

Copper and Brass Sales -INC-

MATERIAL SAFETY DATA SHEET STAINLESS STEEL

COMPANY Copper and Brass Sales, Inc. 17401 Ten Mile Road Eastpointe, Michigan 48021	RE-ISSUE DATE June 1, 1995	IDENTIFICATION NUMBER N/A
TRADE NAME (Common Name or Synonym) Stainless Steel		EMERGENCY PHONE NUMBER 810-775-7710
CHEMICAL NAME Stainless	FORMULA N/A	DOT IDENTIFICATION NUMBER N/A

SECTION 2 - HAZARDOUS INGREDIENTS

NOTE: PRODUCTS UNDER NORMAL CONDITIONS DO NOT REPRESENT AN INHALATION, INGESTION OR CONTACT HEALTH HAZARD.

BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	% COMPOSITION BY WEIGHT (1)	ACGIH TLV (mg/m ³) (2)
Base Metal		
Iron (Fe)	60-88	5 (As Iron Oxide)
Alloying Elements		
Chromium (Cr)	10-30	.5
Nickel (Ni)	0-27	1
Manganese (Mn)	<6	5 (As Dust-Ceiling)
Molybdenum (Mo)	<6	10 (Insoluble Compound)
Copper (Cu)	<6	1 (Dust & Mist)
Titanium (Ti)	<6	10 (Total Dust)
Carbon (C)	<2	None Established
Phosphorus (P)	<2	None Established
Sulfur (S)	<2	5 (As SO ₂)
Silicon (Si)	<2	10 (Total Dust)
Cobalt (Co)	<2	.1 (Dust & Fume)
Niobium (Nb)	<2	None Established
Nitrogen (N)	<2	6 (As NO ₂)
Tin (Sn)	<2	2

(1) % OF ALLOYING MATERIAL VARIES WITH GRADE OF MATERIAL. (2) 1985-1986 ACGIH THRESHOLD LIMIT VALUE.

SECTION 3 - PHYSICAL DATA

MATERIAL IS (At Normal Conditions) Solid	APPEARANCE AND ODOR Gray-Black, Odorless
MELTING POINT (Base Metal) > 2500	SPECIFIC GRAVITY Approximately 7

SECTION 4 - FIRE AND EXPLOSION

EXTINGUISHING MEDIA NA
SPECIAL FIRE FIGHTING PROCEDURES Steel products in the solid state present no fire or explosion hazard.
UNUSUAL FIRE AND EXPLOSION PROCEDURES NA

SECTION 5 - REACTIVITY DATA

STABILITY Stable	INCOMPATIBILITY (Materials To Avoid) Reacts with strong acids to produce hydrogen gas.
CONDITIONS TO AVOID NA	
HAZARDOUS DECOMPOSITION PRODUCTS Metallic dust or fumes may be produced during welding, burning, grinding and possibly machining. Refer to ANSI Z49.1	

SECTION 6 - HEALTH HAZARD DATA

NOTE: STEEL PRODUCTS IN THE NATURAL STATE DO NOT PRESENT AN INHALATION, INGESTION OR CONTACT HAZARD. HOWEVER, OPERATIONS SUCH AS BURNING, WELDING, SAWING, BRAZING AND GRINDING MAY RELEASE FUMES AND/OR DUSTS WHICH MAY PRESENT HEALTH HAZARDS IF TLV'S ARE EXCEEDED.

MAJOR EXPOSURE HAZARD:

INHALATION SKIN CONTACT SKIN ABSORPTION EYE CONTACT INGESTION

EFFECTS OF OVEREXPOSURE

Short term exposure to fumes/dust may produce irritation of eyes and respiratory system. Inhalation of high concentrations of freshly formed oxide fumes or iron, manganese and copper may cause metal fume fever characterized by a metallic taste in the mouth, dryness and irritation of the throat and influenza-like symptoms.

