



G&S Titanium, Inc.

SAFETY DATA SHEET

Revised 08/7/2015

SECTION 1: COMPANY AND PRODUCT IDENTIFICATION

MANUFACTURER: G&S Titanium, Inc.
Address: 4000 East Lincoln Way, Wooster, Ohio 44691

Telephone No. (330)263-0564
Emergency No. 800-424-9300 Chemtrec

Trade Name: Iron and Alloy Steel
Classification: Metal
Recommended Use: Weld Wire, Bar, Billet

SECTION 2: HAZARD IDENTIFICATION

General Hazard Statement: Solid metallic products are generally classified as "articles" and do not constitute a hazardous material in solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Any articles manufactured from these solid products would be generally classified as non-hazardous. However some hazardous elements contained in these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. Products in the solid state present no fire or explosion hazard. Small chips, fines, and dust may ignite readily, though. The following classification information is for the hazardous elements which may be released during processing.

Section 3 - Composition / Information on Ingredients

CAS #	Component	Percent
7439-89-6	Iron	>80
7440-47-3	Chromium	0-11*
7440-66-6	Zinc	0-10
7440-02-0	Nickel	0-9.5
7440-44-0	Carbon	0-5.5
7439-98-7	Molybdenum	0-5
7440-62-2	Vanadium	0-1
7439-96-5	Manganese	0-3
7440-50-8	Copper	0-2.5
7429-90-5	Aluminum	0-2
7440-32-6	Titanium	0-1
7440-31-5	Tin	0-0.9
7440-33-7	Tungsten	0-0.9
7439-95-4	Magnesium	0-0.9

SECTION 4: FIRST AID MEASURES

First Aid: Eyes

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Consult a physician.

First Aid: Skin

Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

First Aid: Ingestion

Do NOT induce vomiting. Call a physician or Poison Control Center immediately. Drink plenty of water. Never give anything by mouth to an unconscious person.

First Aid: Inhalation

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Consult a physician

SECTION 5: FIRE FIGHTING MEASURES

General

Fire Hazards

See Section 9 for Flammability Properties.

This product does not present fire or explosion hazards as shipped. Small chips, fines, and dust from processing may be readily ignitable.

Hazardous Combustion Products

Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. May cause sensitization by inhalation and skin contact.

Extinguishing Media

Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and fines.

Unsuitable Extinguishing Media

DO NOT use halogenated extinguishing agents on small chips or fines. DO NOT use water for fires involving molten metal. These fire extinguishing agents will react with burning material.

Fire Fighting Equipment/Instructions

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



G&S Titanium, Inc.

SAFETY DATA SHEET Revised 08/7/2015

SECTION 6: ACCIDENTAL RELEASE MEASURES

Recovery and Neutralization

Avoid dust formation. Collect scrap for recycling.

Materials and Methods for Clean-Up

If product is molten, contain the flow using dry sand or salt flux as a dam. All tools and containers which come in contact with molten metal must be preheated or specially coated and rust free. Allow the spill to cool before remelting as scrap.

Emergency Measures

Keep people away from and upwind of spill/leak.

Personal Precautions and Protective Equipment

Wear appropriate protective clothing and respiratory protection for the situation.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system.

Prevention of Secondary Hazards

None

SECTION 7: HANDLING AND STORAGE

Handling Procedures

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Avoid dust formation. Keep material dry. Avoid contact with sharp edges or heated material.

Storage Procedures

Keep container tightly closed in a dry and well-ventilated place.

Incompatibilities

Acids. Alkalis. Water. Halogenated compounds. Metal oxides.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Chromium (7440-47-3) ACGIH: 0.5 mg/m3 TWA OSHA: 1 mg/m3 TWA NIOSH: 0.5 mg/m3 TWA	Nickel (7440-02-0) ACGIH: 1.5 mg/m3 TWA (inhalable fraction) OSHA: 1 mg/m3 TWA NIOSH: 0.015 mg/m3 TWA
Molybdenum (7439-98-7) ACGIH: 10 mg/m3 TWA (inhalable fraction); 3 mg/m3 TWA (respirable fraction) OSHA: 10 mg/m3 TWA	Manganese (7439-96-5) ACGIH: 0.2 mg/m3 TWA OSHA: 1 mg/m3 TWA (fume) 3 mg/m3 STEL (fume) 5 mg/m3 Ceiling NIOSH: 1 mg/m3 TWA (fume) 3 mg/m3 STEL
Copper (7440-50-8) ACGIH: 0.2 mg/m3 TWA (fume) OSHA: 0.1 mg/m3 TWA (dust, fume, mist, as Cu) NIOSH: 1 mg/m3 TWA (dust and mist); 0.1 mg/m3 TWA (fume)	Aluminum (7429-90-5) ACGIH: 1 mg/m3 TWA (respirable fraction) OSHA: 15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction) NIOSH: 10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)
Vanadium (7440-62-2) OSHA: 0.05 mg/m3 TWA (respirable dust, as V2O5); 0.05 mg/m3 TWA (fume, as V2O5) NIOSH: 1 mg/m3 TWA (listed under Ferrovandium dust) 3 mg/m3 STEL (listed under Ferrovandium dust)	Tin (7440-31-5) ACGIH: 2 mg/m3 TWA OSHA: 2 mg/m3 TWA NIOSH: 2 mg/m3 TWA
Tungsten (7440-33-7) ACGIH: 5 mg/m3 TWA 10 mg/m3 STEL OSHA: 5 mg/m3 TWA 10 mg/m3 STEL NIOSH: 5 mg/m3 TWA 10 mg/m3 STEL	



G&S Titanium, Inc.

SAFETY DATA SHEET

Revised 08/7/2015

Engineering Measures

Where feasible, enclose processes to prevent dust dispersion into the work area. Provide local exhaust when possible, and general ventilation as necessary, to keep airborne concentrations below exposure limits and as low as possible.

Personal Protective Equipment: Respiratory

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA 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.

Personal Protective Equipment: Hands

Use impervious gloves such as neoprene, nitrile, or rubber for hand protection.

Personal Protective Equipment: Eyes

Wear safety glasses with side shields and/or goggles as necessary to prevent dust from entering eyes.

Personal Protective Equipment: Skin and Body

Use body protection appropriate for task.

Hygiene Measures

Do not breathe vapors/dust. When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Keep away from food, drink and animal feeding stuffs.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Gray-Metallic	Odor:	None
Physical State:	Solid	pH:	NA
Vapor Pressure:	ND	Vapor Density:	ND
Boiling Point:	ND	Melting Point:	~1538 (°C) / ~2800 (°F)
Solubility (H2O):	Insoluble	Specific Gravity:	~7.6-7.8
Evaporation Rate:	ND	VOC:	ND
Octanol/H2O Coeff.:	ND	Flash Point:	NA
Flash Point Method:	NA	Upper Flammability Limit (UFL):	NA
Lower Flammability Limit (LFL):	NA	Burning Rate:	NA
Auto Ignition:		NA	

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability

Stable under recommended storage conditions.

Hazardous Reaction Potential

Will not occur.

Conditions to Avoid

Dust formation. Heat, flames and sparks. Protect from water.

Incompatible Products

Acids. Alkalis. Water. Halogenated compounds. Metal oxides.

Hazardous Decomposition Products

Toxic metal oxides and carbon and nitrogen oxides may be produced during a fire involving metal alloys. Alloys with nickel may also produce poisonous nickel carbonyl.



G&S Titanium, Inc.
SAFETY DATA SHEET Revised 08/7/2015

SECTION 11: TOXICOLOGY INFORMATION

Acute Toxicity
Component Analysis - LD50/LC50
 Iron (7439-89-6)
 Oral LD50 Rat 984 mg/kg
 Nickel (7440-02-0)
 Oral LD50 Rat >9000 mg/kg
 Carbon (7440-44-0)
 Oral LD50 Rat >10000 mg/kg
 Manganese (7439-96-5)
 Oral LD50 Rat 9 g/kg
 Magnesium (7439-95-4)
 Oral LD50 Rat 230 mg/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness
 Contact with dust can cause mechanical irritation or drying of the skin. Contact with oils from processing may cause irritation. Prolonged skin contact may defat the skin and produce dermatitis. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Potential Health Effects: Eye Critical Damage/ Stimulativeness
 Dust contact with the eyes can lead to mechanical irritation.

Potential Health Effects: Ingestion
 May be harmful if swallowed. May cause additional affects as listed under "Inhalation".

Potential Health Effects: Inhalation
 May be harmful if inhaled. Inhalation of dust in high concentration may cause irritation of respiratory system.

Respiratory Organs Sensitization/Skin Sensitization
 May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Generative Cell Mutagenicity
 Suspected of causing genetic defects.

Carcinogenicity
A: General Product Information
 May cause cancer.
B: Component Carcinogenicity

<p>Chromium (7440-47-3) ACGIH: A4 - Not Classifiable as a Human Carcinogen IARC: Monograph 49 [1990] (listed under Chromium and Chromium compounds); Supplement 7 [1987] (Group 3 (not classifiable))</p>	<p>Nickel (7440-02-0) ACGIH: A5 - Not Suspected as a Human Carcinogen NIOSH: potential occupational carcinogen NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen) IARC: Monograph 49 [1990]; Supplement 7 [1987] (Group 2B (possibly carcinogenic to humans))</p>	<p>Aluminum (7429-90-5) ACGIH: A4 - Not Classifiable as a Human Carcinogen</p>
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Reproductive Toxicity
 May damage fertility or the unborn child.
Specified Target Organ General Toxicity: Single Exposure
 Causes damage to organs (kidneys, respiratory system)
Specified Target Organ General Toxicity: Repeated Exposure
 May cause damage to organs through prolonged or repeated exposure (respiratory system). Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure. Prolonged exposure may cause chronic effects. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons. May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.
 Elevated temperature processing such as welding and plasma arc cutting may release hazardous fumes. Overexposure to metal fumes may cause pulmonary edema (fluid in the lungs) and methemoglobinemia. May also cause pulmonary fibrosis and lung cancer.
Aspiration Respiratory Organs Hazard
 None



G&S Titanium, Inc.
SAFETY DATA SHEET Revised 08/7/2015

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

A: General Product Information

Very toxic to aquatic organisms.

