



Invoice

Reference

Invoice 168163 (USD)
Date 1/30/2020
Customer ID 206482

Astralloy Steel

Exposure Guidelines - No permissible exposure limits (PEL) or threshold limit values (TLV) exist for steel. See Section 3 for component materials. Various grades of steel will contain different combinations of these elements. Trace elements may also be present in minute amounts.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Color - Ranges from bright silver-gray to gray-black with metallic luster.
Boiling Point - Not applicable.
Density (at 15.6°C) - Not applicable.
Melting Point - Approximately 2800°F.
pH - Not applicable.
Specific Gravity (at 15.6°C) - Not applicable.
Vapor Pressure - Not applicable.
Vapor Density (air = 1) - Not applicable.
Volatility - Not applicable.
Solubility in Water - Insoluble.
Evaporation Rate (Butyl Acetate = 1) - Not applicable.
Other Physical and Chemical Data - None.

10. STABILITY AND REACTIVITY

Stability - Stable.
Conditions to Avoid - Steel at temperatures above the melting point may release fumes containing oxides of iron and alloying elements. Avoid generation of extreme fumes.
Hazardous Polymerization - Will not occur.
Incompatibility (Materials to Avoid) - Reacts with strong acids to form hydrogen gas. Do not store near strong oxidizers.
Hazardous Decomposition Products - Metallic fumes may be produced during welding, burning, grinding, and possibly crushing or any abrasion with the potential for thermal decomposition. Refer to A515 249.1.

11. TOXICOLOGICAL INFORMATION

The primary component of this product is iron. Long-term exposure to iron dusts or fumes can result in a condition called siderosis which is considered to be a benign pneumoconiosis. Symptoms may include chronic bronchitis, emphysema, and shortness of breath upon exertion. Penetration of iron particles into the skin or eye may cause an emphysematous or ocular siderosis which may be characterized by a red-brown pigmentation of the affected area. Ingestion of iron particles may affect the gastrointestinal, nervous, and hemopoietic systems and the liver. Iron and steel fuming, but not iron or iron oxide, has been listed as a carcinogen (Group 1) by IARC.

When this product is welded, fumes are generated. Welding fumes may be different in composition from the original welding product, with the chief component being ordinary oxides of the metal being welded. Chronic health effects (including cancer) have been associated with the fumes and dusts of individual components in this (see below), and welding fumes as a general category have been listed by IARC as a carcinogen (Group 2B). There is also limited evidence that welding fumes may cause adverse reproductive and fetal effects.

This product may contain small amounts of manganese. Prolonged exposure to manganese dusts or fumes is associated with "manganism", a Parkinson-like syndrome characterized by a variety of neurological symptoms including muscle rigidity, gait disturbances, tremors, and psychosis.

The product may contain chromium. Prolonged and repeated overexposure to chromium dusts or fumes may cause skin rashes, nasal irritation and ulceration, kidney damage and cancer of the respiratory system. Chromium is skin sensitizer. Cancer is generally attributed to the hexavalent (+6) form of chromium which is listed as a carcinogen by IARC and OSHA (Group 1).

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This product may contain small amounts of nickel. Prolonged and repeated contact with nickel may cause sensitization dermatitis. Inhalation of nickel compounds has caused lung damage as well as sinus, nasal and laryngeal irritation. In laboratory animals, nickel is a listed carcinogen by NTP and IARC (Group 1).

The product may contain small amounts of copper. Copper dust and fumes can irritate the eyes, nose and throat causing coughing, wheezing, runny nose, sore throat and difficulty breathing. Other effects from repeated inhalation of copper fumes include a metallic or sweet taste and discoloration of skin, teeth or hair. Copper also may cause an allergic skin reaction. Overexposure to copper can affect the liver.

This product may contain small amounts of vanadium. Adverse effects from dermal, inhalation or percutaneous exposure to various vanadium compounds have been reported. The major target for vanadium compounds toxicity is the respiratory tract. Fumes or dust can cause severe eye and respiratory irritation, and systemic effects. Chronic bronchitis, emphysema, chronic pharyngitis, rhinitis, edema, chronic productive cough, and tightness of the chest have been reported following overexposure. Allergic reactions resulting from skin and inhalation exposures have also been reported. A statistical association between vanadium and lung cancer has been suggested, but vanadium currently is not regarded as a human carcinogen.

12. ECOLOGICAL INFORMATION

Aquatic Ecotoxicology Data - No specific information available on this product.
Environmental Fate Data - No specific information available on this product.

13. DISPOSAL CONSIDERATIONS

Recovery and reuse, rather than disposal, should be the ultimate goal of handling efforts. Dispose in accordance with federal, state, and local health and environmental regulations. Prevent materials from entering drains, sewers, or waterways.

14. TRANSPORT INFORMATION

DOT Proper Shipping Name - Not regulated.
DOT Hazard Classification - Not regulated.
UNNA Number - Not applicable.
DOT Packing Group - Not applicable.
Labeling Requirements - Not applicable.
Placards - Not applicable.
DOT Hazardous Substance - Not applicable.
DOT Marine Pollutant - Not applicable.

15. REGULATORY INFORMATION

This product is not hazardous under the criteria of the Federal CSRA Hazard Communication Standard 29 CFR 1910.1200. However, dusts and fumes from the product may be considered as hazardous and require protection to comply with applicable Federal, state and local laws and regulations.

California Proposition 65 - This product contains chemicals (chromium [hexavalent], Nickel) known to the State of California to cause cancer.
Massachusetts Substance List - Boron, Copper, Chromium, Manganese, Molybdenum, Nickel, Phosphorus, Silicon, Sulfur, Tantalum, Vanadium.
Pennsylvania Hazardous Substance List - Boron, Copper, Chromium, Manganese, Molybdenum, Nickel, Phosphorus, Silicon, Sulfur, Tantalum, Vanadium.
New Jersey Hazardous Substance List - Boron, Copper, Chromium, Manganese, Molybdenum, Nickel, Phosphorus, Silicon, Sulfur, Tantalum, Vanadium.

Toxic Substances Control Act (TSCA)

All components of this product were listed on the TSCA Inventory.

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Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Steel is not reportable. However, if contains hazardous substances that may be responsible if released in pieces with diameters less than or equal to 0.004 inches:

Chemical Name	Reportable Quantity (lb)
Copper	800
Chromium	6000
Iron	100
Phosphorus	1

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III SECTION 311 (2) HAZARD CATEGORIES: Immediate Health Effect, Delayed Health Effect

The product contains the following EPA Section 312 chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA):

SECTION 313 REPORTABLE INGREDIENTS:

Chemical Name	CAS Number	Concentration (%) by weight	Reportable
Copper	7440-50-8	0 - 69	No - Less than 1%
Chromium	7440-47-3	0 - 26.0	Yes - Greater than 0.1%
Manganese	7439-95-5	10 - 140	Yes - Greater than 0.1%
Ni	7440-02-0	0 - 4.0	Yes - Greater than 0.1%
Phosphorus	7723-14-0	0 - 0.15	No - Less than 1%
Vanadium	7440-62-2	0.09 - 0.15	No - Less than 1%

Concentration based on wet basis and product knowledge of typical products derived from this facility.

16. OTHER INFORMATION

The SDS covers product as delivered from the Astralloy Steel facility, but does not include chemicals that may be applied by subsequent handlers and/or distributors of this product. This could include a variety of materials including oils, paints, galvanization, etc. that are not included in this SDS. During welding, procedures could be taken for airborne contaminants that may originate from components of the welding rod. Arc or spark generated while welding or burning could be a source of ignition for combustible and/or flammable materials. The information in this Safety Data Sheet (SDS) was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or completeness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of this product.

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