Chronic inhalation of high concentrations of iron oxide fumes or dust may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

Chromium and nickel and their compounds are listed in the 3rd Annual Report on carcinogens, as prepared by the National Toxicology Program (NTP). Exposure to high concentrations of dust and fumes can cause sensitization dermatitis, inflammation and/or ulceration of upper respiratory tract and possibly cancer of nasal passages and lungs.

Recent epidemiological studies of workers melting and working alloys containing nickel/chromium have found no increased risk of cancer.

EMERGENCY AND FIRST AID PROCEDURES

If exposed to excessive levels of metal fumes, remove to fresh air, seek medical aid immediately.

Eyes - flush with water for at least 15 minutes.

SECTION 7 - SPILL OR LEAK PROCEDURES

SPILL OR LEAK PROCEDURES

This material may be reclaimed for reuse.

WASTE DISPOSAL METHODS

According to local, state and federal regulations.

SECTION 8 - SPECIAL PROTECTION

RESPIRATORY

NIOSH/MSHA - Approved dust and fume respirator should be used to avoid excessive inhalation of particulates when exposure exceeds TLV's.

VENTILATION

Local exhaust ventilation should be utilized when welding, burning, sawing, brazing, grinding or machining when exposure exceeds TLV's.

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.

SECTION 9 - SPECIAL PRECAUTIONS

In welding, precautions should be taken for airborne contaminants which may originate from components of the welding rod. Plasma arc cutting or welding can generate ozone. Overexposure can result in mucuous membrane irritation, as well as pulmonary changes including irritation, congestion and edema.

Arc or spark generated when welding or burning could be a source of ignition for combustible and flammable materials.

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express 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. 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 the product.

Data sheets of individual manufacturers may be obtained by contacting Copper & Brass Sales, Inc., 17401 Ten Mile Rd., Eastpointe, MI 48021.

STAINLESS STEEL**ACIER INOXYDABLE**

P6334

WARNING!**AVERTISSEMENT!****HAZARDS****RISQUES****HEALTH :**

Steel products in the natural state do not present an inhalation, ingestion, or contact hazard. However, operations such as burning, welding, sawing, brazing and grinding may release fumes and/or dusts which may present health hazards if overexposed. The product has not been determined to be carcinogenic. However, individual components, nickel and certain chromium compounds in a dust or fume form, have been associated with carcinogenicity.

FIRE / REACTIVITY :

Steel products in the solid state present no fire or explosion hazard. May react with strong acids to evolve hydrogen gas flammable.

EMERGENCY MEASURES**FIRST AID : (dusts/fumes exposure)**

Inhalation : move to fresh air. Eye : flush thoroughly with water and wash carefully under eyelids. Skin : does not present a hazard, wash with soap and water. Ingestion : not expected source of exposure.

FIRE / REACTIVITY :

Use extinguishing media appropriate to the surrounding material.

PRECAUTIONARY MEASURES

Use local ventilation if overexposed to dust/fume. Wear dust and fume respirator if necessary. Avoid contact with strong acids.

<u>Ingredient</u>	<u>Conc.(%)</u>	<u>CAS #</u>
Iron	60-88	7439-89-6
Chromium	10-30	7440-47-3
Nickel	0-27	7440-02-0
Manganese	<6	7439-96-5
Molybdenum	<6	7439-78-7
Copper	<6	7440-50-8
Titanium	<6	7440-32-6
Carbon	<2	7440-44-0
Phosphorus	<2	7723-14-0
Sulfur	<2	7704-34-9
Silicon	<2	7440-21-3
Cobalt	<2	7440-48-4
Niobium	<2	7440-03-1
Nitrogen	<2	7727-37-9
Tin	<2	7440-31-5

TOXIC MATERIAL

Metal Goods Service Centers
Div. of Alcan Aluminum Corporation
P.O. Box 346
St-Louis, MO
63166

BEFORE USING, READ SAFETY DATA SHEET (SDS)

SANTÉ :

Les produits en acier ne présentent pas de danger à l'inhalation, à l'ingestion ou au contact. Cependant, des opérations telles que chauffage, soudage, sciage, brasage et meulage peuvent dégager des fumées et/ou poussières présentant un risque à la santé en cas de surexposition. Le produit n'est pas considéré comme étant cancérigène, mais certains de ses composants, tels que le nickel et certains composés du chrome sous forme de poussières ou fumées, le sont.

