

MATERIAL SAFETY DATA SHEET

I. MATERIAL IDENTIFICATION

Material Name: Carbon and Alloy Steels
 Other Designations: A-36, Alloy SBQ, Carbon SBQ, 60 Rebar, 11xx SBQ

II. HAZARDOUS INGREDIENTS

	<u>CAS Number</u>	<u>%</u>	<u>OSHA</u> <u>8-hr TWA</u>	<u>ACGIH</u> <u>8-hr TWA</u> <u>(1984-85)</u>	<u>ACGIH</u> <u>STEL</u> <u>(1984-85)</u>
Iron	(1309-37-1)	> 94	10 mg/m ³	5 mg/m ³ (as iron oxide fume)	10 mg/m ³
Manganese	(7439-96-5)	< 1	(Dust) 5 mg/m ³ * (Fume) ---	5 mg/m ³ 1 mg/m ³	--- 3 mg/m ³
Carbon	(1333-86-4)	< 1	3.5 mg/m ³	3.5 mg/m ³ (as carbon black)	7 mg/m ³
Silicon	(7440-21-3)	< 1	(1)	(2)	20 mg/m ³
Nickel	(7440-02-0)	< 1	1 mg/m ³	1 mg/m ³	---
Chromium	(7440-47-3)	< 1	1 mg/m ³	.5 mg/m ³	---
Molybdenum	(7439-98-7)	< 1	15 mg/m ³	10 mg/m ³	20 mg/m ³

* Ceiling Limit

(1) 1% quartz, 15 mg/m³ of total dust or 5 mg/m³ respirable dust.

(2) 1% quartz, 10 mg/m³ of total dust or 5 mg/m³ respirable dust.

NOTE: Chromium, cobalt-chromium alloy, and nickel have been identified as potential human carcinogens. See Section VI, Health Hazard Data.

MATERIAL SAFETY DATA SHEET

III. PHYSICAL DATA

Melting Point: 1371-1482° C
Specific Gravity (@ 60° F): 7.84
Boiling Point (of iron dust): 3,000° C

Vapor Pressure: 1mm HG @ 1787° C
(of iron dust)
Solubility in water: insoluble

Appearance: Gray

IV. FIRE AND EXPLOSION DATA

Flash Point: Information not available Flammability Limits: Information not available
Auto-ignition Temperature (of solid iron in oxygen): 930° C

Solid, massive form of material is not combustible. Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat or flames, or by chemical reaction. Fires have been reported in piles of fine scrap, probably due to contamination from oil or other materials which support combustion. Powdered chromium may explode spontaneously in air.

Fire Extinguishing Methods: Use special mixtures of dry chemical, or sand. Fire fighters should wear self-contained breathing apparatus and protective clothing.

V. REACTIVITY DATA

Massive material is stable at ordinary temperatures, but dust presents moderate fire and explosion hazards. Material may be incomparable with acids, bases, and oxidizers. For additional information, users should consult data sheets on individual component elements.

VI. HEALTH HAZARD DATA

TLV: See Section II.

Primary Routes of Entry: Inhalation of dust or fumes.

Under normal handling and use, exposure to the massive form of carbon steel presents few health hazards. Thermal cutting and melting of steel may produce fumes containing the component elements, and breathing these fumes may present potentially significant health hazards. The exposure levels in Section II are relevant to fumes and dusts. Special precautions should be taken if steel is contaminated; see Section IX.

Chronic overexposure to iron oxide fume may cause an apparently benign pneumoconiosis (siderosis with few or no symptoms). Overexposure to dusts and especially fumes containing component elements of ferrous alloys may cause skin, nose, mouth, and eye irritation and lung changes in workers, potentially leading to pulmonary diseases.

Fumes of copper and manganese may cause metal fume fever with flu-like symptoms, and copper may cause skin and hair discoloration. Overexposure to manganese fumes can cause chronic manganese poisoning. Early symptoms include headaches, apathy, sleepiness, and weakness or cramps in the legs. Chronic overexposure can affect the central nervous system, ultimately leading to emotional disturbances, gait and balance difficulties, and paralysis.

Chromium and nickel compounds have been associated with allergic reactions and rashes, and lung changes. Nickel is a respiratory irritant and can cause pneumonitis.

Chromium, cobalt-chromium alloy, and nickel have been identified as potential cancer-causing agents.

MATERIAL SAFETY DATA SHEET

FIRST AID:

- Eye Contact: Flush well with running water to remove particulate. Get medical attention.
Skin Contact: Brush off excess dust. Wash area well with soap and water.
Inhalation: Remove to fresh air. Get medical attention.
Ingestion: Seek medical help if large quantities of material have been ingested.
(Ingestion of significant amounts of scrap metal is unlikely.)

VII. SPILL PROCEDURES

No special precautions are necessary for spills of bulk material. If large quantities of dust are spilled, remove by vacuuming or wet sweeping to prevent heavy concentrations of airborne dust. Clean-up personnel should wear respirators and protective clothing.

Steel can be reclaimed for reuse. Follow Federal, State and Local regulations regarding disposal.

VIII. SPECIAL PROTECTION INFORMATION

Use general and local exhaust ventilation to keep airborne concentrations of dust or fumes below the TLV. Employees should wear MSHA or NIOSH approved respirators for protection against airborne dust or fumes. Full protective clothing should be worn by workers exposed to heavy concentrations of dust, and showering should be required before changing into street clothes. Goggles and barrier creams may be necessary to prevent skin sensitization and dermatitis.

Approved safety glasses or goggles should be worn when working with dusty material. Safety eye-wash stations should be provided in close proximity to work areas.

Pre-employment and periodic medical evaluations could be considered. Attention should be directed toward skin, eyes, respiratory tract, pulmonary function, and neurologic health. Chest X-rays should be included if symptoms are present.

Food should not be consumed in the work area.

Special precautions should be taken if steel is contaminated; see Section IX.

IX. SPECIAL PRECAUTIONS

Use good housekeeping practices to prevent accumulations of dust and to keep airborne dust concentrations at a minimum. Avoid breathing dust or fumes.

Store material away from incompatible materials, and keep dust away from sources of ignition.

This material is potentially contaminated with coatings, paints, preservatives, cutting oils, and other contaminants. If the material is contaminated, special precautions (such as process control) and personal protective equipment, appropriate to the nature of the suspected contaminants) should be taken to avoid resulting exposures when handling, cutting (mechanical or thermal), and/or melting.