

Hohmann & Barnard, Inc.

Material Safety Data Sheet

*** Malleable Iron Inserts ***

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January 15, 1993
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Section I - Product Information

This MSDS supplied for: Malleable Iron Castings
ASTM alloy designation

Section II - Hazardous Components

INGREDIENT	CAS NO.	PERCENT	TLV (mg/m ³)	PEL (mg/m ³)
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
Chromium VI Compounds Certain Water Insoluble as Cr			0.05	N/E
Chromic Acid and Chromates CL as Cr			N/E	0.1
Chromium Compounds Water soluble as Cr			0.05	N/E
Iron	7439-89-6	92.9 - 96.6		
Iron Oxide Fume (FE2O3) as Fe			5	10
Silicon	7440-21-3	0.8 - 2.0		
Total Dust			10	10
Respirable Fraction			N/E	5

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 ³	Milligrams per cubic meter of air
NTP	National Toxicology Program
CL	Ceiling limit.
STEL	Short Term Exposure Limit

CARCINOGEN CLASSIFICATION

INGREDIENT	OSHA	NTP	IARC	TARGET ORGAN
Chromium	N	Y	3	Lung
Hexavalent	N	Y	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 a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for 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 represent 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. 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:	2750oC 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.

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

- Iron: Siderosis, “iron pigmentation” of the lung, which can be seen in a chest x-ray, which can be seen in a chest x-ray but causes little or no disability.
- Chromium (hexavalent chromium in fume from welding or arcing): Lung cancer.
- 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.

SWALLOWING: N/A

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: N/A

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

IF SWALLOWED: N/A

Section VII - Reactivity Data

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable

INCOMPATIBILITY: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater)

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 reclaimer.

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 concentration exceeds 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. 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.