FEU / RÉACTIVITÉ :

Sous forme solide, ne présente pas de risque de feu ou d'explosion. Peut réagir avec les acides forts pour dégager de l'hydrogène inflammable.

MESURES D'URGENCE**PREMIERS SOINS : (exposition fumées/poussières)**

Inhalation : aller dans un endroit aéré. Yeux : rincer abondamment avec de l'eau et bien rincer sous les paupières. Peau : ne présente pas de risque, laver à l'eau et au savon. Ingestion : source d'exposition peu probable.

FEU / RÉACTIVITÉ :

Utiliser un agent extincteur approprié pour les matières environnantes.

PRÉCAUTIONS

Utiliser une ventilation locale en cas de surexposition aux poussières/fumées. Porter un respirateur anti-particule et fumée si nécessaire. Éviter le contact avec les acides forts.

WHMIS/SIMDUT

<u>Ingrédient</u>	<u>Conc.(%)</u>	<u># CAS</u>
Fer	60-88	7439-89-6
Chrome	10-30	7440-47-3
Nickel	0.27	7440-02-0
Manganèse	<6	7439-96-5
Molybdène	<6	7439-78-7
Cuivre	<6	7440-50-8
Titane	<6	7440-32-6
Carbone	<2	7440-44-0
Phosphore	<2	7723-14-0
Soufre	<2	7704-34-9
Silicium	<2	7440-21-3
Cobalt	<2	7440-48-4
Niobium	<2	7440-03-1
Azote	<2	7727-37-9
Étain	<2	7440-31-5

MATIÈRE TOXIQUE

Centres de Service de Produits de Métaux
Div. de Alcan Aluminium Corporation
C.P. 346
St-Louis, MO
63166

LIRE LA FICHE SIGNALÉTIQUE AVANT D'UTILISER CE PRODUIT

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : Stainless steel

PRODUCT NUMBER : P6334

SUPPLIER : 0804001
 Metal Goods Service Centers
 Div. of Alcan Aluminum Corporation
 P.O. Box 346
 St-Louis, MO, 63166

Emergency tel. : 216-523-6860
 Business tel. : 314-427-1234
 Fax : 314-427-4321 (221)

SYNONYMS : Acier inoxydable, séries 3XX & 4XX series

APPEARANCE AND ODOUR : Grey-black odorless solid

USES : Primary metal

2. COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS #	LD ₅₀	LC ₅₀	EC DIRECTIVE		CONC.
				Symbol	R phrases	
Iron	7439-89-6	Unknown	Unknown	None	None	60-88 %
Alloying elements:						
Chromium	7440-47-3	Unknown	Unknown	Not classified		10-30 %
Nickel	7440-02-0	9000 mg/kg (oral-rat)	Unknown	Xn	40-43	0-27 %
Manganese	7439-96-5	9000 mg/kg (oral-rat)	Unknown	None	None	< 6 %
Molybdenum	7439-78-7	Unknown	Unknown	None	None	< 6 %
Copper	7440-50-8	Unknown	Unknown	None	None	< 6 %
Titanium	7440-32-6	Unknown	Unknown	None	None	< 6 %
Carbon	7440-44-0	Unknown	Unknown	None	None	< 2 %
Phosphorus	7723-14-0	Unknown	Unknown	None	None	< 2 %
Sulfur	7704-34-9	Unknown	Unknown	None	None	< 2 %
Silicon	7440-21-3	3160 mg/kg (oral-rat)	Unknown	None	None	< 2 %
Cobalt	7440-48-4	6170 mg/kg (oral-rat)	Unknown	Xn	42/43	< 2 %
Niobium	7440-03-1	Unknown	Unknown	None	None	< 2 %
Nitrogen	7727-37-9	None	Unknown	None	None	< 2 %
Tin	7440-31-5	Unknown	Unknown	None	None	< 2 %

3. HAZARDS IDENTIFICATION

Not hazardous.

4. FIRST AID MEASURES

In case of dust exposure:

Inhalation : In case of discomfort, remove to a ventilated area. Consult a physician.**Skin contact** : Wash skin thoroughly with soap and water.**Eye contact** : Flush eyes thoroughly with water, taking care to rinse under eyelids. If irritation persists, continue flushing for 15 minutes, rinsing from time to time under eyelids. If discomfort continues, consult a physician.**Ingestion** : Not applicable.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA : The product in the solid state presents no fire or explosion hazard.

HAZARDOUS COMBUSTION PRODUCTS : Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Recycle if possible.

7. HANDLING AND STORAGE

HANDLING PRECAUTIONS : Not applicable.

STORAGE CONDITIONS : Not applicable.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Provide general and local ventilation to maintain concentrations of air contaminants below recommended standards.

Use an approved respirator designed for the hazard, where concentrations exceed exposure limits. Wear goggles, as necessary.

EXPOSURE LIMITS :

(ACGIH=American Conference of Governmental Industrial Hygienists; TLV=Threshold Limit Value; OSHA=Occupational Safety and Health Administration [USA]; PEL=Permissible Exposure Limit; TWA=Time-Weighted Average; STEL=Short Term Exposure Limit; Ceiling=Ceiling value)

	ACGIH (TLV)		OSHA (PEL)	
	TWA	STEL	TWA	Ceiling
Iron oxide, fume	5 mg/m ³	None	10 mg/m ³	None
dust	None	None	10 mg/m ³	None
Chromium metal	0.5 mg/m ³	None	1.0 mg/m ³	None
Carbon (as nuisance particulates - tot.)		10 mg/m ³	None	15 mg/m ³ None
Silicon (tot. dust)	10 mg/m ³	None	15 mg/m ³	None
-Resp. dust	None	None	5 mg/m ³	None
Sulfur	None	None	None	None
Cobalt (Metal/dust/fumes)	0.05 mg/m ³	None	0.1 mg/m ³	None
Tin metal & oxide (As Sn)	2 mg/m ³	None	2 mg/m ³	None
Nickel metal	1.0 mg/m ³	None	1 mg/m ³	None
Manganese (dust)	5 mg/m ³	None	5 mg/m ³	5 mg/m ³ -ceiling
(fumes)	1 mg/m ³	3 mg/m ³	5 mg/m ³	5 mg/m ³
Molybdenum (tot.dust)	None	None	15 mg/m ³	None
- Soluble compounds	5 mg/m ³	None	5 mg/m ³	None
- Insoluble compounds	10 mg/m ³	None	None	None
Copper (fume)	0.2 mg/m ³	None	0.1 mg/m ³	None
(dust)	1.0 mg/m ³	None	1.0 mg/m ³	None
Titanium	None	None	None	None
Phosphorus	0.1 mg/m ³	None	0.1 mg/m ³	None
Niobium	None	None	None	None

9. PHYSICAL AND CHEMICAL PROPERTIES

pH : Not applicable.
boiling point : Not applicable.
melting point : > 2500°C
vapour pressure : Not applicable.
vapour density (air=1) : Not applicable.
evaporation rate : Not applicable.
relative density (water=1) : ≈ 7
water solubility : Not applicable.
partition coefficient (n-octanol/water) : Not applicable.
flashpoint : Not applicable.
autoignition temp. : Not applicable.
lower flammable limit : Not applicable.
higher flammable limit : Not applicable.
explosive properties : Not applicable.
NFPA fire code : 0
oxidizing properties : Not applicable.
odour threshold : Not applicable.

10. STABILITY AND REACTIVITY

STABLE (yes/no) : Yes

CONDITIONS AND MATERIAL TO AVOID : Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS : Metallic dust or fumes may be produced during welding, burning, grinding and machining. Reaction with evolution of hydrogen: on contact with acids.

11. TOXICOLOGICAL INFORMATION

ROUTES OF EXPOSURE : inhalation : Yes ingestion : No
 eye contact : No skin contact : No skin absorption : No

ACUTE EFFECTS :

Inhalation : Irritation. High concentrations of freshly formed oxide fumes of manganese and copper may cause metal fume fever. The principal symptoms are muscular aches, fever, chills, nausea, vomiting and weakness.
Skin contact : Not applicable.
Eye contact : Irritation.
Ingestion : Not applicable.

CHRONIC EFFECTS :

Inhalation: Prolonged and repeated overexposure to dust can lead to a benign pneumoconiosis. Nickel fumes may cause severe pneumonitis. Inhalation of high concentration of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.
Skin contact: Nickel fumes may cause sensitization.

Medical conditions aggravated by exposure to the product : Not determined.

Carcinogenicity / Mutagenicity / Reproductive toxicity : Nickel, chromium and some of their compounds are listed in the current "Annual Report on Carcinogens" prepared by the "National Toxicology Program" (NTP). Does not contain any other carcinogen or potential carcinogen (IARC, NTP, OSHA). (IARC=International Agency for Research on Cancer; NTP=National Toxicology Program [USA]; OSHA=Occupational Safety and Health Administration [USA])

12. ECOLOGICAL INFORMATION

No information available

13. DISPOSAL CONSIDERATIONS

Recycle if possible. Dispose of waste in accordance with federal, state, or local regulations.

14. TRANSPORT INFORMATION

This product is not classified as dangerous under the Transport Regulations, for road, rail, sea or air transport (no UN number).

15. REGULATORY INFORMATION

WHMIS CLASSIFICATION (Canada) : D2 Material causing other toxic effects

EEC CLASSIFICATION (Europe) : Not classified

Warning symbol : None

Warning word : None

Risk phrases : None

Safety phrases : None

USA REGULATIONS:**Section 313 Supplier Notification**

This product may contain the following toxic chemical(s) subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (Title III of SARA) and of 40 CFR 372. (This information must be included in all MSDSs that are copied and distributed for this material).

Chemical Name	CAS #
Manganese	7439-96-5
Chromium	7440-47-3
Nickel	7440-02-0
Copper	7440-50-8
Cobalt	7440-48-4

16. OTHER INFORMATION

Prepared by Alcan Toxicology Service Tel: 418-699-3907
P.O. box 1500, Jonquiere (Quebec), Canada, G7S 4L2 Fax: 418-699-2993

Abbreviations :

CAS #=Chemical Abstracts Service Registry Number; EC=European Community
LD₅₀=Lethal dose 50%; LC₅₀=Lethal concentration 50%; LCL₀=lowest published lethal concentration

* Although the information in this MSDS was obtained from sources which we believe to be reliable, it cannot be guaranteed. In addition, this information may be used in a manner beyond our knowledge or control. The information is therefore provided for advice purposes only, without any representation or warranty express or implied. *

Date of the previous revision : 1992/03/25

Reason for modification : Standardization according to ISO 11014 and European Directive 91/155/EEC.

Modification of certain OSHA Permissible Exposure Limits (section 8).

-> According to the U.S. Court of Appeals, the PEL for many substances has reverted to the level listed under Table Z-1, and in Table Z-2 and Table Z-3 of the amended 29 CFR 1910.1000 (58 FR 35338-351 June 30, 1993). However, OSHA continues to believe that controlling employee exposure to this limit is insufficiently protective. OSHA therefore recommends that employees' exposures be limited to the more protective level of either the NIOSH Recommended Exposure Levels (REL) or the ACGIH Threshold Limit Values (TLV).