1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION		
PRODUCT NAME:	STEEL PLATE, COIL, AND SLAB	
PRODUCT CODE:	None established	
PRODUCT DESCRIPTION:	Carbon or High Strength, Low Alloy or Alloy	
FORMULA:	N/A	
SYNONYMS:	Steel Plate, Coil or Slab	
MSDS DATE:	April 2011	
MANUFACTURER/SUPPLIER		
Evraz Inc. NA P.O. Box 2760 Portland, OR 97208	Emergency Number:	800-242-9300 (CHEMTREC)
	Non-Emergency Number:	503-286-9651 Monday-Friday 8 - 5 PST

2. HAZARDS IDENTIFICATION
✸ ✸ ✸ ✸ ✸ ✸ ✸ **EMERGENCY OVERVIEW** ✸ ✸ ✸ ✸ ✸ ✸ ✸
In the finished state, steel is not expected to present inhalation, ingestion, or contact health hazards. Dust or fumes may be generated by operations involving grinding, welding, cutting, machining, etc. Dust or fumes may irritate the eyes, skin, and respiratory tract. Molten metal may cause thermal burns. Rough edges may cause physical abrasion or irritation.
ROUTES OF ENTRY: Inhalation, eye contact, skin contact
INHALATION: Chronic doses of airborne manganese can affect motor skills (symptoms include languor, sleepiness, weakness, emotional disturbances, spastic gait, and paralysis) and cause sexual dysfunction. Overexposure to iron oxide can cause a non-disabling lung condition called Siderosis, observed as an X-ray change. Inhalation of particulate can cause lung inflammation.
SKIN CONTACT: Contact with steel particulate may cause mechanical irritation or abrasion. Burns will result from contact with heated metal.
EYE CONTACT: Steel can cause physical irritation, tearing. Particles of iron which become imbedded in the eye may cause rust stains if not removed.
INGESTION: Not a likely route of entry. Not expected to be toxic by ingestion.
CARCINOGENICITY: **NTP:** Not listed in the 2005 11th Report on Carcinogens. **IARC:** Welding fume is listed as possibly carcinogenic to humans (Group 2B). **OSHA:** Not listed.

3. COMPOSITION		
INGREDIENT NAME	**CAS #**	**CONCENTRATION**
Iron (Fe)	7439-89-6	Balance
Manganese (Mn)	7439-96-5	< 2 %

[1]Iron metal is not considered hazardous under OSHA Hazard Communication definition. Manganese (Mn) and iron oxide fume (Fe_2O_3), represented in this MSDS, are classified as hazardous under OSHA regulations. In addition to the listed components, all commercial steel products contain small amounts of various elements in small quantities frequently referred to as "trace" or "residual" elements, which originate in the raw materials used. Based on statistical analyses of quality control data, average content of carbon, phosphorus, sulfur, silicon, copper, nickel, vanadium, niobium, aluminum, chromium, molybdenum, titanium, tin, boron, nitrogen, and calcium are not expected to exceed 1%. Based on data from raw materials suppliers, arsenic, beryllium and cadmium do not exceed 0.1%, and cobalt, selenium, zinc and tungsten do not

exceed 1%.
Coatings may be present on steel product. Refer to the coating MSDS for additional information.

4. FIRST AID MEASURES
For dusts or fumes which could be generated from the steel product:
INHALATION: If irritation occurs, remove to fresh air. Seek medical attention if symptoms persist.
SKIN: Wash thoroughly with soap and water, consistent with good hygiene practice. Remove metal splinters. Get medical advice if rash or persistent irritation or dermatitis occurs or if splinter is not easily removed.
EYE: Immediately flush with copious amounts of water for at least 15 minutes, carefully lifting eyelid to expose the eye to contact with the water. Remove contact lens, if present, and repeat flush. For contact with molten material, treat as for skin burns. If any symptoms or irritation persist, contact a physician.
INGESTION: If excessive particulate is ingested, consult a doctor. Do not induce vomiting.

5. FIRE FIGHTING MEASURES	
FLASH POINT:	N/A
AUTO IGNITION TEMPERATURE:	N/A
FLAMMABLE LIMITS:	N/A
EXPLOSIVE LIMITS:	N/A
HAZARDOUS COMBUSTION PRODUCTS: N/A	
FIRE AND EXPLOSION HAZARD: N/A	
EXTINGUISHING MEDIA: None required. This material is completely non-combustible. For fire in close proximity, use standard fire-fighting practices.	
PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS: Wear self-contained breathing apparatus and turnout gear consistent with standard practices.	

6. ACCIDENTAL RELEASE MEASURES:
SPILL OR LEAK PROCEDURES: Where dust is generated, vacuum or use water to wet down and minimize dust during cleanup. See Section 8 for exposure control and personal protection information.

7. HANDLING AND STORAGE:
HANDLING AND STORAGE PRECAUTIONS: Store away from strong oxidizers. Wash thoroughly after handling. If processed in a manner which generates dust or fumes, see Section 8 for specific controls and personal protection equipment.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:					
EXPOSURE GUIDELINES:					
Component	**OSHA PEL**		**ACGIH TLV**		**NIOSH REL**
	TWA	**STEL**	**TWA**	**STEL**	**TWA**
Iron oxide	10 mg/m^3	NE	5 mg/m$^{3\,(R)}$	NE	5 mg/m^3
Manganese	NE	C-5 mg/m^3	*0.2 mg/m^3	NE	NE
* 2011 Proposed TLV TWA of 0.2 mg/m3 (inhalable) and 0.02 mg/m3 (respirable) for manganese fume. N.E. – Not Established. C – Ceiling Limit.					
EYE PROTECTION: Wear safety glasses with side shields when handling or using this product as a general safe practice. For grinding, welding, and cutting of the product, use eye protection consistent with OSHA Standards and the American National Standards Institute (Z87.1-1989).					

