1. Identification
Product Identifier: Malleable Iron Inserts
Manufacturer: Hohmann & Barnard, Inc.
30 Rasons Court
Hauppauge, NY 11788
(631) 234-0600
www.h-b.com

Telephone Numbers
During normal business hours call: (800) 645-0616
24-hour emergency call Chemtrec: (800) 255-3924

2. Hazards Identification
- 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 of 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 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.

POTENTIAL HEALTH EFFECTS:

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.

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.
CARCINOGENICITY:

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>OSHA</th>
<th>NTP</th>
<th>IARC</th>
<th>TARGET ORGAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium</td>
<td>N</td>
<td>Y</td>
<td>3</td>
<td>Lung</td>
</tr>
<tr>
<td>Hexavalent</td>
<td>N</td>
<td>Y</td>
<td>1</td>
<td>Lung</td>
</tr>
</tbody>
</table>

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.

GHS Ratings:

Inhalation Toxicity: 2A  
Carcinogenicity: 1A  
Repeated Organ Exposure: 1

GHS Hazards:

H331 Toxic if dust is inhaled  
H350i May cause cancer if inhaled  
H372 Causes damage to organs through prolonged or repeated exposure

GHS Precautions:

P201 Obtain special instructions before use  
P202 Do not handle until all safety precautions have been read and understood  
P260 Do not breathe dust/fume/gas/mist/vapours/spray  
P264 Wash hands thoroughly after handling  
P270 Do not eat, drink or smoke when using this product  
P271 Use only outdoors or in a well-ventilated area  
P281 Use personal protective equipment as required  
P284 Wear respiratory protection  
P310 Immediately call a POISON CENTER or doctor/physician  
P314 Get medical advice/attention if you feel unwell  
P320 Specific treatment is urgent (see section 4)  
P330+P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing  
P308+P313 IF exposed or concerned: Get medical advice/attention  
P405 Store locked up  
P403+P233 Store in a well-ventilated place. Keep container tightly closed  
P501 Dispose of contents/container according to local regulation

Signal Word: Danger
3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>CAS NO.</th>
<th>PERCENT</th>
<th>TLV (mg/m³)</th>
<th>PEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>7440-44-0</td>
<td>2.0-3.0</td>
<td>N/E</td>
<td>N/E</td>
</tr>
<tr>
<td>Chromium</td>
<td>7440-47-3</td>
<td>0.02-0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium (II) Compounds as Cr</td>
<td></td>
<td>0.5</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Chromium (III) Compounds as Cr</td>
<td></td>
<td>0.5</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Chromium Metal as Cr</td>
<td></td>
<td>0.5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Chromium VI Compounds Certain Water Insoluble as Cr</td>
<td></td>
<td>0.05</td>
<td>N/E</td>
<td></td>
</tr>
<tr>
<td>Chromic Acid and Chromates CL as Cr</td>
<td></td>
<td>N/E</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Chromium Compounds Water soluble as Cr</td>
<td></td>
<td>0.05</td>
<td>N/E</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>92.9 - 96.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron Oxide Fume (Fe₂O₃) as Fe</td>
<td></td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>0.8 - 2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Dust</td>
<td></td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Respirable Fraction</td>
<td></td>
<td>N/E</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

4. First-Aid Measures

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

**Skin:** N/A

**Inhalation (Fumes from welding):** Move to fresh air

**Ingestion:** N/A

5. Fire-fighting measures

_Castings will not burn or explode_

**Ignition Temp:** No dat found

**Extinguishing Media:** No dat found

**Hazardous Combustion Products:** No dat found

**Fire Fighting Procedures:** No dat found

**Fire Fighter Protection:** No dat found

**Unusual Fire and Explosion Hazards:** No dat found

6. Accidental release measures

**Steps to be taken in case of spill or release:** 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.

**Waste Disposal Methods:** No dat found

**Clean Water Act Requirements:** No dat found

**Resource Conservation and Recovery Act (RCRA) Requirements:** No dat found

7. Handling and storage

Keep dry to reduce rusting
8. Exposure controls/personal protection
Engineering Controls: xx
Administrative Controls: xx

PERSONAL PROTECTIVE EQUIPMENT
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.
Respiratory Protection: Wear a NIOSH approved respirator for dusts or fumes if concentration exceeds the TLV or PEL.
Other 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.

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

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Physical Description</th>
<th>Boiling Point</th>
<th>Vapor Pressure</th>
<th>Vapor Density</th>
<th>Solubility in Water</th>
<th>Specific Gravity</th>
<th>% Volatile by Volume</th>
<th>Evaporation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid, silver gray in color, no odor</td>
<td>2750°C for iron</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>7.86 for iron</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

Stability: Stable
Hazardous Decomposition: Iron may cause violent decomposition of hydrogen peroxide (52% by weight or greater)
Hazardous Polymerization: Will not occur
Conditions to Avoid: No data found
Incompatible Materials: Hydrogen peroxide (52% by weight or greater)

11. Toxicological information

Routes of entry: Inhalation
Target ORgans: Lungs

Overexposure: 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.

Carcinogenicity:

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>OSHA</th>
<th>NTP</th>
<th>IARC</th>
<th>TARGET ORGAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromium</td>
<td>N</td>
<td>Y</td>
<td>3</td>
<td>Lung</td>
</tr>
<tr>
<td>Hexavalent</td>
<td>N</td>
<td>Y</td>
<td>1</td>
<td>Lung</td>
</tr>
</tbody>
</table>

12. Ecological Information
No data found.

13. Disposal Considerations
Dust may be classed as a “hazardous waste”. Consult local authorities regarding disposal.
14. Transport information
   No data found.

15. Regulatory Information
   No data found.

16. Other information
   Issue Date: May 31, 2015
   Revision Date: May 31, 2015
   The data in this Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination
   with any other material or in any process. This information is taken from sources or based upon data believed to be reliable; however,
   Hohmann & Barnard, Inc. disclaims any warranty, express or implied, as to the absolute correctness or sufficiency of any of the
   foregoing or that additional or other measures may be required under particular conditions.

   The information contained herein is based on current knowledge and experience; no responsibility is accepted and that the information
   is sufficient or correct in all cases. Users should consider this data only as a supplement to other information. Users should make
   independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these
   materials, the safety and health of employees and customer, and the protection of the environment.