

SECTION VII - PREVENTIVE MEASURES

Personal Protective Equipment	Dependent upon the process being performed on the material. Each operation must be addressed for suitable equipment required.					
Gloves	Respiratory	Eye	Footwear	Clothing	Other	Fume filter respirator gloves & eyewear required during welding.
Leather-faced	NA	NA	NA	NA		
Engineering Controls (eg. ventilation, enclosed process, specify)		Leak and spill procedure	Waste disposal	Handling procedures and equipment	Storage requirements	Special shipping information
General or local exhaust ventilation during welding.		NA	NA	NA	NA	NA

SECTION VIII - FIRST AID MEASURES

For overexposure to metal fumes, remove exposed person to fresh air. Seek medical attention.

Additional Information

IARC lists certain hexavalent chromium under its Group 1 category - "Confirmed Human Carcinogen".
IARC lists nickel and certain nickel compounds under its Group 2A category - "Suspected Human Carcinogen".
Iron-containing welding fume has an exposure limit of 5mg/m³ (1988-89 ACGIH-TLVs).
Welding fume may also contain contaminants from fluxes and/or other welding consumables.

SECTION IX - PREPARATION DATE OF M.S.D.S.

Prepared by: Customer Service Dept. Phone No. (905) 662-4925 Date: 02/27/17

Taylor
STEEL INC.

477 ARVIN AVENUE
STONE CREEK, ON
L8E 2N1

Re: Workplace Hazardous Materials Information System (WHMIS)

The enclosed information is provided to you to fulfill the requirements of Canada's nation-wide Workplace Hazardous Materials Information System regulations which have been implemented both federally and provincially.

This Material Safety Data Sheet (MSDS) covers all the steel materials which are sold by Taylor Steel Inc. As some of the common fabrication techniques such as burning, welding, and grinding generate metal fumes and dust to which workers may be exposed, it has been concluded that steel falls under the WHMIS regulations. In addition to the MSDS, we have enclosed information on steel coatings.

Also included with the MSDS is a sample of the label which accompanies the shipping documents you receive for each delivery of steel (printed on the back of the Bill of Lading document).

A revised MSDS will be provided to you if there are any significant changes in product formulation.

Please ensure that the individual in your organization responsible for fulfilling your employee training requirements under WHMIS receives this information package for reference and safekeeping.

Yours truly,



Paul MacDonnell
Director - Operations

STEEL



ACIER

Overexposure to dusts or fumes generated during welding or burning steels, particularly those containing chromium or nickel, may cause respiratory disease.

High exposure to fumes during welding or burning of zinc coated products can cause reversible short-term flu-like symptoms.

Prolonged skin contact with coated steel may cause skin irritation in sensitive individuals.

LIMIT inhalation of dusts or fumes generated during processing.

LIMIT skin contact.

Overexposure to metal fumes: Move to fresh air.
Seek medical attention if necessary.
Skin Contact: Wash with soap and water.

Read the relevant material Safety Data Sheet for more information.

La surexposition aux poussières ou aux fumées générées lors du soudage, surtout des aciers possédant du chrome ou du nickel, pourraient provoquer les maladies respiratoires.

Une exposition intensive aux fumées lors du soudage des produits revêtus du zinc pourraient provoquer des symptômes réversibles de grippe à court terme.

Contacte avec la peau et les aciers revêtus pourraient provoquer une irritation de la peau chez certains individus.

LIMITER l'inhalation des poussières ou des fumées générées pendant la transformation.

LIMITER contacte avec la peau.

Si l'individu est surexposé aux fumées venant des métaux, emmenez la personne pour qu'elle puisse avoir de l'air frais. Cherchez les soins médicaux s'il est nécessaire.
S'il s'agit de contacte avec la peau, lavez la peau avec du savon et de l'eau.

Veuillez lire la fiche signalétique pertinente pour plus de renseignements.

STEEL COATINGS

Steel can be coated with a variety of metallic and non-metallic materials. The concentration of these materials is such that they need not be disclosed on the Material Safety Data Sheet. A general description of the health effects and precautionary measures to follow are presented below for both metallic and non-metallic coatings.

