

## Material Safety Data Sheet (MSDS)

Label information for SC-000-040 REV. 8 DATE 1/97

The following hazard information is required for labels under OSHA Standard 1910.1200 and applicable instructions. Other label information may be added.

### MALLEABLE IRON CASTINGS

#### CAUTION

Grinding, welding, or arc gouging of this casting creates dust or fumes containing substances listed below with corresponding possible health effects after prolonged or repeated overexposure:

Carbon: Respiratory and skin irritation.

Chromium, Hexavalent: Lung cancer.

Iron: Siderosis "iron pigmentation" of the lung, which can be seen in a chest x-ray but causes little or no disability.

Silicon: Skin, eye and nose irritation.

Wear eye protection. Wear a NIOSH-approved respirator if dust or fumes are excessive.

For additional information, see Material Safety Data Sheet SC-000-040 Rev. 8 for this material.



Distributed By -

**FREEMAN Mfg. & Supply Co.**

1101 MOORE ROAD

AVON, OHIO 44011-1011 (800) 321-8511



SC-C-000-040 REV.8  
DATE 1/97

# Material Safety Data Sheet (MSDS)

Conforms to requirements of OSHA standard 1910.1200  
"Hazard Communication" and to various state "Employee Right to Know" Laws  
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## MALLEABLE IRON CASTINGS

### SECTION I — PRODUCT IDENTIFICATION

This MSDS supplied for: MALLEABLE IRON CASTINGS  
ASTM ALLOY DESIGNATION

### SECTION II — HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV (mg/m <sup>3</sup> )	PEL (mg/m <sup>3</sup> )
Carbon	7440-44-0	2.0-3.0	N/E	N/E
Chromium*	7440-47-3	0.02-0.10		
Chromium (II) Compounds as Cr			0.5	0.5
Chromium (III) Compounds as Cr			0.5	0.5
Chromium Metal as Cr			0.5	1.0
Chromium VI Insoluble Compounds			0.01	N/E
Chromic Acid and Chromates as CrO <sub>3</sub>			N/E	1.0 mg/10m <sup>3</sup>
Chromium VI Compounds Water Soluble as Cr			0.05	0.1 (CL)
Iron	1309-37-1	92.9-96.6		
Iron Oxide Fume (Fe <sub>2</sub> O <sub>3</sub> )			N/E	10.0
Iron Oxide Dust and Fume (Fe <sub>2</sub> O <sub>3</sub> )			5.0	N/E
Silicon	7440-21-3	0.8-2.0		
Total Dust			10.0	15.0
Total Respirable Dust			N/E	5.0

Vendor name and address:

KIRSH FOUNDRY INC.  
125 ROWELL ST.  
BEAVER DAM, WI 53916  
(414) 887-0395

Emergency phone number:

### SECTION II — HAZARDOUS COMPONENTS (cont'd)

N/E = none established. N/A = not applicable. N/D = no data available.  
TLV = American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (8-hour time weighted average).  
PEL = OSHA Permissible Exposure Limit. The PEL values given are those promulgated as final limits as part of OSHA's 1989 PEL project (8-hour time weighted average).  
mg/m<sup>3</sup> = Milligrams per cubic meter of air.  
NTP = National Toxicology Program.  
CL = Ceiling Limit.  
STBL = Short Term Exposure Limit.

### CARCINOGEN CLASSIFICATION

INGREDIENT	OSHA NTP	IARC	TARGET ORGAN
Chromium Hexavalent N	1	1	Lung

Y = Listed as Human Carcinogen. N = Not Listed as a Human Carcinogen.  
Code for IARC (International Agency for Research on Cancer) evidence for human carcinogenicity: 1 = positive; 2A = probable; 2B = possible; 3 = not classified; 4 = probably negative.  
Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "0%" may not be present in certain grades.

\*This constituent, a toxic chemical, makes this product subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Quantity threshold amounts are 25,000 pounds for manufacturing, importing or processing and 10,000 pounds for otherwise using the listed chemical. Chemicals marked \*\* are reportable only if in the form of dust or fume.

**SECTION III — OVERVIEW**

There are no chemical hazards from these castings in solid form.

Dust or fumes generated by machining, grinding, or welding of the casting will put contaminants in the air. Since the casting is more than 90 percent iron, most of the dust or fume will be iron or iron oxide.

