and upper respiratory tract. Generally of low toxicity.

**Molybdenum dust and fumes** Can cause irritation of mucous membranes, skin and respiratory tract. Acute overexposures: Can cause headache, backache and sore joints. Chronic overexposures: Can cause deformities of the joints, blood disorders, kidney damage, lung damage and liver damage.

**Aluminum dust, fines and fumes** Low health risk by inhalation. Generally considered to be biologically inert.

Some products are supplied with a lubricant/oil coating or have residual oil from the manufacturing process. **Oil** Can cause irritation of skin. Skin contact (prolonged or repeated): Can cause dermatitis. **Mineral oils, untreated or mildly refined** Studies with experimental animals by skin contact have found skin tumors. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1)\*.

## Health Effects Of Additional Compounds That May Be Formed During Processing

**Hexavalent chromium (Chrome VI)** Can cause irritation of eyes, skin and respiratory tract. Skin contact: Can cause irritant dermatitis, allergic reactions and skin ulcers. Chronic overexposures: Can cause perforation of the nasal septum, respiratory sensitization, asthma, fluid in the lungs (pulmonary edema), lung damage, kidney damage, lung cancer, nasal cancer and cancer of the gastrointestinal tract. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1)\*.

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**Nickel compounds** Associated with lung cancer, cancer of the vocal cords and nasal cancer. IARC/NTP: Listed as "known to be a human carcinogen" by the NTP. Listed as carcinogenic to humans by IARC (Group 1)\*.

**Iron oxide** Chronic overexposures: Can cause benign lung disease (siderosis). Ingestion: Can cause irritation of gastrointestinal tract, bleeding, changes in the pH of the body fluids (metabolic acidosis) and liver damage.

**Manganese oxide fumes** Can cause irritation of eyes, skin and respiratory tract. Acute overexposures: Can cause nausea, fever, chills, shortness of breath and malaise (metal fume fever).

**Silica, amorphous** Acute overexposures: Can cause dryness of eyes, nose and upper respiratory tract.

**Titanium dioxide** Can cause irritation of eyes and respiratory tract. Chronic overexposures: Can cause chronic bronchitis.

**Alumina (aluminum oxide)** Low health risk by inhalation. Generally considered to be biologically inert.

If the product is heated well above ambient temperatures or machined, oil vapor or mist may be generated. **Oil vapor and mist** Can cause irritation of respiratory tract. Acute overexposures: Can cause bronchitis, asthma, headache, central nervous system effects (nausea, dizziness and loss of coordination) and drowsiness (narcosis).

Welding, plasma arc cutting, and arc spray metalizing can generate ozone. **Ozone** Can cause irritation of eyes, nose and upper respiratory tract. Acute overexposures: Can cause shortness of breath, tightness of chest, headache, cough, nausea and narrowing of airways. Effects are reversible on cessation of exposure. Acute overexposures (high concentrations): Can cause respiratory distress, respiratory tract damage, bleeding and fluid in the lungs (pulmonary edema). Effects can be delayed up to 1-2 hours. Additional information: Studies with experimental animals by inhalation have found genetic damage, reproductive harm, blood cell damage, lung damage and death. **Welding fumes** IARC/NTP: Listed as possibly carcinogenic to humans by IARC (Group 2B)\*.

## \*IARC Classification Definitions

Group 1: The agent is carcinogenic to humans. There is sufficient evidence that a causal relationship existed between exposure to the agent and human cancer.

Group 2B: The agent is possibly carcinogenic to humans. Generally includes agents for which there is limited evidence in the absence of sufficient evidence in experimental animals.

## Medical Conditions Aggravated By Exposure to the Product

Asthma, chronic lung disease, skin rashes and secondary Parkinson's disease.

## \* \* \* Section 4 - First Aid Measures \* \* \*

### First Aid: Eyes

Flush eyes with plenty of water or saline for at least 15 minutes. Consult a physician.

### First Aid: Skin

Wash skin with soap and water for at least 15 minutes. Consult a physician if irritation persists.

### First Aid: Inhalation

Remove to fresh air. If unconscious or severely injured, check for clear airway, breathing and presence of pulse. Perform CPR if there is no pulse or respiration. Consult a physician.

