1. IDENTIFICATION

Product Identifier

Product Name
Type "HW-1" Silver Brazing Powder Flux, Boric Acid Free

Other means of identification
SDS # GFM-040

Synonyms
Type "HW-1" Boric Acid Free Silver Brazing Powder Flux.

Recommended use of the chemical and restrictions on use

Recommended Use
For all purpose brazing of all ferrous, nickel, and non-ferrous alloys except aluminum and magnesium.

Details of the supplier of the safety data sheet

Manufacturer Address
The Gasflux Company
32 Hawthorne Street
P.O. Box 1170
Elyria, Ohio 44036 U.S.A.

Emergency Telephone Number
Company Phone Number (440) 365-1941 (8am - 4:30pm EST M-F)
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International) 1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance White Powder
Physical State Solid
Odor No odor

Classification

Acute toxicity - Oral Category 4
Serious eye damage/eye irritation Category 1

Signal Word
Danger

Hazard Statements
Harmful if swallowed
Causes serious eye damage

Precautionary Statements - Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product

Precautionary Statements - Response

If exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a poison center or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician, rinse mouth
Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms
Type "HW-1" White High Temperature Silver Brazing Powder Flux.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium fluoroborate</td>
<td>14075-53-7</td>
<td>30-50</td>
</tr>
<tr>
<td>Potassium Pentaborate</td>
<td>11128-29-3</td>
<td>20-35</td>
</tr>
<tr>
<td>Potassium bifluoride</td>
<td>7789-29-9</td>
<td>10-30</td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

First Aid Measures

General Advice
If exposed or concerned: Get medical advice/attention. Always contact physician or poison center in case of medical emergency. Treatment may vary with condition of victim and specifics of incident.

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek immediate medical attention/advice.

Skin Contact
Wash off immediately with plenty of water.

Inhalation
Remove to fresh air. Administer oxygen or artificial respiration only on a physician’s recommendation. Get medical attention.

Ingestion
Rinse mouth. Induce vomiting, but only if victim is fully conscious. Seek medical attention immediately.

Most important symptoms and effects
Symptoms
May cause irritation and burns to the respiratory tract, symptoms may include coughing, sore throat, and labored breathing. May cause eye burns and permanent eye damage. Symptoms may be delayed. May cause brain and kidney damage. May cause nausea, vomiting, stomach ache, and diarrhea. May cause mottling of teeth, damage to bone and fluorosis.

Indication of any immediate medical attention and special treatment needed

Notes to Physician
Exposure may aggravate pre-existing respiratory or skin problems.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
Not determined.

Specific Hazards Arising from the Chemical
Non-flammable.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions
Avoid contact with eyes and skin.

Methods and material for containment and cleaning up

Methods for Containment
Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up
Sweep up and shovel into suitable containers for disposal. Dilute and wash remaining with water and dispose of in accordance with federal, state, and local regulations.

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01-May-2015
7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Use personal protection recommended in Section 8. Do not eat, drink or smoke when using this product. Protect container from physical damage. Emptied container retains product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. American Welding Society (AWS) Specification Class: FB3-A Form: Paste Filler

Metal: Bag and BCuP
Typical Ingredients: Borates and Fluorides Boron
Application: General purpose flux for most ferrous and non-ferrous alloys. Has extended heat cycle.
Activity Temp. Range: 1050-1600 °F / 565-875 °C
Recommended base metals: All brazeable ferrous and non-ferrous metal except those with aluminum or magnesium as a constituent. Also used to braze carbides.

Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up.

Incompatible Materials

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
Use enough ventilation and local exhaust at the flame site to keep the fumes below the threshold limit value-time weighted average (TLV-TWA) for welding fumes of 5 mg/m³ in the brazers’s breathing zone and in the general air. Train the employee to keep his/her head out of the fumes

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Pentaborate</td>
<td>STEL: 6 mg/m³ inhalable fraction TWA: 2 mg/m³ inhalable fraction</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potassium fluoroborate</td>
<td>TWA: 2.5 mg/m³ F TWA: 2.5 mg/m³ dust (vacated) TWA: 2.5 mg/m³</td>
<td>TWA: 2.5 mg/m³ F TWA: 2.5 mg/m³ dust (vacated) TWA: 2.5 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Potassium bifluoride</td>
<td>TWA: 2.5 mg/m³ F TWA: 2.5 mg/m³ dust (vacated) TWA: 2.5 mg/m³</td>
<td>TWA: 2.5 mg/m³ F TWA: 2.5 mg/m³ dust (vacated) TWA: 2.5 mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

Appropriate engineering controls

Engineering Controls
Ventilation systems. Eyewash stations. Showers.

Individual protection measures, such as personal protective equipment

Eye/Face Protection
Chemical goggles or full face shield.

Skin and Body Protection
Rubber gloves.

Respiratory Protection
Use approved fume respirator or air-supplied respirator when brazing in a confined space or where local exhaust or ventilation does not keep exposure below the applicable TLV-TWA.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Appearance</th>
<th>Color</th>
<th>Odor</th>
<th>Odor Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>White powder</td>
<td>White</td>
<td>No odor</td>
<td>Not determined</td>
</tr>
</tbody>
</table>
The physical data listed below are typical values and should not be read as a product specification.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>566 °C / 1100 °F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling Point/Boiling Range</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>Non-flammable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability (Solid, Gas)</td>
<td>Non-flammable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limits</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>~1.963 (1=Water)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Moderately soluble</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partition Coefficient</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinematic Viscosity</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic Viscosity</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

**Reactivity**
Not reactive under normal conditions.

**Chemical Stability**
Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**
None under normal processing.

**Hazardous Polymerization**
Hazardous polymerization does not occur.

**Conditions to Avoid**
Exposure to air may dry flux.

**Incompatible Materials**

**Hazardous Decomposition Products**
Brazing fumes and gases cannot be classified simply. The composition and quantity of the fumes and gases are dependent upon the base metal, the process, procedures, and filler metal being used. Coatings or residue on the base metal such as cleaning or degreasing agents, paint, galvanizing or plating will produce fumes as well. Other conditions which influence the composition and quality of the fumes and gases to which workers may be exposed are: the number of operators relative to the volume of the work area, the quality and amount of ventilation, the position of the brazer’s head in respect to the fume plume, as well as the presence of contaminants in the atmosphere such as halogenated hydrocarbon vapors from cleaning and degreasing activities. When brazing, the composition of the fumes and gases are usually different from the composition of the ingredients mentioned in Section 3. Fume ingredients of normal operation include those originating from volatilization, reaction, or oxidation of the materials noted in the above paragraph. Reasonably expected by-products include hazardous and corrosive fumes including oxides of boron with OSHA PEL of 10mg/m³, and fluorides with OSHA PEL of 2.5 mg/m³.

11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Product Information**
- **Eye Contact**: Causes serious eye damage.
- **Skin Contact**: Avoid contact with skin.
- **Inhalation**: Avoid breathing vapors, mists or dust.
- **Ingestion**: Harmful if swallowed.

**Component Information**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium fluoroborate</td>
<td>= 5854 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14075-53-7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SDS# GFM-040
01-May-2015
Information on physical, chemical and toxicological effects

Symptoms

Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity

Not classifiable as a human carcinogen.

Numerical measures of toxicity

Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium fluoroborate 14075-53-7</td>
<td>95: 96 h Desmodesmus subspicatus mg/L EC50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Not determined.

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Hazardous Waste Status</th>
</tr>
</thead>
</table>

14. TRANSPORT INFORMATION

Note

Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT

Not regulated

IATA

Not regulated

IMDG

Not regulated

15. REGULATORY INFORMATION

International Inventories

Not determined

US Federal Regulations

SARA 311/312 Hazard Categories

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health Hazard</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

US State Regulations

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01-May-2015
### U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium fluoroborate</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14075-53-7</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Potassium bifluoride</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7789-29-9</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>Not determined</td>
</tr>
<tr>
<td>HMIS</td>
<td>Health Hazards</td>
<td>Flammability</td>
<td>Physical Hazards</td>
<td>Personal Protection</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>Not determined</td>
</tr>
</tbody>
</table>

**Issue Date:** 28-Feb-2011  
**Revision Date:** 01-May-2015  
**Revision Note:** New format

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet