1. Supplier and Manufacturer

Aufhauser Corporation
39 West Mall
Plainview NY 11803 USA
Telephone: 516-694-8696  www.brazing.com
Emergency Phone Number: 516-694-8696  or  212-246-0205
Email: sales@brazing.com
24-hour Emergency Response: 212-246-9420 or 911
SDS Number: MSRG 201802
Product Codes: Mild Steel RG Welding Wire/Rods: RG45, RG60 (AWS A5.2)
Product Use(s): Metal (Oxy-fuel gas) welding

2. Hazards identification

Classification(s): In solid form
GHS Label Symbol(s): GHS07, GHS08

GHS Label Signal Word(s): Danger
GHS Label Hazard Statement(s): H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness. H372: Causes damage to organs through prolonged or repeated exposure.

Other Hazards: No additional information available.
Unknown acute toxicity: No data available.

3. Composition/information on ingredients

Note: The percentage by weight values for the ingredients in this product represent approximate formulation values.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS</th>
<th>% wt</th>
<th>GHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>7429-90-5</td>
<td>&lt; 0.2</td>
<td></td>
</tr>
<tr>
<td>Carbon</td>
<td>7440-44-0</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>&gt; 94</td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>&lt; 2</td>
<td></td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>&lt; 2</td>
<td></td>
</tr>
<tr>
<td>Titanium</td>
<td>7440-32-6</td>
<td>&lt; 0.2</td>
<td></td>
</tr>
</tbody>
</table>
4. First aid measures

**Description of First Aid Measures**

**Inhalation:** Remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

**Skin:** Immediately begin decontamination with cold, running water. Minimum flushing is for 15 minutes. Victim must seek medical attention if any adverse reaction occurs.

**Eye:** Open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

**Ingestion:** If swallowed call physician immediately! Do not induce vomiting unless directed by medical personnel. Rinse mouth with water if person is conscious. Never give fluids or induce vomiting if person is unconscious, having convulsions, or not breathing.

**Note to Physician:** Treat symptoms and eliminate overexposure.

**Most Important Symptoms and Effects Both Acute and Delayed**

**General:** Welding, cutting, or processing this material may release dust or fumes that are hazardous. During processing, inhalation of fumes may cause dizziness and/or irritation to the eyes, nose, and throat. Hot molten product will cause thermal burns to the skin.

**Inhalation:** Short-term (acute) overexposure to gases, fumes, and dusts may include irritation of the eyes, lungs, nose, and throat. Some toxic gases may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as water eyes, nose and throat irritation, headache, dizziness, difficulty in breath, frequent coughing, or chest pain. Excessive inhalation or ingestion of manganese can produce manganese poisoning. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances, and spastic gait resembling Parkinsonism. These symptoms can become progressive and permanent if not treated. Excessive inhalation of fumes may cause "Metal Fume Fever" with flu-like symptoms such as chills, fever, body aches, vomiting, sweating.

**Skin Contact:** May cause irritation. Contact with hot, molten metal will cause thermal burns.

**Eye Contact:** Fumes from thermal decomposition may cause eye irritation. Risk of thermal burns on contact with molten product. Arc rays and sparks can burn eyes.

**Ingestion:** Ingestion is likely to be harmful or have adverse effects.

**Indication of Any Immediate Medical Attention and Special Treatment Needed**

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label/SDS at hand.

5. Firefighting measures

**Extinguishing Media**

**Suitable Extinguishing Media:** Use extinguishing agents appropriate for surrounding materials.

**Unsuitable Extinguishing Media:** Do not use water on molten metal.

**Special Hazards Arising From the Substance or Mixture**

**Fire Hazard:** Not considered flammable.

**Explosion Hazard:** Product is not explosive. Ensure proper welding procedures to avoid welding explosions.

**Reactivity:** None under normal conditions.

**Advice for Firefighters**

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire.