SKIN PROTECTION: Wear leather gloves or welders gloves to protect against burns, cuts, and abrasions.

RESPIRATORY PROTECTION: Avoid breathing dust or fumes generated from grinding, welding, cutting, machining, etc.

- If dust or fume concentration is greater than the OSHA PEL, but less than 10 times PEL, use a NIOSH approved half-mask respirator with P-100 cartridge.
- For concentrations above 10 times PEL, but less than 50 times PEL use a NIOSH approved full-face respirator with P-100 cartridge or a powered air-purifying respirator.
- Where airborne concentrations may exceed 50 times PEL, use supplied-air.

ENGINEERING CONTROLS: Welding, sawing, burning, melting, brazing, grinding or other similar processes should be performed in well ventilated areas. Use local exhaust ventilation to maintain airborne dust or fume concentration below PEL. If ventilation fails to maintain concentrations below the PEL, respiratory protection is required by federal and/or state regulations.

GENERAL HYGIENE CONSIDERATIONS: Wash thoroughly after handling and before eating or drinking.

9. PHYSICAL AND CHEMICAL PROPERTIES:	
PHYSICAL STATE:	Solid
APPEARANCE:	Gray-black metallic solid. Iron oxide fume is red-brown in color.
ODOR:	Metallic taste
BOILING POINT:	N/A
MELTING POINT:	Fe2O3- 1597 deg C (2907 deg F)
pH:	N/A
SOLUBILITY IN WATER:	Insoluble. Soluble in dilute acids.
SPECIFIC GRAVITY:	7.6-7.8 (water=1)
% VOLATILE BY WEIGHT:	N/A
VAPOR PRESSURE:	Fe2O3- 0 torr at 20°C
VAPOR DENSITY:	N/A

10. REACTIVITY/STABILITY:

STABILITY: Stable at normal ambient temperature and pressure (70 °F and 760 mm Hg) or anticipated storage and handling conditions.

CONDITIONS TO AVOID: Avoid generation of dust, excessive heat and ignition sources, and incompatible materials.

HAZARDOUS POLYMERIZATION: Does not occur.

INCOMPATIBILITIES: Iron oxide reacts violently with calcium hypochlorite. Steel reacts with strong acids to release flammable/ explosive hydrogen gas.

DECOMPOSITION PRODUCTS: Manganese reacts with acids to release flammable/ explosive hydrogen gas. Thermal decomposition of iron can produce metal oxides.

11. TOXICOLOGICAL INFORMATION:

Skin and eye irritation studies were available for iron oxide. Toxicological studies for manganese are summarized in the Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile.

ACUTE DOSE EFECTS: LD50: Fe2O3- acute oral >10000 mg/kg (rat), Mn- oral >9000 mg/kg (rat)

REPEATED DOSE EFFECTS: Chronic inhalation overexposures to manganese may result in neurological damage and affect motor skills. ATSDR 2008 chronic inhalation reference concentration (RfC) of 0.04 µg/m3 for respirable manganese.

IRRITATION: Not expected to be irritating to skin or eyes.
SENSITIZATION: None listed
CARCINOGENICITY: See Section 3
GENETIC EFFECTS: None listed
REPRODUCTIVE TOXICITY: Chronic overexposures to manganese may result in impotence.
DEVELOPMENTAL EFFECTS: Animal studies indicate that exposure to high levels of manganese can cause birth defects in the unborn.

12. ECOLOGICAL INFORMATION:
Iron and manganese exist naturally in the environment. Manganese is limited in drinking water to reduce staining.

13. DISPOSAL CONSIDERATIONS:
Recovery and recycling, rather than disposal, should be the ultimate goal of handling efforts. If this product as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CRF 261. Dispose of according to local, state/provincial, and federal regulations.
EPA Waste Codes: N/A for product

14. TRANSPORT INFORMATION:	
D.O.T. SHIPPING NAME:	N/A
TECHNICAL SHIPPING NAME:	N/A
D.O.T. HAZARD CLASS:	N/A
U.N/N.A. NUMBER:	N/A
SPECIAL SHIPPING INFO:	N/A

15. REGULATORY INFORMATION:
Users should comply with applicable OSHA and other state and federal regulations, including (but not limited to) 29 CFR 1910.1000 (air contaminants) and 29 CFR 1910.1200 (hazard communication).
TSCA Inventory Status: Product excluded from the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
SARA Title III Sect. 302 (EHS) / CERCLA Hazardous Substances: This material contains no Reportable Quantity (RQ) Substances.
SARA Title III Sect. 311/312 Hazard Classes: Product excluded from SARA regulations.
SARA Title III Sect. 313 Toxic Chemicals: Manganese (N450)
Components are listed on the following US state right-to-know lists: Alaska, California, Florida, Illinois, Kansas, Minnesota, Missouri, New Jersey, Pennsylvania, Rhode Island, Texas, West Virginia, and Wisconsin.

16. OTHER INFORMATION:	
MSDS STATUS / REVISION NUMBER:	Final / 6.0
PREPARED BY:	PCA Health and Safety Consultants, Inc. Lake Oswego, OR (503) 652-6040