Persistence/Degradability

Metal powders may cause ecological damage through silting or sedimentation effect in water depriving organisms of habitat and mobility, and/or fouling of gills, lungs and skin thus limiting oxygen uptake.

Bioaccumulation

Metal powders in water or soil may form metal oxides or other metal compounds that could become bioavailable and harm aquatic or terrestrial organisms.

Mobility in Soil

Metal powder would be relatively immobile in soils but some metal compounds may be transported with ground water.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Instructions

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

Disposal of Contaminated Containers or Packaging

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: TRANSPORTATION INFORMATION

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants. Component

Copper	7440-50-8	DOT regulated severe marine pollutant (powder)
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DOT Information

Shipping Name: Not Regulated

IATA Information

Shipping Name: Not Regulated

ICAO Information

Shipping Name: Not Regulated

IMDG Information

Shipping Name: Not Regulated

SECTION 15: REGULATORY INFORMATION

Regulatory Information

A: 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).

Chromium (7440-47-3)

SARA 313: 1.0 % 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 >100 µm); 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 >100 µm)

Zinc (7440-66-6)

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

CERCLA: 454 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 >100 µm); 1000 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 >100 µm)

Nickel (7440-02-0)

SARA 313: 0.1 % 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 >100 µm); 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 >100 µm)



G&S Titanium, Inc.
SAFETY DATA SHEET Revised 08/7/2015

Manganese (7439-96-5)

SARA 313: 1.0 % de minimis concentration

Copper (7440-50-8)

SARA 313: 1.0 % 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 >100 µm); 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

Aluminum (7429-90-5)

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

Antimony (7440-36-0)

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 >100 µm); 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 >100 µm)

Phosphorus (7723-14-0)

SARA 302: 100 lb TPQ (This material is a reactive solid. The TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)

CERCLA: 1 lb final RQ; 0.454 kg final RQ

Selenium (7782-49-2)

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 >100 µm); 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 >100 µm)

B: Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants.

Copper (7440-50-8)

0-2.5 DOT regulated severe marine pollutant (powder)

State Regulations

A: Component Analysis - State

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

Component	CAS	CA	MA	MN	NJ	PA	RI
Iron	7439-89-6	Yes	No	No	No	No	No
Chromium	7440-47-3	Yes	Yes	Yes	Yes	Yes	Yes
Zinc	7440-66-6	Yes	Yes	No	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes	Yes	Yes	Yes
Carbon	7440-44-0	No	No	No	No	No	Yes
Molybdenum	7439-98-7	Yes	Yes	Yes	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes	Yes	Yes	Yes
Aluminum	7429-90-5	Yes	Yes	Yes	Yes	Yes	Yes
Titanium	7440-32-6	Yes	No	No	Yes	No	No
Vanadium	7440-62-2	Yes	Yes	No	Yes	Yes	No
Magnesium	7439-95-4	Yes	Yes	No	Yes	Yes	Yes
Tin	7440-31-5	Yes	Yes	Yes	Yes	Yes	Yes
Tungsten	7440-33-7	Yes	Yes	Yes	Yes	Yes	Yes

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

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.



G&S Titanium, Inc.

SAFETY DATA SHEET

Revised 08/7/2015

Component Analysis - WHMIS IDL

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

Component	CAS #	Minimum Concentration
Chromium	7440-47-3	0.1 %
Nickel	7440-02-0	0.1 %
Molybdenum	7439-98-7	1 %
Manganese	7439-96-5	1 %
Copper	7440-50-8	1 %
Aluminum	7429-90-5	1 %

Additional Regulatory Information

Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Iron	7439-89-6	Yes	DSL	EINECS
Chromium	7440-47-3	Yes	DSL	EINECS
Zinc	7440-66-6	Yes	DSL	EINECS
Nickel	7440-02-0	Yes	DSL	EINECS
Carbon	7440-44-0	Yes	DSL	EINECS
Molybdenum	7439-98-7	Yes	DSL	EINECS
Manganese	7439-96-5	Yes	DSL	EINECS
Copper	7440-50-8	Yes	DSL	EINECS
Aluminum	7429-90-5	Yes	DSL	EINECS
Titanium	7440-32-6	Yes	DSL	EINECS
Vanadium	7440-62-2	Yes	DSL	EINECS
Magnesium	7439-95-4	Yes	DSL	EINECS
Tin	7440-31-5	Yes	DSL	EINECS
Tungsten	7440-33-7	Yes	DSL	EINECS

SECTION 16: OTHER INFORMATION

None Available

The information in this SDS was obtained from sources which G&S Titanium, Inc. believes are reliable. However the information is provided without any representation or warranty, expressed or implied, regarding the accuracy of that information.