## \* \* \* Section 5 - Fire Fighting Measures \* \* \*

## Flammable/Combustible Properties

This product does not present fire or explosion hazards as shipped.

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## Fire/Explosion

May be a potential hazard under the following conditions:

- \* Molten metal in contact with water/moisture. Moisture entrapped by molten metal can be explosive.

## Extinguishing Media

Use fire fighting methods and materials that are appropriate for surrounding fire.

## Fire Fighting Equipment/Instructions

Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

## \* \* \* Section 6 - Accidental Release Measures \* \* \*

## Small/Large Spill

Recover using mechanical means. *If molten:* Contain the flow using dry sand or salt flux as a dam. Do not use shovels or hand tools to halt the flow of molten metal. Allow the spill to cool before remelting as scrap.

## \* \* \* Section 7 - Handling and Storage \* \* \*

## Handling/Storage

Product should be kept dry. Avoid contact with sharp edges or heated metal. Avoid generating dust.

## Requirements for Remelting of Scrap Material and/or Ingot

Molten metal and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water. Water and other forms of contamination on or contained in scrap or remelt ingot are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions.

All tooling and containers which come in contact with molten metal must be preheated or specially coated. Molds and ladles must be preheated or oiled prior to casting. Any surfaces that may contact molten metal (e.g., concrete) should be specially coated.

During melting operations, the following minimum guidelines should be observed:

- \* Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.
- \* Store materials in dry, heated areas with any cracks or cavities pointed downwards.
- \* Preheat and dry large or heavy items such as ingot adequately before charging into a furnace containing molten metal. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the internal metal temperature of the coldest item of the batch to 400°F and then hold at that temperature for 6 hours.

## \* \* \* Section 8 - Exposure Controls / Personal Protection \* \* \*

## Engineering Controls

Use with adequate ventilation to meet the limits listed in Section 8, Exposure Guidelines.

## Personal Protective Equipment

### Respiratory Protection

Use NIOSH-approved respiratory protection as specified by an Industrial Hygienist or other qualified professional if concentrations exceed the limits listed in Section 8, Exposure Guidelines. Suggested respiratory protection: P95

### Eye Protection

Wear safety glasses/goggles to avoid eye contact.

### Skin Protection

Wear appropriate gloves to avoid any skin injury.

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## General

Personnel who handle and work with **molten metal** should utilize primary protective clothing like face shields, fire resistant tapper's jackets, leggings, spats and similar equipment to prevent burn injuries. In addition to primary protection, secondary or day-to-day work clothing that is fire resistant and sheds metal splash is recommended for use with molten metal.

If the product is coated with **oil**, wear oil-resistant gloves to avoid skin contact. Minimize breathing oil vapors and mist. Remove oil contaminated clothing; launder or dry-clean before reuse. Remove oil contaminated shoes and thoroughly clean and dry before reuse. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of the work period. Oil coating is readily removed from skin with waterless hand cleaners followed by a thorough washing with soap and water.

## Exposure Guidelines

### A: General Product Information

Alcoa recommends an Occupational Exposure Limit for Nickel Compounds of 0.1 mg/m<sup>3</sup> TWA.

Alcoa recommends an Occupational Exposure Limit for chromium (VI) compounds [both soluble and insoluble forms] of 0.25 ug/m<sup>3</sup> TWA as chromium.

Alcoa recommends an Occupational Exposure Limit for Oil Mist of 0.5 mg/m<sup>3</sup> TWA.

### B: Component Exposure Limits

#### Nickel (7440-02-0)

ACGIH 1.5 mg/m<sup>3</sup> TWA (inhalable fraction)

OSHA 1 mg/m<sup>3</sup> TWA

#### Chromium (7440-47-3)

ACGIH 0.5 mg/m<sup>3</sup> TWA

OSHA 1 mg/m<sup>3</sup> TWA

#### Manganese (7439-96-5)

ACGIH 0.2 mg/m<sup>3</sup> TWA

OSHA 5 mg/m<sup>3</sup> Ceiling (fume)

#### Molybdenum (7439-98-7)

ACGIH 10 mg/m<sup>3</sup> TWA (inhalable fraction); 3 mg/m<sup>3</sup> TWA (respirable fraction)

#### Copper (7440-50-8)

ACGIH 0.2 mg/m<sup>3</sup> TWA (fume); 1 mg/m<sup>3</sup> TWA (dusts and mists, as Cu)

OSHA 0.1 mg/m<sup>3</sup> TWA (fume); 1 mg/m<sup>3</sup> TWA (dusts and mists)

#### Silicon (7440-21-3)

ACGIH 10 mg/m<sup>3</sup> TWA

OSHA 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

#### Aluminum (7429-90-5)

ACGIH 10 mg/m<sup>3</sup> TWA (metal dust)

OSHA 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

#### Cobalt (7440-48-4)

ACGIH 0.02 mg/m<sup>3</sup> TWA

OSHA 0.1 mg/m<sup>3</sup> TWA (dust and fume)

#### Tantalum (7440-25-7)

ACGIH 5 mg/m<sup>3</sup> TWA (dust)

OSHA 5 mg/m<sup>3</sup> TWA

### C: Exposure Limits for Additional Compounds Which May Be Formed During Processing

#### Iron oxide (1309-37-1)

ACGIH 5 mg/m<sup>3</sup> TWA (dust and fume, as Fe)

OSHA 10 mg/m<sup>3</sup> TWA

#### Nickel insoluble compounds (Not Available)

ACGIH 0.2 mg/m<sup>3</sup> TWA (inhalable fraction, as Ni) (related to Nickel insoluble inorganic compounds (NOS))

OSHA 1 mg/m<sup>3</sup> TWA (as Ni)

#### Chromium (II) compounds (Not Available)

OSHA 0.5 mg/m<sup>3</sup> TWA (as Cr)

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## Chromium (III) compounds (Not Available)

ACGIH 0.5 mg/m<sup>3</sup> TWA (as Cr) (related to Chromium (III) Compounds)

OSHA 0.5 mg/m<sup>3</sup> TWA (as Cr) (related to Chromium (III) Compounds)

## Chromium (VI) compounds- water soluble (Not Available)

ACGIH 0.05 mg/m<sup>3</sup> TWA (as Cr)

## Chromium (VI) compounds (certain water insoluble forms) (Not Available)

ACGIH 0.01 mg/m<sup>3</sup> TWA (as Cr)

## Chromic acid (7738-94-5)

OSHA 0.1 mg/m<sup>3</sup> Ceiling (and chromates)

## Manganese inorganic compounds (Not Available)

ACGIH 0.2 mg/m<sup>3</sup> TWA (as Mn)

OSHA 5 mg/m<sup>3</sup> Ceiling (as Mn)

## Silica fume (amorphous) (69012-64-2)

ACGIH 2 mg/m<sup>3</sup> TWA (respirable fraction)

## Molybdenum insoluble compounds (Not Available)

ACGIH 10 mg/m<sup>3</sup> TWA (inhalable fraction, as Mo); 3 mg/m<sup>3</sup> TWA (respirable fraction, as Mo)

## Titanium dioxide (13463-67-7)

ACGIH 10 mg/m<sup>3</sup> TWA

OSHA 15 mg/m<sup>3</sup> TWA (total dust)

## Aluminum oxide (non-fibrous) (1344-28-1)

ACGIH 10 mg/m<sup>3</sup> TWA (particulate matter containing no asbestos and < 1% crystalline silica)

OSHA 15 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

## Oil mist, mineral (8012-95-1)

ACGIH 5 mg/m<sup>3</sup> TWA (sampled by a method that does not collect vapor)

ACGIH 10 mg/m<sup>3</sup> STEL

OSHA 5 mg/m<sup>3</sup> TWA

## Welding fumes (NOC) (Not Available)

ACGIH 5 mg/m<sup>3</sup> TWA

## Ozone (10028-15-6)

ACGIH 0.05 ppm TWA (heavy work); 0.08 ppm TWA (moderate work); 0.10 ppm TWA (light work); 0.20 ppm TWA (heavy, moderate or light work, less than or equal to 2 hours)

OSHA 0.1 ppm TWA; 0.2 mg/m<sup>3</sup> TWA

## \* \* \* Section 9 - Physical & Chemical Properties \* \* \*

**Physical State:** Solid

**Boiling Point:** Not determined

**Vapor Pressure:** Not applicable

**Solubility in Water:** Not soluble

**Density:** ~ 0.29 lb/in<sup>3</sup> (~7.9 g/cm<sup>3</sup>)

**Odor:** Odorless

**Octanol-Water Coefficient:** Not applicable

**Appearance:** Metallic appearance

**Melting Point:** 2500-2795°F (1371-1535°C)

**Vapor Density:** Not applicable

**Specific Gravity:** See Density

**pH Level:** Not applicable

**Odor Threshold:** Not applicable

## \* \* \* Section 10 - Chemical Stability & Reactivity Information \* \* \*

### Stability

Stable under normal conditions of use, storage, and transportation.

### Conditions to Avoid

\* **Water:** Molten metal can react violently/explosively with water or moisture, particularly when the water is entrapped.

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## \*\*\* Section 11 - Toxicological Information \*\*\*

### Health Effects of Ingredients

#### A: General Product Information

No information available for product.

#### B: Component Analysis - LD50/LC50

##### Iron (7439-89-6)

Oral LD50 Rat: 30 g/kg

##### Manganese (7439-96-5)

Oral LD50 Rat: 9 g/kg

##### Silicon (7440-21-3)

Oral LD50 Rat: 3160 mg/kg

##### Cobalt (7440-48-4)

Oral LD50 Rat: 6171 mg/kg

### Carcinogenicity

#### A: General Product Information

No information available for product.

#### B: Component Carcinogenicity

##### Nickel (7440-02-0)

ACGIH A5 - Not Suspected as a Human Carcinogen

IARC Monograph 49, 1990

NTP Reasonably Anticipated To Be A Carcinogen

##### Chromium (7440-47-3)

ACGIH A4 - Not Classifiable as a Human Carcinogen

IARC Monograph 49, 1990

##### Cobalt (7440-48-4)

ACGIH A3 - Animal Carcinogen

IARC Monograph 52, 1991 (Evaluated as a group)

## \*\*\* Section 12 - Ecological Information \*\*\*

### Ecotoxicity

#### A: General Product Information

No information available for product.

#### B: Component Analysis - Ecotoxicity - Aquatic Toxicity

##### Nickel (7440-02-0)

96 Hr LC50 rainbow trout (adults):31.7 mg/L;96 Hr LC50 fathead minnow: 3.1 mg/L

72 Hr EC50 freshwater algae (4 species): 0.1 mg/L

96 Hr LC50 water flea: 510 µg/L

##### Copper (7440-50-8)

96 Hr LC50 fathead minnow: 23 µg/L;96 Hr LC50 rainbow trout: 13.8 µg/L;96 Hr LC50 bluegill: 236 µg/L

72 Hr EC50 freshwater algae (Scenedesmus subspicatus): 120 µg/L

96 Hr LC50 water flea: 10 µg/L;96 Hr LC50 water flea: 200 µg/L

### Environmental Fate

No information available for product.

## \*\*\* Section 13 - Disposal Considerations \*\*\*

### Disposal Instructions

Reuse or recycle material whenever possible. Material may be disposed of at an industrial landfill.

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## US EPA Waste Number & Descriptions

### A: General Product Information

RCRA Status: Not federally regulated in the U.S.

### B: Component Waste Numbers

RCRA waste codes other than described under Section A may apply depending on use of product. Refer to 40 CFR 261 or state equivalent in the U.S.

## \* \* \* Section 14 - Transportation Information \* \* \*

### Special Transportation

	PSN #1	PSN #2	PSN #3	PSN #4
Notes:	(1)			
Proper Shipping Name:	Not regulated			
Hazard Class:	-			
UN NA Number:	-			
Packing Group:	-			
RQ:	-			
Other - Tech Name:	-			
Other - Marine Pollutant:	-			

### Notes:

- (1) When "Not regulated," enter the proper freight classification, "MSDS Number," and "Product Name" on the shipping paperwork.

Canadian TDG Hazard Class & PIN:	Not regulated
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## \* \* \* Section 15 - Regulatory Information \* \* \*

### US Federal Regulations

#### A: General Product Information

No information available for product.

