

STEEL – MATERIAL SAFETY DATA SHEET

UNIFIEDALLOYS



STEEL – MATERIAL SAFETY DATA SHEET

Material Use: Manufacture of articles.
Includes all sheet products, plate, strip, bar, slab, ingot, structural shapes, and tubular products.

STEEL – MATERIAL SAFETY DATA SHEET

1. HAZARDOUS INGREDIENTS

Component (*)	CAS Number	TLV ACGIH (mg/m ³)	LD 50	Carbon & H.S.L.A. Steels	Electrical Steels	Leaded & Low Alloy Steels	Rails & Tie Plates	Tubular Products
Iron (Fe)	7438-86-6	5 (Fume)	U	91-99	91-99	92-96	94-96	94-96
Manganese (Mn)	7439-96-5	5	>9 gm/kg Oral Rat	<2.0	<2.0	<2.2	<1.1	<1.7
Chromium (Cr)	7440-47-3	0.5	U	<0.1	<1.0	<1.7	<1.6	<0.7
Nickel (Ni)	7440-02-0	1	>9 gm/kg Oral Rat	<1.0	<0.1	<2.1	<0.15	<0.5
Copper (Cu)	7440-50-8	1	U	<1.0	-	-	<0.1	<0.5
Phosphorous (P)	7732-14-0	0.1	U	<1.25	-	-	-	<0.1
Molybdenum (Mo)	7439-98-7	10	U	-	-	-	<0.12	<1.0
Lead (Pb)	7439-92-1	0.15	U	-	-	<0.35	-	-

* (As required by WHMIS ingredient disclosure list. For exact composition, refer to analysis or specifications)

2. PREPARATION INFORMATION

Prepared By: **UnifiedAlloys**
Telephone: (780) 468-5656
Note: **Contact Supplier (Quality Department) for additional information**

Preparation Date: January 1, 2010

3. PRODUCT / COMPANY INFORMATION

Material Use: Manufacture of articles.
Includes all sheet products, plate, strip, bar, slab, ingot, structural shapes, and tubular products.

Importer / Supplier / Distributor:

UnifiedAlloys
8835 – 50th Avenue
Edmonton, Alberta CANADA
T6E 5H4
Emergency Phone #: (780) 468-5656 (on-call service)

The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond 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.

Galvanize / Galvanneal

Hot dipped zinc (CAS 7440-66-6) coating. Coating weights range from 15 to 500 g/m² per side. May be chemically passivated with a chromium compound which leaves a residue chromium level of 11 to 40 mg/m² per side. Petroleum based rust preventive oils are applied to oiled product. Typical oil coating weights range from 1.1-5.4 g/m² per side.

Galvalume

Hot dipped zinc (CAS 7440-66-6) 43% and aluminum (CAS 7429-90-5) 55% coating. Coating weights range from 50-150 g/m² per side. May also be passivated or oiled similar to galvanize material.

Tin Plate

Electroplated with tin (CAS 7440-31-5) coating. Coating weights range from 0.9 to 15 g/m² per side. Treated with chromium passivation solution which leaves a chromium residue of 0.5 to 7.5 mg/m² per side. May be coated with an edible oil to prevent scratching. Oil coating typically .01 micro inches thick.

Chromium

Electroplated with chromium (CAS 7440-47-3) coating, Coating weights range from 0.1 to 0.17 g/m² per side. May be coated with edible oil similar to tin plate.

C2 Coating Electrical

Glass film composed of magnesium ortho-silicate formed during high temperature anneals.

C3 Coating Electrical

Oil modified polyester resin varnish film.

Prepared By: **UnifiedAlloys**
Telephone: (780) 468-5656
Note: **Contact Supplier (Quality Department) for additional information - Page 1 of 3**

Preparation Date: January 1, 2010

STEEL – MATERIAL SAFETY DATA SHEET

C5M Coating Electrical

An inorganic iron-silicate complex that is heat and oil resistant with good insulating properties.

Dry-Lube

Mixture of borate and carbonate soap lubricants for metal forming.

Pre-Lube

Petroleum based oil coating used for metal forming.

Lube Oil

Lubricating protective petroleum based oil.

Slushing Oil

Mineral oil based protective coating containing small quantities of anti-oxidants.

Varnishing Oil

Solvent applied petroleum oil protective coating leaving a wax-like protective coating.

Pre-coated

Cured paint / resin film applied to sheet steel. Galvanized or galvalume coated steel sheet.

Zincrometal

Protective coating of zinc rich paint over a chromate based primer compound. Coating is applied to one side of strip. Typical coating weights range from 0.215 to 0.325 g/m².

NOTE:

Individual coating components are present at values below the reporting requirements of the WHMIS ingredient disclosure list.

4. PHYSICAL DATA

Physical State: Solid

Odor: N/A

Evaporation Rate: N/A

Boiling Point: N/A

Vapor Pressure: N/A

Vapor Density: N/A

Freezing Point: 1530 Degrees Celsius

Density: 7.86

Coefficient Water / Oil Distribution: N/A

PH: N/A

Odor Threshold: N/A

Appearance: Silver Grey Metallic (Steel)

Solubility in Water: N/A

Specific Gravity: 7.65 to 7.94 (0.28 – 0.29 lb/in³)

5. FIRE / EXPLOSION HAZARD

1. Conditions of flammability: Steel products (Copper Metal) does not present fire or explosion hazards under normal conditions. Fine metal particles such as those produced in grinding or sawing can burn. High concentrations of metal filings may present an explosion hazard.
2. Means of extinction: For molten metal use dry powder or sand. Do NOT use water on molten metals.
3. Flashpoint and method of determination: N/A (under normal conditions)
- 4/5. Upper and Lower flammable Limit: N/A (under normal conditions)
6. Auto-ignition temperature: N/A (under normal conditions)
7. Hazardous Combustion Products: N/A (under normal conditions)
8. Explosion Data: sensitivity to mechanical impact: N/A (under normal conditions)
9. Explosion Data: sensitivity to static discharge: N/A (under normal conditions)

6. REACTIVITY DATA

Chemical Stability: Stable under normal condition of use and storage.

Conditions of Reactivity: N/A

Hazardous Decomposition Products: N/A

Incompatibility to Other Substances: YES - Contact with Mineral Acids will release Hydrogen Gas

STEEL – MATERIAL SAFETY DATA SHEET

7. TOXICOLOGICAL PROPERTIES

Route of Entry:

Prolonged skin contact with coated steel may cause skin irritation in sensitive individuals. Inhalation of metal particulate or elemental oxide fumes generated during welding, burning, grinding or machining may pose acute or chronic health effects.

Effects of Acute Exposure to Material:

Inhalation overexposure to manganese, copper or zinc (coated products) may cause metal fume fever characterized by fever and chills (flu-like symptoms). Appears 4-6 hours after exposure with no long-term effects.

Effects of Chronic Exposure to Material:

Chronic inhalation overexposure to metal fume (iron oxide fume) may cause a benign pneumoconiosis (siderosis) with few or no symptoms. Chronic inhalation of lead fumes may cause lead poisoning which can affect the digestive system, nervous system, muscles and joints.

Irritancy of Material: N/A

Sensitization to Material: N/A

Mutagenicity of Material: N/A

Reproductive Effects: N/A

Teratogenicity of Material: N/A

Synergistic Materials: N/A

Carcinogenicity of Material: N/A

IARC lists certain hexavalent chromium compounds under its group 1 category - "Confirmed Human Carcinogen."

IARC lists nickel and certain nickel compounds under its group 2A category - "Suspected Human Carcinogen."

NOTE:

Iron containing welding fumes has an exposure limit of 5 mg/m³ (ACGIH – TLV's 1988-89). Welding fumes may also contain contaminants from fluxes or welding consumables

8. PREVENTATIVE MEASURES

Personal Protective Equipment: All protective equipment is recommended during welding, burning and handling. Dependant upon processes being performed on material. Each operator must be addressed for suitable equipment.

Gloves: Protective gloves should be worn during welding, burning and handling operations.

Clothing: As required. Dependent on the operations and local safety codes.

Respiratory: Niosh/MHSA approved dust and fume respirator should be used to avoid excessive inhalation of particles when exposure exceeds TLV's.

Footwear: CSA Z195.02 approved Steel Toed Safety Shoes.

Eye: Safety glasses, goggles or face shield should be worn as required by exposure.

Other: Fume filter respirator. Gloves and eyewear are required during welding.

Engineering Controls (e.g. ventilation, enclosures, specify)

Ventilation: General or local exhaust ventilation during corrosion.

Leak and Spill Procedures: N/A

Waste Disposal: N/A

Storage Requirements: Keep stored material dry to prevent corrosion.

Special Shipping Information: N/A

9. FIRST AID MEASURES

Skin: Maintain good personal hygiene. Wash with soap and water. Seek medical attention if irritation persists.

Eyes: Flush eyes thoroughly with clean, lukewarm water for 15 minutes. Seek medical attention.

Inhalation: Move to fresh air. Seek medical attention if necessary.

Notes:

- Respiratory disorders may be aggravated by exposure to metallic and/or organic/inorganic coating dusts or fumes. Consult a Physician.
- Do not induce vomiting or give liquids to an unconscious person.