**Firefighting Instructions:** Do not breathe fumes from fires or vapors from decomposition.

**Protection During Firefighting:** Use proper protective equipment, including respiratory protection.

**Hazardous Combustion Products:** This product may decompose and produce iron fumes, and a variety of metal compounds and metal oxides. The hot material can present a significant thermal hazard to firefighters.

6. Accidental release measures

**Personal Precautions, Protective Equipment and Emergency Procedures**

**General Measures:** No additional information available.

**For Non-Emergency Personnel**

**Protective Equipment:** Wear appropriate personal protective equipment. Ensure adequate ventilation.

**Emergency Procedures:** No additional information available.

**For Emergency Personnel**

**Protective Equipment:** No additional information available.

**Emergency Procedures:** No additional information available.
Environmental Precautions
Avoid release into the environment. Avoid dispersal of spilled material and contact with soil, ground, and surface water drains and sewers.

Methods and Material for Containment and Cleaning Up
For Containment: No special requirements.
Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Avoid generation of dust during clean-up of spills. Ventilate area. Do not mix with other materials. Transfer spilled material to a suitable container for recycling or appropriate disposal.

7. Handling and storage
Precautions for Safe Handling
Use proper ventilation and respiration apparatus; eye, hand, and body protection as necessary.
Precautions for Safe Handling: Use appropriate personal protective equipment when handling and observe good personal hygiene measures after handling.
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities
Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.
Incompatible Materials: See section 10.

8. Exposure controls/personal protection
Ingredients – Exposure Limits

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS</th>
<th>ACGIH TLV (mg/m3)</th>
<th>OSHA PEL (mg/m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(inhal), (resp)</td>
<td>(total dust), (resp)</td>
</tr>
<tr>
<td>Carbon</td>
<td>7440-44-0</td>
<td>10 (inhal), 3 (resp)</td>
<td>15 (total dust), 5 (resp)</td>
</tr>
<tr>
<td>Copper</td>
<td>7440-50-8</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439-96-5</td>
<td>0.2</td>
<td>1</td>
</tr>
<tr>
<td>Silicon</td>
<td>7440-21-3</td>
<td>10</td>
<td>15 (total dust), 5 (resp)</td>
</tr>
</tbody>
</table>

Exposure Controls
Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. All equipment should comply with the National Electric Code. When cutting, grinding, crushing, or drilling, provide general or local ventilation systems, as needed, to maintain airborne dust concentrations below the regulatory limits. Local vacuum collection is preferred since it prevents release of contaminants into the work area by controlling it at the source. Other technologies that may aid in controlling airborne respirable dust include wet suppression, ventilation, process enclosure, and enclosed employee work stations. Prevent dust accumulation.

Materials for Protective Clothing: With molten material wear thermally protective clothing.
Hand Protection: Appropriate welding or heat resistant gloves.
Eye Protection: Welders should wear goggles or safety glasses with side shields that comply with ANSI Z87.1 under welding helmets and always wear goggles or other suitable eye protection when gas welding or oxygen cutting.
Skin and Body Protection: Wear fire/flame resistant/retardant clothing appropriate for task.
Respiratory Protection: Wear approved respiratory apparatus appropriate for task.
Consumer Exposure Controls: Do not eat, drink or smoke during use.

9. Physical and chemical properties
The following information is for steel, a related compound:

| Physical state: Solid                   | Appearance: steel (gray) wire/rod |
| Odor: none                             | Odor threshold: n/a                |
| pH: n/a                                | Evaporation rate: n/a              |
| Melting point: 1300 C (2372 F)          | Freezing point: n/a                |
| Boiling point (@ 24 mm Hg): 3000 C (5432 F) | Flash point: n/a                  |
| Auto-ignition temperature: n/a         | Decomposition temperature: n/a     |
| Flammability (solid, gas): n/a         | Lower flammable limit: n/a         |
| Upper flammable limit: n/a             | Vapor pressure, mm Hg @ 1787 C: n/a |
| Relative vapor density at 20C: n/a     | Relative density: n/a              |
| Specific gravity @ 20C (water = 1): 7.6 - 7.78 | Solubility in water: Insoluble    |
10. Stability and reactivity

Products as shipped are non-hazardous, nonflammable, non-explosive, and nonreactive.

