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MATERIAL SAFETY DATA SHEET (M.S.D.S.)

Description of Product

Product Name: UGITECH SA Stainless Steel long products

Grades: 200 Series/300 Series/400 Series/Duplex

Hazardous Ingredients: N.B.- Products under normal conditions do not represent an inhalation, ingestion or contact health hazard.

BASE METAL ALLOYING ELEMENTS	CAS NUMBER (1)	% RANGE	ACGIH TLV-TWA (mg/m3) (2)	OSHA PEL (mg/m3) (3)
Iron (FE)	7439-89-5	>40	5 Oxide Fume	10 Oxide Fume
Chrome (Cr)	7440-47-3	>10-30	0.5 (metal)	1 (metal)
Nickel (Ni)	7440-02-0	<35	1 (metal)	1 (metal)
Manganese (Mn)	7439-96-5	<25	5 (dust); 1 (fume)	5 (as Manganese)
Silicon (Si)	7440-21-3	<2.5	10 (dust)	15 (dust)
Molybdenum (Mo)	7439-98-7	<7	10 (insoluble compound)	15 (insoluble compound)
Copper (Cu)	7440-50-3	<5	1 (dust and mist); 0.2 (fume)	1 (dust and mist); 0.1 (fume)
Cobalt (Co)	7440-48-4	<1	0.1 (dust and fume)	0.1 (dust and fume)
Titanium (Ti)	7440-32-6	<2	10 dust	15 dust
Niobium (Nb)	7440-03-1	<2	none established	none established
Carbon (C)	7440-44-0	<.7	none established	none established
Nitrogen (N)	10102-44-0	<.5	6 (as NOx)	6 (as NOx)
Phosphorus (P)	7723-14-0	<.1	0.1(yellow P)	0.1(yellow P)
Sulfur (S)	7704-34-9	<.4	5 (as SOx)	13 (as SOx)

* COATINGS: Certain materials such as lime, alkaline salts, borax or mineral oil in the processing, and certain residuals (<1% total weight of product) may remain on the product's surface.

(1) Chemical Abstract Service Number (2) 1985-1986 ACGIH Threshold Limit Value – Time Weighted Average (3) OSHA Permissible Exposure Limit

Listed below are certain critical effects (TLV Basis) which apply to hazardous ingredients found in alloys supplied. Please refer to table above of potential hazardous ingredients found in the subject alloy(s).

Chromium : Irritation; dermatitis.
Cobalt : Asthma; lung; CVS
Copper : Irritation; GI; metal fume fever
Iron : Pneumoconiosis
Manganese : CNS (manganism); lung; reproductive
Molybdenum : Irritation
Nickel : Dermatitis; pneumoconiosis; kidney; Cancer (lung); irritation
Silicon : Lung
Titanium : (Dioxide) Lung.
Vanadium : (Pentoxide Dust & Fume) Irritation; lung.



PHYSICAL DATA

Material is (under normal conditions):	SOLID	Evaporation Rate:	N/A
Melting Point (Base Metal):	>2400°F	Boiling Point:	N/A
Specific Gravity:	approx. 8 g/cm³	Solubility in water:	N/A
Vapor Pressure:	N/A	Appearance and order:	Gray, Silvery or Black, Odorless
Vapor Pressure:	N/A		
Vapor Density:	N/A		

PRIMARY ROUTES OF ENTRY

Exposure occurs generally through inhalation of fumes and dust created during certain manufacturing operations. Certain elements, however, may be hazardous through direct skin and/or eye contact. Ingestion, while highly unlikely, could also be harmful in the case of certain elements.

FIRE and EXPLOSION

Steel products in the solid state present no fire or explosion hazard.

SPECIAL PROTECTION INFORMATION

VENTILATION: Local Exhaust ventilation should be utilized when welding, burning, brazing or grinding when exposure exceeds TLV's or PEL's.

RESPIRATORY: When engineering or administrative controls are not feasible to control overexposure, or while they are being instituted, appropriate NIOSH-approved respirators should be used, selected according to 29 CFR 1910.134.

EYE PROTECTION AND PROTECTIVE CLOTHING: Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by the welding standards.

WELDING AND BRAZING: On welding and brazing, hazardous constituents of basic electrode coatings, coated brazing rods or flux materials can contaminate the air. These material should only be used according to the manufacturer or supplier. Particular care must be taken when carrying out the above-mentioned work in restricted rooms or containers.

PHYSIOLOGICAL EFFECTS: The inhalation of high concentrations of various metals fumes or extremely fine metal dusts at or near to their source can cause an acute reaction known as "metal fume fever."

Although metals such as copper and zinc have been ,most associated with metal fume fever, this condition can also by the inhalation of iron, manganese and nickel fumes or dust.

The symptoms consist of temporary chills and fever which may last from few hours to a full day: characteristic are outbreaks of perspiration, coughing, chest pains (if the case history is uncertain, a head cold at the same time indicates infection). Long-term effects of metal fume fever on healthy individuals have not been noted.

Chronis inhalation of high concentrations of iron oxide fumes or dust mat lead to siderosis, a benign pneumoconiosis. The siderosis can subside on removal from the hazardous environment.



It is generally believed that the hexavalent forms of chrome (chromic acid and chromates) are responsible for its toxic effects, whereas the metal itself and its trivalent compounds are largely regarded as harmless. Chromic acid and chromates cause irritation and ulceration. Chromates are potential skin sensitizers with regard to allergies. Long-term inhalation of hexavalent chrome compounds can cause cancer.

Inhalation of nickel dusts or aerosols containing metallic nickel, nickel sulfide, nickel oxide, or of cobalt dust / aerosols can also cause cancer.

Acute toxic effects of these two metals are not known. However, frequent contact with nickel and cobalt can cause allergic skin reactions.

EMERGENCY and FIRST AID PROCEDURES

If acute overexposure to fumes occurs, remove victim from the adverse environment immediately and seek medical attention.

ADDITIONAL COMMENTS

The percentage composition reflects the range that is possible within this group of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist.

The steel itself presents no health hazard unless it is welded, burned, ground or cut. During these procedures, hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether a hazard exists.

NOTE

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