DOMESTIC CAPABILITIES
GRAY IRON, DUCTILE
PAINTING, MACHINING
ANNEALING, PLATING,
CUSTOM CASTINGS

UNICAST COMPANY
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GLOBAL SOURCING (ASIA)
GRAY IRON, DUCTILE
STEEL
MACHINING

241 North Washington Street ■ Boyertown, PA 19512 ■ Phone: 610-367-0155 ■ Fax: 610-367-2787
1653 Hausman Road ■ Allentown, PA 18104 ■ Phone: 610-366-8835 ■ Fax: 610-366-8836

MATERIAL SAFETY DATA SHEET

I. MATERIAL IDENTIFICATION

Material Name: **GREY IRON CASTING**

II. HAZARDOUS INGREDIENTS

	CAS Number	%	OSHA 8-hr TWA	ACGIH 8-hr TWA
***Aluminum**	7429-90-5	0.01-.02	15 mg/m3-Total 5 mg/m3-Resp. 5 mg/m3-welding fume	10 mg/m3-metal dust 5 mg/m3-welding fume
Alumina	1344-28-1		15 mg/m3-Total 5 mg/m3-Resp.	10 mg/m3-Total
Carbon	1336-86-4	3.0-3.7	3.5 mg/m3 as Carbon Black	3.5 mg/m3 as Carbon Black
***Chromium**	7440-47-3	0.08-.09	5 mg/m3	0.5 mg/m3
***Copper**	7440-50-8	0.4-1.4	1 mg/m3-dust 0.1 mg/m3-fume	1 mg/m3-dust 0.2 mg/m3-fume
Iron	7439-89-6	Balance	See Oxide	See Oxide
Iron Oxide	1309-37-1		10 mg/m3-dust & fume	5 mg/m3-fume
***Manganese**	7439-96-5	0.6-.8	(c)5 mg/m3-fume	5 mg/m3-dust 1 mg/m3-fume
***Nickel**	7440-02-0	0.06-.08	1 mg/m3	1 mg/m3
***Phosphorus**	7723-14-0	0.05-.07	0.1 mg/m3	0.1 mg/m3
Silicon	7440-21-3	2.0-2.4	15 mg/m3-total 5 mg/m3-Resp.	10 mg/m3-total
Sulfur	7440-34-9	0.08-.10	13 mg/m3 as SO2	5 mg/m3 as SO2
Silica	14808-60-7	Unknown*	$\frac{10}{\% SiO2+2}$ mg/m3	0.1 mg/m3 Respirable

Trace elements: Magnesium, Molybdenum, Tin, Titanium.

E-mail: unicast@unicastco.com ■ sales@unicastco.com ■ m.mull@unicastco.com

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MATERIAL SAFETY DATA SHEET

SPECIAL INSTRUCTIONS FOR SARA 313 CHEMICALS

The chemicals present in this product which are marked with an asterisk (*) are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 in 40 CFR, Part 372. If no percentage is shown, the chemical represents less than 1% by weight of the product (the chemical is not a carcinogen) or less than 0.1% (if the chemical is a known or suspected carcinogen).

CEILING LIMITS

The following elements have Ceiling Limits:

Manganese - 5 mg/m3

III.PHYSICAL DATA

Melting Point (F): 1371-1482
Vapor Pressure: NA
% Volatile by Volume: NA
Solubility in Water: Insoluble
Appearance and Odor: Silver-gray with no odor

Specific Gravity: 7.84
Vapor Density: NA
Evaporation Rate: NA

IV.FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA
Flammable Limits: LEL = NA
Extinguishing Media: See Below

Method Used: NA
UEL = NA

Special Fire Fighting Procedures: Solid, massive form is combustible. Fire and explosion hazards are moderate when material is in the form of dust and exposed to heat, flames, chemical reaction, or contact with powerful oxidizers. Use special mixtures of dry chemical or sand. Firefighters should wear self-contained breathing apparatus and protective clothing.

V.HEALTH HAZARD DATA

Permissible Exposure Limits and Threshold Limit Values: See Section II

Route(s) of Entry:
Inhalation: Yes
Skin: Yes
Injestion: Yes

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MATERIAL SAFETY DATA SHEET

V. HEALTH HAZARD DATA (continued)

Effects of Overexposure:

***Aluminum**
Aluminum dust/fines and fumes are a low health risk by inhalation and are normally treated as a nuisance dust in normal operations (e.g., milling,cutting, grinding). The AIHA Hygiene Guide lists toxicity by ingestion as "none expected".

***Chromium**
In some workers, chromium compounds act as allergens and may cause dermatitis and may also produce pulmonary sensitization. Chromic acid and chromates have a direct corrosive effect on the skin and the mucous membranes of the upper respiratory tract. Although rare, there may be the possibility of skin and pulmonary sensitization.
IARC has determined that there is sufficient evidence of increased lung cancer among workers in the chromate-producing industry and possibly chromium alloy workers. This determination is supported by sufficient evidence for carcinogenicity to animals and possible mutagenicity testing of Cr VI compounds.

***Copper**
Melting, grinding, cutting of copper may produce fumes or dust exposure and breathing these fumes or dust may present potentially significant health hazards. Fumes of copper may cause metal fume fever with flu-like symptoms and skin and hair discoloration. While industrial dermatitis has not been reported, keratinization of the hands and the soles of the feet has been reported. Systemically as well, copper dust and fume cause irritation of the upper respiratory tract, metallic taste in the mouth, and nausea. Chronic poisoning results in Wilson's Disease, characterized by a hepatic cirrhosis, brain damage, demyelination, renal disease and copper deposition in the cornea.

Iron
The inhalation of iron oxide fumes may cause an apparent benign pneumoconiosis which is called siderosis. This disease is reported not to be disabling, but makes x-ray of other lung conditions difficult or impossible.

Magnesium
Inhalation of freshly produced magnesium fume has caused metal fume fever similar to the better known "zinc chills." Heavy exposure to magnesium oxide is irritating to the eyes, nose, and throat. Presence in a wound can increase inflammation and retard healing.
Finely powdered magnesium is a fire hazard, and severe injuries and deaths have occurred from ignition of powdered magnesium.

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MATERIAL SAFETY DATA SHEET

V. HEALTH HAZARD DATA (continued)

***Manganese**

Chronic manganese poisoning may result from inhalation of dust or fume. The central nervous system is the chief site of the injury. Chronic manganese poisoning is not a fatal disease although it is extremely disabling. Some individuals may be hypersusceptible to manganese. Freshly formed manganese fume has caused fever and chills similar to metal fume fever.

***Nickel**

The most common ailment arising from contact with nickel or its compounds is an allergic dermatitis known as "nickel itch" which usually occurs when the skin is moist. Generally nickel and most salts of nickel do not cause systemic poisoning.
IARC has determined that there is at least limited evidence that nickel and certain nickel compounds may be human carcinogens. Several nickel compounds are carcinogenic to laboratory animals by various routes of entry.

***Phosphorus**

Red phosphorus does not react with the air and is extremely insoluble making it harmless. Yellow phosphorus is extremely flammable. The liquid ignites spontaneously in the presence of air. It is normally stored as a solid kept under water and is transferred as a liquid. Yellow phosphorus is toxic and may produce poisoning if taken by mouth. Chronic poisoning takes the form of general weakness, including anemia, loss of appetite, indigestion, and chronic cough resulting from irritation of the gastrointestinal system and fatty degeneration of the liver.

Silicon

Silicon is a nuisance dust. Deposition in the eyes, ears, skin, and nose may result in injury. Inhalation produces no change in x-ray.

Silica

Inhalation Hazard--The disease associated with chronic (long term) exposure to free silica is called silicosis. This is a form of pneumoconiosis which is characterized by the formation of nodules of scar tissue (fibrosis) throughout the lungs. Silicosis can cause difficult or labored breathing especially on exertion, decreased physical work capacity, and sometimes an enlarged chest. The degree of hazard depends upon the silica content, concentration and size of the airborne dust, as well as the length of exposure.
Silicosis may also make the lungs more susceptible to other diseases and silicotuberculosis can be a severe complication. IARC has determined that Silica is a potential carcinogen.

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MATERIAL SAFETY DATA SHEET

V. HEALTH HAZARD DATA (continued)

Emergency and First Aid Procedures:

Eye Contact: Flush well with running water to remove particulate. Get medical attention.
Skin Contact: Vacuum off excess dust. Wash well with soap and water. Avoid blowing particulate into the atmosphere.
Inhalation: Remove to fresh air. Get medical attention.
Ingestion: Seek medical attention if large quantities of material have been ingested (this is not likely in the form of the product sold, iron castings.

VI. REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Stable under normal conditions of transport and storage. Molten metal may react violently with water.
Incompatibility (Materials to avoid): Acids, bases, and oxidizers
Hazardous Decomposition or Byproducts: Metal fume. **NOTE:** if grinding or any work is done on the casting, release of silica may result from residual sand on the surface of the casting.
Hazardous Polymerization: Will Not Occur

VII. PRECAUTIONS FOR SAFE HANDLING OR USE

Steps to Be Taken in Case Material is Released or Spilled: 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. Follow federal, state, and local regulations concerning the disposal of waste.
Waste Disposal Method: Dispose of in accordance with federal, state, and local regulations. Cleanup personnel should wear respirators and protective clothing.
Precautions to be Taken in Handling and Storing: Store material away from incompatible materials and keep dust from sources of ignition.
Other Precautions: See all other sections of this MSDS.

VIII. CONTROL MEASURES

Respiratory Protection: If exposure above the PEL or TLV, NIOSH approved respirator for fume or dust, dependent upon the source of airborne contaminant.
Ventilation: Required if dust or fume created in handling or working on this material.
Local Exhaust: Required if dust or fume created in handling or working on this material.

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MATERIAL SAFETY DATA SHEET

VIII. CONTROL MEASURES (continued)

Mechanical (general): As above to reduce airborne dust or fume levels.
Protective gloves: Required for melt, grind, cut, weld operations. Select glove approved for the specific operation.
Eye Protection: Required for melt, grind, cut, or weld operations. Minimum requirement of safety glasses with side shields for these operations. Melting and welding may require special eye protection including face shields and specially tinted glass. Grinding operations may also require face-shield.
Other Protective Clothing or Equipment: As required for the work done on or with the casting.
Work/Hygiene Practices: As required for the work done with the casting.

--Use precautions in lifting and prevent dropping--

IX. SPECIAL PRECAUTIONS

WARNING

This casting was produced in a sand mold. Therefore, there may be some residual sand on the surface of the casting or lying loose on or inside the product. Precautions must be taken if handling or work on the casting would release or cause this silica to become airborne in the breathing zone of workers. Refer to section on Health Hazards and Control Measures.

******SPECIAL INSTRUCTIONS FOR CHEMICALS MARKED WITH AN ASTERISK******

Those chemicals marked with an asterisk (*) are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 in 40 CFR, Part 372.

THIS INFORMATION IS TAKEN FROM SOURCES BELIEVED TO BE RELIABLE; HOWEVER, THE MANUFACTURER MAKES NO WARRANTY AS TO THE ABSOLUTE CORRECTNESS OR SUFFICIENCY OF ANY OF THE FOREGOING OR THAT ADDITIONAL OR OTHER MEASURES MAY NOT BE REQUIRED UNDER PARTICULAR CONDITIONS.

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