Reactivity: None under normal conditions.
Chemical Stability: Stable under normal conditions. May produce dangerous fumes and gases during use.
Possibility of Hazardous Reactions: Will not occur.
Conditions to Avoid: Incompatible materials. Uncontrolled exposure to extreme temperatures.
Incompatible Materials: None.

Hazardous Decomposition Products: Metal oxides. Iron compounds. Fume constituents may include: complex oxides or iron, manganese, silicon, chromium, nickel, columbium, molybdenum, copper, carbon dioxide, carbon monoxide, ozone and nitrogen oxides. Certain products may also include: antimony, barium, molybdenum, aluminum, columbium, magnesium, strontium, tungsten, zirconium, or zinc oxides. Fume limits for individual components may be reached before limit of 5 mg/m3 of general welding fumes is reached. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

NOTE: The composition and quality of welding fumes and gases are dependent upon the metal being welded, the process, the procedure, and the electrodes used. Other conditions that could also influence the composition and quantity of fumes and gases to which workers may be exposed include the following: any coatings on metal being welded (e.g., paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality of ventilation, the position of the welder’s head with respect to the fume plume, and the presence of other contaminants in the atmosphere. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2 (Composition and Information on Ingredients). Fume and gas decomposition products, and not the ingredients in the electrode, are important. Concentration of the given fume or gas component may decrease or increase by many times the original concentration. New compounds in the electrode may form. Decomposition products of normal operations include not only those originating from volatilization, reaction, or oxidation of the product’s components but also those from base metals and any coating (as noted previously). The best method to determine the actual composition of generated fumes and gases is to take an air sample from inside the welder’s helmet if worn or in breathing zone. For additional information, refer to the American Welding Society Publication, "Fumes and Gases in the Welding Environment".

11. Toxicological information

<table>
<thead>
<tr>
<th>Ingredient(s)</th>
<th>Information on Toxicological Effects - Ingredient(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>TDLo (oral, child) = 77 mg/kg; BAH, gastrointestinal tract, blood effects</td>
</tr>
<tr>
<td>Manganese</td>
<td>TCLo (inhalation, man) = 2300 g/m3; brain, central nervous system effects</td>
</tr>
<tr>
<td>Silicon</td>
<td>ATE (oral) 3160 mg/kg</td>
</tr>
<tr>
<td>Copper</td>
<td>TDLo (oral, human) = 1200 ug/kg; gastrointestinal tract effects</td>
</tr>
</tbody>
</table>

Suspected Cancer Agents: The components of this product are listed as follows:

- Iron (as Iron Oxide) ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen; agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of lack of data), IARC-3 (Unclassifiable as to Carcinogenicity in Humans)
- Manganese EPA-D (Not Classifiable as to Human Carcinogenicity)
- Copper EPA-D (Not Classifiable as to Human Carcinogenicity)
Other components of these products that are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, and CAL/OSHA therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

12. Ecological information

**Toxicity:** Very toxic to aquatic life.

<table>
<thead>
<tr>
<th>Component</th>
<th>Toxicity Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese</td>
<td>NOEC chronic fish: 3.6 mg/L (Exposure time: 96h - Species: Oncorhynchus mykiss)</td>
</tr>
<tr>
<td>Iron</td>
<td>LC50 Fish: 0.56 mg/L (96h - Cyprinus carpio)</td>
</tr>
</tbody>
</table>
| Copper    | LC50 Fish 1: 0.0068-0.0156 mg/L (96h - Pimephales promelas)  
              EC50 Daphnia 1: 0.03 mg/L (48h - Daphnia magna [static])  
              EC50 other aquatic organisms 1: 0.0426 - 0.0535 mg/L (72h - Pseudokirchneriella subcapitata [static]) |
|           | LC50 Fish 2: <0.3 mg/L (96h - Pimephales promelas [static])  
              EC50 other aquatic organisms 2: 0.031 - 0.054 mg/L (96h - Pseudokirchneriella subcapitata [static]) |

**Persistence and Degradability:** The components of these products are expected to persist in the environment for an extended period of time.

