BETHLEHEM STEEL CORPORATION

MATERIAL SAFETY DATA SHEET
Date Issued: March 2000

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION INFORMATION

Product Name: Plate - Carbon
Plate - HSLA

Synonym(s): Carbon Plate Steel
HSLA Plate Steel
(Same MSDS as ASTM A36-97A
BLP AR-235 Rev. 2 '97

BETHLEHEM STEEL CORPORATION
Bethlehem, PA 18016-7699
For Additional Information, Contact: (610) 694-2296
Emergency Phone Numbers:
BETHLEHEM STEEL (610) 694-7290
CHEMTREC (Day or Night) 1-800-424-9300

2. COMPOSITION INFORMATION ON INGREDIENTS

COMPONENTS	CAS No.	Wt.%	OSHA PEL (mg/M^3)	ACGIH TLV (mg/M^3)	LD50 or LC50 Species/Route
Iron (FE)	7439-89-6	97 – 100	10 - Iron Oxide Fume	5 - Iron Oxide Fume as Fe	5.4 gm/kg mouse/oral
Aluminum (Al)	7429-90-5	<0.15	10 – Total Dust 5 – Respirable Fraction	10 – Metal Dust as Al 5 – Fume as Al	No Information
Carbon (C)	7440-44-0	0 - 0.75	Not Established	Not Established	No Information
Chromium (Cr)*	7440-47-3	0 - 0.8	1-Chromium Metal as Cr 0.5 - Chromium (II, III) Compounds as Cr 0.1 - Chromates as CrO_3	0.5 - Chromium Metal 0.5 - Chromium (II, III) Compounds as Cr 0.05 - Chromium (VI) Compounds as Cr	No Information
Copper (Cu)	7440-50-8	0 – 0.5	0.1 – Fume as Cu 1 – Dusts and Mists as Cu	0.2 – Fume 1 – Dusts and Mists as Cu	3.5 mg/kg mouse/intra-peritoneal
@Manganese (Mn)	7439-96-5	0 - 2	5 - Ceiling as Mn	5 - Dust as Mn 1 - Fume as Mn 3 - Fume as Mn (STEL)	9 gm/kg rat/oral
@ Nickel (Ni)	7440-02-0	0 - 0.5	1 - Metal as Ni 1 - Insoluble Compounds as Ni 1 - Soluble Compounds as Ni	1 - Metal 1 - Insoluble Compounds as Ni 0.1 - Soluble Compounds as Ni	No Information
Silicon (Si)	7440-21-3	< 0.65	15 - Total Dust 5 - Respirable Fraction	10	No Information

Material may contain trace or residual elements. The following are typical percentages for the elements identified: boron 0.003%, cobalt 0.015%, molybdenum 0.12%, niobium (columbium) 0.06%, phosphorous 0.035%, sulfur <0.33% (typically 0.035%), tin 0.030%, titanium 0.050%, and vanadium 0.11%.

*The chromium contained in this product is in the elemental form.

@ SARA Reportable - See Section 15. Regulatory Information.

3. HAZARDS IDENTIFICATION

Potential Health Effects: Carbon and HSLA plate products in their usual physical form do not pose a health hazard. Inhalation of metal dust and fume may result from further processing of the material by user, particularly during welding, burning, grinding, and machining activities, and should be evaluated by an industrial hygienist. Presented below are the potential health effects that have been identified for the ingredients listed which are of an industrial hygiene significance.

Chromium: Chromium metal and its divalent and trivalent compounds are of low toxicity. Adverse reactions on the skin may include dermatitis for a Cr-sensitive individual. Long-term excessive inhalation exposure to ferro-chromium alloys may cause lung changes in workers exposed to these alloys. Exposure to chromium metal does not give rise to pulmonary fibrosis or pneumoconiosis. Chromium metal, unlike hexavalent chromium (Chromium VI), has not been linked to an increased risk of cancer.

Iron Oxide: Long-term excessive inhalation exposure to iron oxide fume or dust has been associated with a benign lung condition known as siderosis. No physical impairment of lung function has been linked to siderosis.

Manganese: Manganese dust and fume can act as minor irritants to the eyes and respiratory tract. Excessive inhalation exposures may adversely affect the central nervous system (CNS). Early symptoms may include weakness in lower extremities, sleepiness, salivation, nervousness, and apathy. In more advanced stages, severe muscular incoordination, impaired speech, spastic walking, mask-like facial expression, and uncontrollable laughter may occur. Excessive inhalation exposure to manganese fume may result

a flu-like illness termed metal fume fever. Excessive exposure to manganese has been linked to increased incidence of umonia, bronchitis and inflammation of the lungs.

Nickel: Nickel fume and dust are respiratory irritants and excessive exposure may cause severe inflammation of the lungs. Prolonged and repeated skin contact with nickel and its compounds may cause an allergic dermatitis. The resulting skin rash is often referred to as "nickel itch." Nickel and its compounds may also produce eye irritation, particularly on the inner surfaces of the eyelids. Studies have linked nickel and certain nickel compounds to an increased incidence of cancer of the respiratory system.

Usual Route(s) of Entry: Inhalation

Medical Conditions Possibly Aggravated: Individuals with chronic diseases or disorders of the respiratory system should consult a physician regarding workplace exposure to ingredients.

	IARC	NTP	OSHA
Carcinogen References: Nickel	Yes	Yes	No

4. FIRST AID MEASURES

Eye: Treat for foreign body in the eye. Seek medical attention.

Skin: Not anticipated to pose a significant skin hazard. However, should dermatitis develop, wash affected area thoroughly with mild soap and water. If irritation or other symptoms develop, seek medical attention.

Ingestion: Not considered an ingestion hazard.

Inhalation: Remove from excessive exposure levels. Seek medical attention. Give artificial respiration if breathing has stopped.

5. FIRE FIGHTING MEASURES

products do not present fire or explosion hazards under normal conditions. Molten metal may react violently with water. n concentrations of metallic fines in the air may present an explosion hazard.

Fire fighters are to wear full protective equipment, including full bunker gear and SCBA respiratory protection.

6. ACCIDENTAL RELEASE MEASURES

Any excess product can be recycled for further use, disposed in an appropriately permitted waste landfill, or disposed by other methods which are in accordance with local, state, and federal regulations.

7. HANDLING AND STORAGE

Work Practices: Use lifting and work devices, e.g., crane, hoist, etc., within rated capacities and in accordance with manufacturer's instructions when handling these products.

Should be handled in ways to minimize generation of airborne dust and fume.

Nonmetallic coatings, i.e. oils, paints, epoxies, laminates, etc. may be applied (generally at the customer's request) to the surface of these products. Burning or welding on steel products with nonmetallic coatings may produce emissions which may cause eye and respiratory tract irritation or other respiratory system effects. The possible presence of these coatings should be recognized and considered when evaluating potential employee health hazards and exposures during handling and welding or other dust/fume generating activities. Prolonged contact with nonmetallic coating oils may cause skin irritation and should be avoided.

8. EXPOSURE CONTROLS /PERSONAL PROTECTION

Engineering Controls (Ventilation, etc.): Provide ventilation sufficient to maintain exposure levels below the applicable exposure limits.

n airborne emissions may occur due to further processing: (1) avoid breathing dust and fume, (2) evaluate potential employee e, (3) minimize generation of airborne emissions, (4) maintain surfaces free as practical of accumulated material, (5) use pro ve clothing as specified by an industrial hygienist or safety professional where exposure levels may be excessive, (6) do not smoke in work area, (7) wash hands before eating, drinking or smoking and after handling, (8) change contaminated clothing before leaving work premises.

Removal of surface coatings should be considered prior to welding or other fume generating activities.

Eye Protection: Use safety glasses and/or other protective eyewear as specified by a safety professional where risk of eye injury is present.

Skin Protection: Not anticipated to pose significant skin hazard. Use gloves (i.e., cotton, leather or kevlar) and/or protective clothing (i.e., Tyvek, cotton) as specified by an industrial hygienist or safety professional where exposure levels are excessive or where handling material could result in punctures or cuts to the hands or arms.

Respiratory Protection: When engineering controls are not feasible or sufficient to lower exposure levels below the applicable exposure limit, use a NIOSH-approved respirator which protects against dust or fume as specified by an industrial hygienist or qualified safety professional in accordance with manufacturer instructions and use limitations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid
Specific Gravity: 7.6 to 7.8
Appearance and Odor: Metallic grey solid; no odor
Melting Point: 2800°F

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Acids
Hazardous Decomposition Products: Metal oxides of listed ingredients.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

See available LD50 and/or LC50 information in Section 2.

12. ECOLOGICAL INFORMATION

Steel products in their usual form do not pose an ecological hazard.

13. DISPOSAL CONSIDERATION

Any excess product can be recycled for further use, disposed in an appropriately permitted waste landfill, or disposed by other methods which are in accordance with local, state, and federal regulations.

14. TRANSPORT INFORMATION

Not a hazardous material for DOT shipping.

15. REGULATORY INFORMATION

SARA Title III Hazard Categories: This material is considered, under applicable definitions, to meet the following categories.

( ) Immediate (acute) Health
( ) Reactive
(x) Delayed (chronic) Health
( ) Fire
( ) Sudden Release of Pressure

SARA 313 Information: This product contains chemicals subject to the reporting requirements of Section 313 of TITLE III of the Superfund Amendments & Reauthorization Act (SARA) of 1986 and 40 CFR, Part 372 (see Section 2; the @ symbol denotes chemicals subject to these reporting requirements). Please also note that if you repackage or otherwise redistribute this product to industrial customers, SARA 313 requires that a notice be sent to those customers.

16. OTHER INFORMATION

e following label hazard ratings are recommended:

NFPA		HMIS	
Fire	0	Health	0
Health	0	Flammability	0
Reactivity	0	Reactivity	0
Specific Hazard	None		

bjective in sending this information is to help you protect the health and safety of your personnel and to comply with the OSHA Hazard nication Standard and Title III of the Superfund Amendment and Reauthorization Act of 1986. BETHLEHEM MAKES NO \. NTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WA. ANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE.