AB&I FOUNDRY

THE FOUNDRY OF THE FUTURE SINCE 1906

Material Safety Data Sheet (MSDS)

7825 San Leandro Street • Oakland, CA 94621
800-GOT-IRON • 510/632-3467 • Fax 510/632-8035
www.abifoundry.com

15006 Nelson Ave. • City of Industry, CA 91744
800-356-IRON • 626/333-4882 • Fax 626/333-8681

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

SECTION I - PRODUCT IDENTIFICATION

This MSDS supplied for: **GRAY IRON - SOIL PIPE**

ASTM ALLOY DESIGNATION

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV (mg/m³)	PEL (mg/m³)
Carbon	7440-44-0	2.5 - 4.0	N/E	N/E
Chromium*	7440-47-3	0.01 - 0.9		
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 Compounds Certain Water Insoluble as Cr			.005	N/E
Chromic Acid and Chromates CL as Cr			N/E	0.1
Chromium VI Compounds Water Soluble as Cr			0.05	N/E
Iron	7439-89-6	86.3 - 96.2		
Iron Oxide Fume (Fe_2O_3) as Fe			5.0	10.0
Manganese* (as Mn)	7439-96-5	0.2 - 1.1		
Dust and Compounds as Mn			5.0	N/E
Dust and Compounds CL as Mn			N/E	5.0
Fume as Mn			1.0	1.0
STEL as Mn			3.0	3.0
Asphalt**	8052-42-4	<1	5.0	5. 0
Iron Oxide Fume (Fe_2O_3) as Fe				
Nickel*	7440-02-2	0.01 - 1.5		
Metal			1.0	1.0
Insoluble Compounds as NI			1.0	1.0
Soluble Compounds as NI			0.1	0.1
Silicon	7440-21-3	1.0 - 3.5		
Total Dust			10.0	10.0
Respirable Fraction			N/E	5.0

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/m³ - Milligrams per cubic meter of air

NTP - National Toxicology Program

CL - Ceiling Limit

STEL - Short Term Exposure Limit

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. Quality 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.

CARCINOGEN CLASSIFICATION

INGREDIENT	OSHA	NTP	IARC	TARGET ORGAN
Chromium	N	Y	3	Lung
Hexavalent	N	Y	1	Lung
Nickel	N	Y	1	Lung, nasal

- 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.

N/E - none established **N/A** - not applicable **N/D** - no data available

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 over 85% iron, most of the dust or fume will iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/m^3 , as if it were a nuisance dust, will serve as a guideline until a TLV is established.

High production dry machining of gray 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 MSDS for the welding rod being used.

Welding or flame cutting may convert a fraction of the chromium to the water insoluble hexavalent (carcinogenic) form, but the chromium content of the casting is so low that overexposure is not likely.

Nickel has been shown to cause cancer in laboratory animals. However, its potential to cause cancer in humans has not been determined. The nickel content of the casting is so low that overexposure is not likely.

Grinding castings that have not been cleaned or that contain embedded sand will generate significant amounts of dust containing free silica, which can cause silicosis. If good ventilation is not available, use a NIOSH-approved dust respirator. IARC has listed crystalline silica as Class 2A, probably can cause lung cancer.

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

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION	-	Solid, silver gray in color, no odor	
BOILING POINT	-	-	2750^C 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

"Warning: Manufactured with methyl chloroform, a substance which harms public health and environment by destroying ozone in the upper atmosphere."

SECTION IV - FIRE AND EXPLOSION DATA

Casting will not burn or explode.

SECTION V - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.
SKIN: None known.
BREATHING: Prolonged or repeated overexposure to dust or fumes from these castings may cause the following health effects:

- **Chromium (hexavalent chromium in fume from welding or arcing):** Lung Cancer
- **Iron:** Siderosis "iron pigmentation" of the lung, which can be seen in a chest x-ray but causes little or no disability.
- **Manganese:** Central nervous system effects are: Sleepiness, weakness in legs, spastic gait, emotional disturbances.
- **Nickel:** Lung and nasal 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 defences against other lung diseases.
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.

SECTION VI - 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 DATE

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 in concentrations exceed the TLV or PEL.
VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLV's.
PROTECTIVE GLOVES: Work gloves advisable for handling castings.
EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Wear 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.