NON-METALLIC STEEL COATINGS

1. Dry Lubricants

This class of coatings includes materials composed of borates and carbonates. These materials are skin, eye and respiratory irritants. The quantity of material which would appear on steel would not pose a high inhalation hazard. Protective measures for skin and eyes should be addressed.

2. Petroleum-Based Lubricants and Coatings

This class of coatings are oils with varying viscosities and/or various additives as minor components. These components include:

- * Corrosion Inhibitors (Sulphonates)
- * Emulsifiers (Fatty Acids)
- * Detergents (Sulphonates)
- * Antioxidants (Amines)

These materials are eye, skin and respiratory irritants. The primary area of concern with regard to this class of coatings is skin contact. Lighter kerosene-type materials may cause defatting of tissue, redness, and possibly dermatitis upon prolonged contact. Heavier-type oils can block pores leading to an acne-like inflammation (oil acne).

Protective measures for skin and eyes should be taken. Good personal hygiene practices should be followed, i.e. washing of hands or other affected areas with mild soap and water.

METALLIC COATINGS

This group of coatings would only pose a health hazard if welding, burning or grinding were to take place in an uncontrolled manner.

Zinc:

Products which may have zinc as a coating include Galvanized, Galvalume, Galvanneal or Zincrometal.

Over-exposure to zinc fumes generated during welding or burning may develop an acute condition known as "metal fume fever". This is characterized by flu-like symptoms such as fever, chills, nausea and vomiting. (The symptoms appear 4-6 hours after exposure and may last 12-18 hours.)

No long-term (chronic) health hazards to zinc dust or fumes have been documented.

Tin:

Products which may have tin as a coating include Tin Mill Material or Tin Plate.

The fume or dust generated during welding or grinding may cause irritation to eyes, nose or throat, but generally metallic tin and inorganic tin compounds have low toxicity.

Chromium:

Products which may have chromium as a coating include Zincrometal, Tin Mill or Tin Plate material. Chromium may be found in a variety of forms. These include chromium metal, chromium III oxide and chromium VI compounds. Dust and fumes of chromium metal and chromium III oxide generated during welding and grinding are classed as respiratory irritants. Prolonged inhalation over-exposure to certain hexavalent (chromium VI) compounds have been linked with an increased risk of cancer. The International Agency for Research (IARC) has listed certain chromium VI compounds as Group 1 compounds, i.e. carcinogenic to humans. The low chromium content of those steel grades referenced on the Material Safety Data Sheet would indicate that the chromium hazard would be minimal at most.

Chromium-coated materials may cause skin irritation and/or dermatitis upon prolonged contact to sensitive individuals.

PRECAUTIONARY MEASURES FOR METALLIC COATINGS

Since the primary hazard of metallic coatings results from the over-exposure through inhalation of metal fumes or dusts during welding, burning or grinding, a brief overview of precautions to be taken, especially during welding or burning, is given.

Welding operations generally involve the melting of a metal in the presence of a flux or a shielding gas by means of a flame or metal arc. The composition of the welding fumes and gases formed are dependent upon the base metal, welding consumable and fluxes, and metal surface coatings.

Welding fumes are generated when the filler metal, and to a lesser extent, the base metal become vaporized and then rapid condensation of the metal vapour back into a fine particulate material, namely welding fumes.

The key precautions to investigate to protect welders as a result of welding fume generation is general or local ventilation and/or proper approved respiratory protection. Various sources may be consulted to obtain more information on these topics such as the Canadian Welding Institute, Ministry of Labour, or the Local Safety Association Office.

Other hazards are created due to the welding process. These include ultra-violet radiation from the welding arc which could affect eyes, and infrared radiation which generates heat. Thus, proper eye and skin protection will also be required. The type and degree of protection is dependent upon the welding process which is being carried out.

MATERIAL SAFETY DATA SHEET

PRODUCT: SHEET STEEL

SECTION 1 - MATERIAL IDENTIFICATION AND USE

MATERIAL NAME/IDENTIFIER: Carbon Sheet Steel, Alloy Sheet Steel, High Strength Corrosion Resistant Sheet Steel						
WHMIS CLASS	TDG CLASS	PIN NO.	CHEMICAL NAME	CHEMICAL FAMILY	CHEMICAL FORMULA	MOLECULAR WEIGHT
D2A	NA	NA	NA	STEEL	NA	NA
MATERIAL USE - Manufacture of Steel Articles			SUPPLIER NAME, ADDRESS, PHONE: TAYLOR STEEL, see front cover.			

SECTION II - HAZARDOUS INGREDIENTS OF MATERIAL

HAZARDOUS INGREDIENTS	APPROXIMATE CONC. %	CAS, NA OR U.N. NUMBERS	LD / LC ₅₀ (Specify Species & Route)	EXPOSURE LIMIT
Iron (Fe)	~95	7439-89-6	U	5 mg/m ³ (iron oxide)
Manganese (Mn)	≤2.0	7439-96-5	9 g/Kg (Rat - Oral)	5 mg/m ³ (dust) or 1 mg/m ³ (fume)
Chromium (Cr)	≤1.25	7440-47-3	U	0.55 mg/m ³
Nickel (Ni)	≤0.75	7440-02-0	U	1 mg/m ³

(Ref: 1988-19 ACGIH-TLVs)

ADDITIONAL INGREDIENTS (APPROXIMATE CONCENTRATION)

Aluminum	≤0.60%	Copper	≤0.75%	Titanium	≤0.25%
Carbon	≤1.0%	Molybdenum	≤0.50%	Vanadium	≤0.20%
Cerium	≤0.10%	Phosphorus	≤0.15%	Zirconium	≤0.20%
Columbium	≤0.12%	Silicon	≤3.5%		

SECTION III - PHYSICAL DATA FOR MATERIAL

Physical state -	Solid	Coefficient of water/oil distribution	NA
Colour & appearance	Silver Grey Metallic	Evaporation rate	NA
Odour threshold (ppm)	NA	Boiling point	NA
Specific gravity	7.86	Freezing point	-1530°C
Vapour pressure (mm)	NA	Solubility in water	NA
Vapour density (Air=1)	NA	pH	NA
% Volatile (by volume)	NA		

SECTION IV - FIRE AND EXPLOSION HAZARD OF MATERIAL

FLAMMABILITY	Non-flammable, will not support combustion	Means of Extinction	NA
		Special Procedures	NA
Flash point & Method	NA	Hazardous combustion products	NA
Upper explosion limit (% by volume)	NA	Explosion data-sensitivity to chemical impact	NA
Lower explosion limit (% by volume)	NA	Rate of burning	NA
Auto Ignition Temperature	NA	Explosive Power	NA
TDG Flammability classification	NA	Sensitivity to static discharge	NA

SECTION V - REACTIVITY DATA

Chemical Stability	Stable	Reactivity and under what conditions	NA
		Hazardous decomposition products	NA
Incompatibility to other substances - If so, which ones?	Yes	Contact with strong acids will release flammable hydrogen gas.	

SECTION VI - TOXICOLOGICAL PROPERTIES OF MATERIAL

Route of Entry:	None in its natural state. Operations such as welding, burning, grinding, or machining may pose acute or chronic health effects.		
Effects of Acute Exposure to Material:	None to parent material. Welding, burning, grinding or machining can generate metal particulate or elemental oxide fumes. Inhalation overexposure to manganese has been reported to cause metal fume fever characterized by fever and chills (ie. flu-like symptoms). Such an overexposure is unlikely due to small amount of manganese available.		
Effects of Chronic Exposure to Material:	None to parent material. Chronic inhalation overexposure to metal fume (ie. iron oxide fume) may cause a benign pneumoconiosis (ie. siderosis) with few or no symptoms.		
LD ₅₀ of Material (Specify species and Route)	LD ₅₀ of Material (Specify species and Route)	Exposure Limit(s)	Irritancy of Material
See Section II	U	See Section II	None Synergistic Materials
Sensitization of Material	Carcinogenicity, Reproductive effects, Teratogenicity, Mutagenicity		
NA		Ni & Cr	U

CONTINUED ON REVERSE...