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MATERIAL SAFETY DATA SHEET, STAINLESS STEELS, ISSUED 12/1/03, PAGE 1 OF 2

I. PRODUCT IDENTIFICATION

SUPPLIER: VARIOUS TRADE NAME: STAINLESS STEEL CHEMICAL NAME: 300 & 400 STAINLESS STEELS
FORM: PIPE FITTINGS, FORGINGS, AND TUBULAR PRODUCTS TELEPHONE: (908) 638-6200 24 Hours A Day

II. PRODUCT INGREDIENTS

Material/Component	CAS Number	% Weight	Exposure Limits OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)
Base Metal				
Iron	7439-89-6	40.0-90.0	10 Oxide Fume	.10 Oxide Fume
Alloying Elements				
Aluminum (Al)	7429-90-5	<0.1-0.5	Not Established	5 Fume/10 Dust
Boron (B)	7440-42-8	<0.1-1.0	15 Oxide Fume	10 Oxide Fume
Carbon (C)	7440-44-0	<0.10-1.5	3.5 (as Carbon Black)	3.5 (as Carbon Black)
Cobalt (Co)	7440-48-4	<0.01-0.5	0.1 Dust & Fume	0.1 Dust & Fume
Chromium (Cr)	7440-47-3	<0.40-30.0	1.0 Chrome Metal	0.5 Chrome Metal
Columbium (Cb)/ Tantalum (Ta)	7440-25-7	<0.15-1.5	5.0 (Ta)	5.0 (Ta)
Copper (Cu)	7440-50-8	<0.30-1.9	0.1Fume/1.0 Dust	0.2 Fume/1.0 Dust
Manganese (Mn)	7439-96-5	<0.04-2.0	5c Dust/5c Fume	5c Dust/1 Fume
Molybdenum (Mo)	7439-98-7	<0.15-4.0	15 Insoluble Compounds	10 Insoluble Compounds
Nickel (Ni)	7440-02-0	<0.01-45.0	1 Nickel Metal	1 Nickel Metal
Phosphorus (P)	7723-14-0	<0.04-0.12	0.1 Phosphorus	0.1 Phosphorus
Silicon (Si)	7440-21-3	<0.05-2.0	Not Established	5 Total Dust
Sulfur (S)	7704-34-9	<0.05-0.35	13 Sulfur Dioxide	5 Sulfur Dioxide
Titanium (Ti)	7440-36-6	<.01-3.0	15 Oxide/10 Dust	15 Dioxide

NOTE: The above listing is a summary of elements used in alloying steel. Various grades of steel will contain different combinations of these elements. Trace elements may be present in minute amounts. No permissible exposure limits (PEL) or threshold limit values (TLV) exist for nickel alloys. Values shown are applicable to component elements.

III. PHYSICAL DATA

Physical Form: Solid under normal conditions
Appearance & Odor: Silver-gray odorless metal
Specific Gravity (H20 = 1): Approx. 7
Melting Point: Approximately 2800° F.
Solubility in Water (% by Weight): Not Applicable
Boiling Point: Not Applicable
Vapor Pressure: Not Applicable
Vapor Density: Not Applicable
Acidity/Alkalinity: Not Applicable
% Volatile by Volume: Not Applicable

IV. FIRE AND EXPLOSION DATA

Flash Point: N/A **Auto-ignition Temperature:** N/A **Flammable limits in Air:** N/A **Fire & Explosion Hazards - Extinguishing Media:** Steel products do not present fire or explosion hazards under normal conditions. Use fire fighting methods and materials that are appropriate for surrounding fire. Fine metal particles, such as produced in grinding and sawing, can burn. High concentrations of metallic fines in the air may present an explosion hazard. Molten metal may explode on contact with water. For these fires use dry powder or sand extinguishing media.

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V. ENVIRONMENTAL HEALTH & SAFETY INFORMATION

Health Hazards: Steel products in their solid state present no inhalation, ingestion, or contact health hazard. Operations such as burning, welding, sawing, brazing, grinding, and machining, which result in elevating the temperature of the product to or above its melting point, or result in the generation of airborne particulates may present hazards. The major exposure hazard is inhalation. Effects of overexposure to fume and dust are as follows: **Acute:** Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose, and throat. High concentrations of fumes and dusts of iron oxide, manganese, copper, and lead may result in metal fume fever. Typical symptoms last from 12 to 48 hours and consist of metallic taste in the mouth, dryness and irritation of the throat, chills, and fever. **Chronic:** Chronic and prolonged inhalation of high concentrations of fumes or dust of the following elements may lead to the conditions listed opposite the element: **Aluminum:** May initiate fibrotic changes to lung tissue. **Boron:** No chronic debilitating symptoms indicated. **Cobalt:** Pneumonia, fibrosis, dermatitis. **Copper:** No chronic debilitating symptoms indicated. **Lead:** Amemia, urinary dysfunction, weakness, constipation, nausea, nervous disorder. **Manganese:** Bronchitis, pnemonitis, lack of coordination. **Molybdenum:** Respiratory tract irritation, possible liver and kidney damage, bone deformity. **Nickel:** Lesions of the skin and mucous membranes, possible cancer of the nose or lungs- bronchogenic carcinoma. **Phosphorus:** Necrosis of the mandible. **Sulfur (as sulfur dioxide):** Edema of the lungs.

OCCUPATIONAL EXPOSURE LIMITS: See Section II. Chromium and Nickel have been identified by the International Agency for Research on Cancer (IARC) and/or the National Toxicology Program (NTP) as potential cancer causing agents.

EMERGENCY MEDICAL PROCEDURES: **Inhalation:** Remove to fresh air; if condition continues, consult a physician. **Eye Contact:** Flush thoroughly with running water to remove particulate; obtain medical attention. **Skin Contact:** Remove particles by washing thoroughly with soap and water. Seek medical attention if condition persists. **Ingestion:** If significant amounts of metal are ingested, consult physician.

OCCUPATIONAL PROTECTIVE MEASURES: **Respiratory Protection:** Appropriate dust/mist/fume respirator should be used to avoid excessive inhalation of particulates. If exposure limits are reached or exceeded, use NIOSH approved equipment. **Hand, Arms, and Body:** Protective gloves should be worn as required for welding, burning, or handling operations. **Eyes and Face:** Safety glasses should be worn when grinding or cutting; face shields should be worn when welding or burning. **Other Clothing and Equipment:** As required depending on operations and safety codes.

REACTIVITY INFORMATION: **Stability:** Stable under normal conditions of use, storage, and transportation. **Incompatibility (Materials to avoid):** Some alloys react with strong acids to form hydrogen gas. **Conditions to Avoid:** Nickel alloys at temperatures above the melting point may liberate fumes containing oxides of iron and alloying elements. Avoid generation of airborne fume and dust.

SPILL, LEAK, AND DISPOSAL METHODS: Fine turnings and small chips should be swept or vacuumed. Scrap metal can be reclaimed for reuse. Used or unused product should be disposed of in accordance with federal, state, or local laws and regulations.

ADDITIONAL PRECAUTIONS: Minimize and control operations producing fume or dusts. Provide adequate exhaust ventilation; maintain good housekeeping.

DISCLAIMER: This MSDS is intended for use solely in safety education and environmental health training and not for specification purposes. The information in this MSDS was obtained from usually reliable sources and is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. Custom Alloy Corporation assumes no responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of the product.