

H=0 F=0 R=0 PPE=N/A



MATERIAL SAFETY DATA SHEET

(Complies with OSHA Hazard Communication Standard 29CFR 1910.1200)

MSDS - Carbon, Low- and High-Alloy Steel Products
Revision 0: *ALMEN STRIPS*
Supersedes - Original Issue
Issue Date - March 1986
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SECTION I — Identification

Manufacturer/Supplier Name: **Sandvik Steel Company**
Information Supplied By and Emergency Phone Number: **Sandvik Steel Company (717) 587-5191**
Address: **P.O. Box 1220, Scranton, PA 18501-1220**
Trade Name: **SANDVIK**
Classification: **Carbon, Low- and High-Alloy Steel (ALMEN STRIPS)**
Product Type: **Blooms, Billets, Slabs; Sheet, Strip, Plate; Bar, Rod, Wire; Tubular Products**

SECTION 2 — Hazardous* Ingredients

Element	CAS No.	Contaminant	Contaminants and Exposure Limits		Max. Wt. % (3) (4)
			PEL(1)	TLV(2)	
Carbon	7440-44-0	NOT LISTED			1.2
Chromium	7740-47-3	Soluble Cr Salts	0.5	0.5	30.0
		Metal, Insoluble Cr Salts	0.5	0.5	
Iron	7439-89-6	Iron Oxide Fume	10	5	98.0
		As Fe		5	
Manganese	7439-96-5	Manganese Dust	5	5	19.0
		Manganese Fume	3	1	
Silicon	7440-21-3	Nuisance Dust	5	10	5.0
Nickel	7740-02-0	Metallic Ni	1	1	3.7
		Soluble Ni Compounds	0.3	0.1	
Molybdenum	7439-98-7	Soluble Mo Compounds	5	5	7.0
		Insoluble Compounds	15	10	
Titanium	7440-32-6	Ti Dioxide	15	5	1.2
Aluminum	7429-90-5	Welding Fume		5	2.0
Tungsten	7440-33-7	Tungsten Dust	5	5	1.3

*The term "Hazardous" in "Hazardous Ingredients" should be interpreted as a term required and defined in the OSHA Hazard Communication Standard (29 CFR Part 1910.1200) and does not necessarily imply the existence of any hazard. Carbon, low- and high-alloy steel products applicable to this sheet as shipped are non-reactive, non-flammable, non-explosive, and essentially non-hazardous until welded.

- (1) Permissible Exposure Limit (mg/m³) OSHA (29 CFR 1910)
- (2) Threshold Limit Value (mg/m³) - American Conference of Governmental Hygienists
- (3) Wt % 1% or greater of .1% or greater if included in one of the following:
 - National Toxicology Program (NTP) Annual Report on Carcinogens
 - International Agency for Research on Cancer (IARC) Monographs
- (4) See NOTE in Section 9

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SECTION 3 — Physical and Chemical Characteristics

— Melting Point: °F °(C)	Greater than 2550 (1400)
— Vapor Pressure:	Not Applicable
— Vapor Density (Air = 1):	Not Applicable
— Solubility in Water:	Negligible
— Appearance and Odor:	Dull gray to brightly polished silver and odorless
— Specific Gravity (H ₂ O = 1):	Greater than 7
— % Volatile by Volume (%):	Not Applicable
— Evaporation Rate:	Not Applicable

SECTION 4 — Fire and Explosion Hazard Data

— Flash Point: °F °(C)	Not Applicable
— Extinguishing Media:	Use methods applicable to surrounding area
— Special Fire Fighting Procedures:	Use self-contained breathing apparatus for protection against degradation products and fire fighting technique(s) or agent(s) applicable to surrounding materials
— Flammable Limits:	Not Applicable
— Unusual Fire and Explosion Hazards:	NONE

SECTION 5 — Health Hazard Data

Applicable Statutory or Recommended Occupational Exposure Limits:

No Threshold Limit Value (TLV) or Permissible Exposure Limit (PEL) exists for steel. See chart in SECTION 2 for listing of the individual constituents.

Effects of Overexposure:

ACUTE —

Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fume fever; or produce flu-like symptoms.

CHRONIC —

Aluminum: May initiate fibrotic changes to lung tissue

Chromium: Skin ulceration, irritative dermatitis, allergic reaction, ulceration of the mucous membranes, perforation of the nasal septum, bronchial carcinoma, adenocarcinoma, mutagen(?) Listed NTPARC and IARC Monographs

Iron: Siderosis

Manganese: Bronchitis, pneumonitis, lack of coordination

Molybdenum: Morphological changes in the liver, kidneys, and spleen, anemia, diarrhea, bone deformity and growth retardation

Nickel: Inflammation of respiratory tract, pneumoconiosis. Skin sensitizer. Certain nickel compounds can cause cancer. Listed NTPARC and IARC Monographs

Titanium: No Chronic debilitating symptoms indicated

Tungsten: Over exposure to tungsten dust can result in hard mental disease whose symptoms are cough dyspnea and wheezing.

Emergency and First Aid Procedures:

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

Other Special Protection Information:

Ventilation:

Local exhaust ventilation should be used to keep worker exposure below accepted exposure limits during welding and grinding operations.

Respiratory Protection:

When engineering or administrative controls are not feasible to control overexposure or while they are being instituted, appropriate NISH approved respirators shall be used, and selected according to 29 CFR 1910.134.

Eye Protection:

Appropriate protective eye and face equipment shall be worn where there is a reasonable probability of injury that can be prevented by such equipment (such as welding, grinding).

Protective Gloves:

Appropriate and as needed to protect against exposure to chemical or physical hazards.

SECTION 6 — Reactivity Data

STABILITY: Considered Stable

INCOMPATIBILITY: Not incompatible with materials

HAZARDOUS POLYMERIZATION: Not Applicable

HAZARDOUS DECOMPOSITION PRODUCTS: Not Applicable

CONDITIONS TO AVOID: May liberate metal fumes, metal oxides, or other oxides, if exposed to elevated temperatures. Acid pickling of product may result in the formation of hexavalent chromium which is a hazardous waste and suspect carcinogen.

SECTION 7 — Precautions For Safe Handling And Uses/Applicable Control Measures

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not Applicable

WASTE DISPOSAL METHOD: Prevent waste from contaminating the surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations. Also may be reclaimed for re-use.

SECTION 8 — Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances. Also see SECTION 5 of this MSDS.

SECTION 9 — Special Precautions and Additional Comments

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Not Applicable

OTHER PRECAUTIONS: Not Applicable

NOTE: The percent composition listed in SECTION 2 reflects the range that is possible within this group of products. These are not the technical specifications for a particular product. Actual composition will fall within this range, but will depend on specifications for the particular product. Thus, when welding or cutting products containing chromium or nickel (for example), the potential for exposure to chromium or nickel obviously increases as their percentage composition increases. Therefore, we strongly urge that all operations with potentially hazardous exposures be evaluated by a competent industrial hygienist. See SECTIONS 4 and 5 for further information.

These alloys alone present no health hazard unless welded, burned, ground or cut. During these procedures it is possible that hazardous amounts of fume or dusts may be generated. It is advised that your particular operation be evaluated by a competent health professional to determine whether or not a hazard exists.