**Environmental Stability:** Iron, the main component of these products will react with water and air to form a variety of stable iron oxides.

**Bioaccumulative:** No additional information available.

**Mobility in Soil:** No additional information available.

**Other Adverse Effects:** No additional information available.

13. Disposal considerations

**Sewage Disposal Recommendations:** Do not empty into drains; dispose of this material and its container in a safe way.

**Waste Disposal Recommendations:** Dispose of waste material in accordance with all local, regional, national, and international regulations.

**Additional Information:** Recycle where possible and/or dispose of spent material such as metals & metal-bearing waste and submerged arc welding (SAW) flux/slag appropriately.

**EPA Waste Number:** Not applicable.

14. Transport information

**THIS MATERIAL IS NOT HAZARDOUS (Per 49 CFR 172.101) BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

Transport is not regulated in accordance with: USDOT, TDG (Canada), IATA, or IMDG.

**UN Identification Number:** Not Applicable

15. Regulatory information

<table>
<thead>
<tr>
<th>Component</th>
<th>US Federal Regulations</th>
<th>Canadian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
<td>Listed on the Canadian DSL (Domestic Substances List)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WHMIS Classification: Uncontrolled product according to WHMIS classification criteria</td>
</tr>
<tr>
<td>Manganese</td>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory; Listed on United States SARA Section 313</td>
<td>Listed on the Canadian DSL (Domestic Substances List); Listed on the Canadian IDL (Ingredient Disclosure List)</td>
</tr>
<tr>
<td></td>
<td>SARA Section 313 - Emission Reporting: 1.0%</td>
<td>IDL Concentration 1 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WHMIS Classification: Uncontrolled product according to WHMIS classification criteria</td>
</tr>
<tr>
<td>Iron</td>
<td>Listed on United States TSCA (Toxic Substances Control Act) inventory</td>
<td>WHMIS Class B-4</td>
</tr>
<tr>
<td>Copper</td>
<td>Listed on United States TSCA (Toxic Substances Control Act) inventory</td>
<td>Listed on the Canadian DSL (Domestic Substances List)</td>
</tr>
<tr>
<td></td>
<td>SARA Section 313 (40 CFR 372.65) - Emis. 1.0%</td>
<td>SARA Section 304 (40 CFR Table 302.4)</td>
</tr>
</tbody>
</table>

**State Regulatory Information:**

Some components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains information required by CPR.
Proposition 65 (California):
· Chemicals known to cause cancer: None of the ingredients are listed.
· Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.
· Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed.
· Chemicals known to cause developmental toxicity: None of the ingredients is listed.

State Right to Know (RTK) Listings
US. Massachusetts RTK - Substance List: copper, manganese, silicon
US. Minnesota – Hazardous Substance List: copper, manganese, silicon
US. New Jersey Worker RTK Haz. Substance List: copper, manganese, silicon
US. Pennsylvania RTK - Hazardous Substances: copper, manganese, silicon

16. Other information including information on preparation and revision of the SDS

<table>
<thead>
<tr>
<th>NFPA Health Hazard: 1</th>
<th>Exposure could cause irritation but only minor residual injury even if no treatment is given</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA Fire Hazard: 0</td>
<td>Materials that will not burn</td>
</tr>
<tr>
<td>NFPA Reactivity: 0</td>
<td>Normally stable, even under fire exposure conditions, and are not reactive with water</td>
</tr>
<tr>
<td>HMIS III Rating:</td>
<td>Health: 2 Moderate Hazard - Temporary or minor injury may occur</td>
</tr>
<tr>
<td></td>
<td>Flammability: 0 Minimal Hazard</td>
</tr>
<tr>
<td></td>
<td>Physical: 0 Minimal Hazard</td>
</tr>
</tbody>
</table>

Date of Preparation: 2018-Feb

Disclaimer
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Aufhauser Corporation