



A Milacron Company

Dear Customer:

Enclosed is the **REVISED** Material Safety Data Sheet for our product:

D-M-E #2 & #3 STEEL

The products we distribute are not normally hazardous in their natural state. However, steel does contain elements deemed by OSHA to be hazardous when released by manufacturing, such as brazing, burning, grinding, sawing or welding, etc. Failure to control dust and fumes can result in chronic health problems.

We believe the information, supplied by the Manufacturer, on the enclosed MSDS to be accurate; however, D-M-E makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability for the information so presented.

Should you require additional information, please call or write the Manufacturer listed on the MSDS.

Sincerely yours,

D-M-E Company
Director of Operations
Ken Jasina

Revised: May 2005



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION INFORMATION

Product Name: Plate - Alloy

ISG Burns Harbor Plate, Inc.
250 West US Highway 12, Burns Harbor, IN 46304-9529
For Additional Information, Contact: (219) 787-4642
Emergency Phone Numbers:
ISG Burns Harbor Dispatcher (219) 787-3444

Synonym(s): Alloy Plate Steel

2. COMPOSITION / INFORMATION ON INGREDIENTS

| COMPONENTS | CAS No. | Wt. % | OSHA PEL (mg/M ³) | ACGIH TLV (mg/M ³) |
|-----------------|-----------|---------|--|--|
| Iron (Fe) | 7439-89-6 | 88-100 | 10 - Iron Oxide Fume | 5 - Iron Oxide Fume as Fe |
| Aluminum (Al) | 7429-90-5 | <0.15 | 10 - Total Dust 5 - Respirable Fraction | 10 - Metal Dust as Al 5 - Fume as Al |
| Carbon (C) | 7440-44-0 | 0-1.6 | Not Established | Not Established |
| @Chromium (Cr)* | 7440-47-3 | 0-10.0 | 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 |
| @Copper (Cu) | 7440-50-8 | 0-1.75 | 0.1 - Fume as Cu 1 - Dusts and Mists as Cu | 0.2 - Fume 1 - Dusts and Mists as Cu |
| @Manganese (Mn) | 7439-96-5 | 0 - 2.0 | 5 - Ceiling as Mn | 0.2 - Elemental as Mn 0.2 - Inorganic compounds as Mn |
| Molybdenum (Mo) | 7439-98-7 | 0 - 1.8 | 15 - Total Dust 5 - Soluble Compounds | 10 - Insoluble Compounds 5 - Soluble Compounds |
| @ Nickel (Ni) | 7440-02-0 | 0-9.5 | 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 |
| Silicon (Si) | 7440-21-3 | <2.25 | 15 - Total Dust 5 - Respirable Fraction | 10 |

Material may contain trace or residual elements. The following are typical percentages for the elements identified: boron 0.005%, cobalt 0.06%, niobium (columbium) 0.06%, phosphorous 0.035%, sulfur <0.1% (typically 0.035%), tin 0.03%, titanium <0.33% (typically 0.05%), and vanadium <0.5% (typically 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: Alloy 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. The presence of nonmetallic coatings (for example, oils, paints, epoxies, laminates, etc.) on steel products should be considered when evaluating potential employee health hazards during handling, welding, grinding, sanding or other fume/dust generating activities. Presented below are the potential health effects that have been identified for the ingredients listed that are of industrial hygienic 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 those 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 in a flu-like illness termed metal fume fever. Excessive exposure to manganese has been linked to increased incidence of pneumonia, 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. Flush eyes with large amounts of water. 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.
- Inhalation:** Remove from excessive exposure levels. Seek medical attention. Give artificial respiration if breathing has stopped.
- Ingestion:** Not considered an ingestion hazard.

5. FIRE FIGHTING MEASURES

Steel products do not present fire or explosion hazards under normal conditions. Molten metal may react violently with water. High 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 in accordance with local, state, and federal regulations. Finely divided, dry particles should be removed by vacuuming or wet sweeping to prevent spreading dusts. Avoid using compressed air.

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. Operations with the potential for generating high concentrations of airborne particles should be evaluated and controlled as needed. Minimize generation of airborne dust and fume. Avoid breathing metal dust or fumes.

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 that 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.