High production dry machining of malleable iron castings usually requires local exhaust ventilation.

Flame cutting, arc gouging, or welding of the casting generates iron oxide fume. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on chest x-ray but causes little or no disability. Also see the Material Safety Data sheet for the welding rod being used.

Since these castings contain up to 0.1 percent chromium, airborne contaminants from machining or welding will contain traces of chromium dust or fume. If total welding fume is adequately controlled, chromium will also be controlled.

Water insoluble hexavalent chromium is classified as a human carcinogen by the ACGIH. Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.) IARC classifies hexavalent chromium as Class 1, i.e., that there is positive evidence that it can cause human lung cancer.

Other toxic metals in the alloy are present in small amounts that will not present a hazard if total dust and fume are adequately controlled.

Grinding castings that have not been cleaned or that contain embedded silica will generate significant amounts of dust containing free silica, which can cause silicosis.

**SECTION III — OVERVIEW (cont'd.)**

Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator. IARC has classified crystalline silica as a Class 2A carcinogen, probably capable of causing lung cancer.

**SECTION IV — PHYSICAL DATA**

- PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor
- BOILING POINT: 2750C for iron
- VAPOR PRESSURE: N/A
- VAPOR DENSITY: N/A
- SOLUBILITY IN WATER: N/A
- SPECIFIC GRAVITY: 7.86 for iron
- PERCENT VOLATILE BY VOLUME: N/A
- EVAPORATION RATE: N/A

**SECTION V — FIRE AND EXPLOSION DATA**

Castings will not burn or explode.

**SECTION VI — HEALTH HAZARD DATA**

**EYES:** Metal particles in the eyes may cause irritation if not removed. Contact lenses should be worn with caution in a metalcasting environment. Obey work rules concerning contact lenses.

**SKIN:** Carbon: Skin irritation; Silicon: Skin irritation.

**BREATHING:** Prolonged or repeated overexposure to dust or fumes from these castings may cause the following health effects:

Carbon: Respiratory irritation.

Chromium, Hexavalent: Lung cancer.

Iron: Siderosis "iron pigmentation" of the lung, which can be seen in a chest x-ray but causes little or no disability.

Silicon: Skin, eye and nose irritation.

## SECTION VI — HEALTH HAZARD DATA (cont'd.)

Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. IARC has listed crystalline silica as Class 2A, probably can cause lung cancer.

**INGESTION:** Hand, clothing, food and drink contact with metal dust, fume or powder can cause ingestion of particulate during hand to mouth activities such as eating, drinking, smoking, nail biting, etc.

**NOISE:** Grinding or machining castings is noisy. The OSHA limit for noise averaged over eight hours is 90 decibels (dBA). A hearing conservation program is required if exposure is over 85 dBA. If noise is at or above 90 dBA, you should wear ear muffs or ear plugs.

### FIRST AID

**IF IN EYES:** Metal particles should be removed by a trained individual such as a nurse or physician.

**IF ON SKIN:** Use a mild hand cream if irritation develops.

**IF BREATHED:** (Fumes from welding): Move to fresh air.

**IF INGESTED:** Consult local physician.

## SECTION VII — REACTIVITY DATA

**HAZARDOUS POLYMERIZATION:** Will not occur.

**STABILITY:** Stable.

**INCOMPATIBILITY:** Metal dust can burn or explode and must be protected from ignition sources such as grinding sparks, etc. Under some conditions, metal dust is incompatible with some oxidizing conditions and may be incompatible with oxidizers, acids and water and may ignite or explode.

## SECTION VIII — SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

If damaged, return castings to vendor or send to scrap reclaimers.

Collected dust from machining, welding, etc., may be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

## SECTION IX — PROTECTIVE EQUIPMENT TO BE USED

**RESPIRATORY PROTECTION:** Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

**VENTILATION:** Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

**PROTECTIVE GLOVES:** Work gloves advisable for handling castings.

**EYE PROTECTION:** Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

**OTHER PROTECTIVE EQUIPMENT:** Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding castings. Safety shoes may be required during certain operations.

If noise is at or above 90 dBA, you should wear ear muffs or ear plugs.

## SECTION X — SPECIAL PRECAUTIONS OR OTHER COMMENTS

**STORAGE:** Keep dry to reduce rusting.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT, UNDER THE CIRCUMSTANCES, IS NOT WARRANTED TO BE.