#### B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

#### Nickel (7440-02-0)

SARA 313: 0.1 percent de minimis concentration

CERCLA: 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)

#### Chromium (7440-47-3)

SARA 313: 1.0 percent de minimis concentration

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 2270 kg final RQ (no reporting of releases of this hazardous material is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)

#### Manganese (7439-96-5)

SARA 313: 1.0 percent de minimis concentration

#### Copper (7440-50-8)

SARA 313: 1.0 percent de minimis concentration

CERCLA: 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is equal to or exceeds 0.004 inches)



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## Aluminum (7429-90-5)

SARA 313: 1.0 percent de minimis concentration (fume or dust only)

## Cobalt (7440-48-4)

SARA 313: 0.1 percent de minimis concentration

### SARA 311/312 Physical and Health Hazard Categories:

**Immediate (acute) Health Hazard:** Yes, if particulates/fumes generated during processing

**Delayed (chronic) Health Hazard:** Yes, if particulates/fumes generated during processing

**Fire Hazard:** No

**Sudden Release of Pressure:** No

**Reactive:** No

### State Regulations

#### A: General Product Information

PENNSYLVANIA "Special Hazardous Substance": Chromium, Mineral oils, Nickel.

Chemical(s) known to the State of California to cause cancer: Chromium, Chromium compounds, hexavalent, Mineral oils (untreated and mildly treated), Nickel and certain nickel compounds.

#### B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Iron	7439-89-6	Yes	No	No	No	No	No
Nickel	7440-02-0	Yes	No	Yes	Yes	Yes	Yes
Chromium	7440-47-3	Yes	No	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	No	Yes	Yes	Yes	Yes
Molybdenum	7439-98-7	Yes	No	Yes	Yes	Yes	Yes
Copper	7440-50-8	Yes	No	Yes	Yes	Yes	Yes
Silicon	7440-21-3	No	No	Yes	Yes	Yes	Yes
Aluminum	7429-90-5	Yes	No	Yes	Yes	Yes	Yes
Titanium	7440-32-6	Yes	No	No	No	Yes	No
Cobalt	7440-48-4	Yes	No	Yes	Yes	Yes	Yes
Tantalum	7440-25-7	Yes	No	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

### Other Regulations

#### A: General Product Information

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

Material meets the criteria for inclusion in WHMIS Class D2A.

#### B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Nickel	7440-02-0	0.1 % (English Item 1126, French Item 1193)
Chromium	7440-47-3	0.1 % (English Item 399, French Item 561)
Manganese	7439-96-5	1 % (English Item 974, French Item 1077)
Molybdenum	7439-98-7	1 % (English Item 1092, French Item 1167)
Copper	7440-50-8	1 % (English Item 433, French Item 578)
Aluminum	7429-90-5	1 % (English Item 47, French Item 197)
Cobalt	7440-48-4	0.1 % (English Item 417, French Item 566)

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## C: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS	AUST.	MITI
Iron	7439-89-6	Yes	Yes	Yes	Yes	No
Nickel	7440-02-0	Yes	Yes	Yes	Yes	No
Chromium	7440-47-3	Yes	Yes	Yes	Yes	No
Manganese	7439-96-5	Yes	Yes	Yes	Yes	No
Molybdenum	7439-98-7	Yes	Yes	Yes	Yes	No
Copper	7440-50-8	Yes	Yes	Yes	Yes	No
Silicon	7440-21-3	Yes	Yes	Yes	Yes	No
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	No
Titanium	7440-32-6	Yes	Yes	Yes	Yes	No
Cobalt	7440-48-4	Yes	Yes	Yes	Yes	No
Tantalum	7440-25-7	Yes	Yes	Yes	Yes	No

**Note:** Pure metals are not specifically listed by CAS or MITI number. The class of compounds for each of these metals is listed on the MITI inventory.

## \* \* \* Section 16 - Other Information \* \* \*

### MSDS History

Original: October 17, 2000

Revised: December 23, 2003

### MSDS Status

Reviewed on a periodic basis in accordance with Alcoa policy. Changes in Section 8.

### Prepared By

Hazardous Materials Control Committee

Preparer: Jon N. Peace, 412-553-2293

### MSDS System Number

156088

### Other Information

\* Guide to Occupational Exposure Values-2003, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH).

\* Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1991, Compiled by the American Conference of Governmental Industrial Hygienists, Inc. (ACGIH).

\* NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, June 1994.

\* Dangerous Properties of Industrial Materials, Sax, N. Irving, Van Nostrand Reinhold Co., Inc., 1984.

\* Patty's Industrial Hygiene and Toxicology: Volume II: Toxicology, 4th ed., 1994, Patty, F. A.; edited by Clayton, G. D. and Clayton, F. E.: New York: John Wiley & Sons, Inc.

\* Integrated Index(R), MICROMEDEX, Inc., 2003

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## Key-Legend:

ACGIH	American Conference of Governmental Industrial Hygienists
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CPR	Cardio-pulmonary Resuscitation
DOT	Department of Transportation
DSL	Domestic Substances List (Canada)
EINECS	European Inventory of Existing Commercial Chemical Substances
EPA	Environmental Protection Act
IARC	International Agency for Research on Cancer
LC <sub>50</sub>	Lethal concentration (50 percent kill)
LC <sub>Lo</sub>	Lowest published lethal concentration
LD <sub>50</sub>	Lethal dose (50 percent kill)
LD <sub>Lo</sub>	Lowest published lethal dose
LFL	Lower Flammable Limit
MITI	Ministry of International Trade & Industry
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PIN	Product Identification Number
PSN	Proper Shipping Name
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TCLP	Toxic Chemicals Leachate Program
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UFL	Upper Flammable Limit
WHMIS	Workplace Hazardous Materials Information System
atm	atmosphere
cm	centimeter
g, gm	gram
in	inch
kg	kilogram
lb	pound
m	meter
mg	milligram
ml, ML	milliliter
mm	millimeter
mppcf	million particles per cubic foot
n.o.s.	not otherwise specified
ppb	parts per billion
ppm	parts per million
psia	pounds per square inch absolute
u	micron
ug	microgram

INFORMATION HEREIN IS GIVEN IN GOOD FAITH AS AUTHORITATIVE AND VALID; HOWEVER, NO WARRANTY, EXPRESS OR IMPLIED, CAN BE MADE.

This is the end of MSDS # 1105

# STAINLESS STEEL



## WARNING

**Hazards:** Explosion potential may be present when molten metal is in contact with water or moisture.

If coated with oil, may cause skin irritation/dermatitis by contact.

Chronic overexposures to manganese dust can cause central nervous system damage, scarring of the lungs and reproductive harm in males.

Overexposure to fumes (fine dusts) of copper and manganese oxide may cause metal fume fever by inhalation.

Overexposures to cobalt dust can cause respiratory sensitization (asthma) and damage to the heart and lungs.

Overexposures to molybdenum dust can cause headaches, sore joints, joint deformities and damage to blood system, kidneys, lungs and liver.

Chronic overexposure to copper may cause skin and hair discolorations and blood disorders (anemia).

Overexposure to dust or fume (fine dusts) containing nickel and hexavalent chromium compounds may cause nasal and/or lung cancer.

Chronic overexposure to iron oxide dust or fume may cause benign lung disease (siderosis). Chronic overexposure to silicon dust and titanium dioxide dust can cause chronic bronchitis.

**WARNING:** Nickel and certain nickel compounds, Chromium (hexavalent compounds) and Mineral oils (untreated or mildly treated) are chemicals known to the State of California to cause cancer. (Proposition 65). WHMIS Class D2A.

**Precautions:** Avoid generating dust. Use with adequate ventilation. Keep material dry. Use appropriate personal protective equipment (safety glasses/gloves) to avoid injury. Use appropriate NIOSH approved respiratory protection (P95) if concentrations exceed the permissible limits.

Read Alcoa Material Safety Data Sheet No. 1105 for more information about use and disposal.

Emergency Phone: (412) 553-4001.

**INGREDIENTS:**

Iron	(7439-89-6)
Nickel	(7440-02-0)
Chromium	(7440-47-3)
Manganese	(7439-96-5)
Molybdenum	(7439-98-7)
Copper	(7440-50-8)

**CAS No:**

**INGREDIENTS:**

Silicon	(7440-21-3)
Aluminum	(7429-90-5)
Titanium	(7440-32-6)
Cobalt	(7440-48-4)
Tantalum	(7440-25-7)

**CAS No:**

**Alcoa Inc.**

201 Isabella Street, Pittsburgh, PA 15212-5858 USA



**ALCOA**