When airborne emissions may occur due to further processing: (1) avoid breathing dust and fume, (2) evaluate potential employee exposure, (3) minimize generation of airborne emissions, (4) maintain surfaces free as practical of accumulated material, (5) use protective 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 that 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 | pH: Not Applicable |
| Appearance and Odor: Metallic gray solid; no odor | Vapor Pressure: Not Applicable |
| Boiling Point: Not Applicable | Vapor Density: Not Applicable |
| Melting Point: 2800°F | Flashpoint: Not Applicable |
| Specific Gravity: 7.6 to 7.8 | Evaporation Rate: Not Applicable |
| Percent Volatile by Volume: 0 | Solubility in Water: Not Soluble |
| Percent Solid (%) by Weight: 100 | |

10. STABILITY AND REACTIVITY

Chemical Stability: Stable **Conditions to Avoid:** Acids **Hazardous Polymerization:** Will not occur
Hazardous Decomposition Products: Metal oxides of listed ingredients and carbon monoxide from nonmetallic coatings.

11. TOXICOLOGICAL INFORMATION

Alloy Plate has not been evaluated as a whole. Toxicity data for components:

| | |
|-------------------------|--|
| Aluminum (Al) | LD50: No Information |
| Elemental Carbon (C) | LD50: No Information |
| Chromium (Cr) Elemental | TDLo: Cr III - 90 mg/kg - Rat/Intraperitoneal- |
| Copper (Cu) | TDLo: 120 mg/kg - human/oral |
| Iron (Fe) | LD50: 30 g/kg - rat/oral |
| Manganese (Mn) | LD50: 9 g/kg rat/oral |
| Molybdenum (Mo) | LD50: No Information |

Nickel (Ni)
Silicon (Si)

LDLo: 5 g/kg - Oral/Rat, LDLo: 5 mg/kg - Oral, + TCLo: 15 mg/m³/91W-Inhalation/adult Guinea Pig
LD50: No information

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 in accordance with local, state, and federal regulations.

14. TRANSPORT INFORMATION

Not a hazardous material for DOT shipping.

15. REGULATORY INFORMATION

The following list of regulatory requirements relating to an ISG Burns Harbor, Inc. product may not be complete and should not be solely relied on for all regulatory compliance responsibilities.

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

- Immediate (acute) Health
- Reactive
- 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

The following label hazard ratings are recommended:

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

DISCLAIMER: Our objective in sending this information is to help you protect the health and safety of your personnel and to comply with the OSHA Hazard Communication Standard and Title III of the Superfund Amendment and Reauthorization Act of 1986. This information is taken from sources or is based upon data believed to be reliable. ISG Burns Harbor, Inc. makes no warranty as to the absolute correctness, completeness, or sufficiency of any of the foregoing, or that any additional or other measures may not be required under particular conditions. ISG BURNS HARBOR, INC. MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE.

ALLOY PLATE
ISG Burns Harbor Plate, Inc.



Contains: Aluminum (CAS 7429-90-5), Carbon (CAS 7440-44-0), Chromium (CAS 7440-47-3), Copper (CAS 7440-50-8), Iron (CAS 7439-89-6), Manganese (CAS 7439-96-5), Molybdenum (CAS 7439-98-7), Nickel (CAS 7440-02-0) and Silicon (CAS 7440-21-3)

CAUTION

Hazards: Inhalation of metal dust and fume may result from further processing of the material by the user, particularly during welding, burning, cutting, grinding and machining activities. Long-term excessive exposure to the fume or dust may cause respiratory system effects. Studies have associated nickel and certain nickel compounds to an increased risk of cancer of the respiratory system.

Recommended Handling Procedures:

- Avoid creating excessive dust or fume levels. Mechanical ventilation or personal protective equipment (i.e., eye protection, protective clothing and NIOSH-approved respiratory protection) may be necessary during welding, burning, grinding and other dust/fume generating activities.
- The presence of nonmetallic coatings (for example, oils, paints, epoxies, laminates, etc.) on these products should be considered when evaluating potential employee health hazards. Removal of surface coatings should be considered prior to welding or other dust/fume generating activities. Avoid prolonged skin contact with nonmetallic coating oils.

FIRST AID AND MEDICAL EMERGENCY PROCEDURES

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

Skin Contact: Not anticipated to pose a significant skin hazard. However, should dermatitis develop, wash affected area with mild soap and warm water. Seek medical attention if conditions persist.

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

Ingestion: Not considered an ingestion hazard.

For more detailed health and safety information, read the Material Safety Data Sheet (MSDS) for this product. *July 1, 2003*
ISG Burns Harbor Plate, Inc. 250 West US Highway 12, Burns Harbor, IN 46304-9529
Emergency Phone Numbers: ISG Burns Harbor Dispatcher (219) 787-3444