



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name Stay-Silv® White Brazing Flux
Revision date 05-20-2011
Version # 01
CAS # Mixture
MSDS Number 0134
Product use Metal brazing operations.
Manufacturer/Supplier Harris Products Group
4501 Quality Place
Mason, Ohio 45040 US
salesinfo@jwharris.com
Telephone Number: 513-754-2000
Emergency Emergency Telephone Number: CHEMTREC: 1-800-424-9300

2. Hazards Identification

Physical state Solid.
Appearance White paste.
Emergency overview DANGER

CORROSIVE
Causes eye burns. Prolonged or repeated contact with the product may cause burns to the skin. Causes digestive tract burns. Dust is irritating to the eyes and respiratory tract. Harmful if inhaled, absorbed through skin, or swallowed. Possible adverse reproductive and developmental effects.
OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects
Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.
Eyes Causes eye burns. Risk of serious damage to eyes.
Skin Prolonged or repeated contact with the product may cause burns to the skin. Harmful if absorbed through the skin. Hydrogen fluoride, a possible decomposition product, is extremely corrosive and a poison by all routes of entry. Hydrogen fluoride can penetrate the skin and produce burns, which may not be immediately painful or visible; the burns impact the lower layers of skin and bone tissue. Hydrogen fluoride exposures involving 20 percent of the body or more can be fatal through systemic fluoride poisoning.
Inhalation Harmful by inhalation. Dust irritating to respiratory tract. Prolonged inhalation may be harmful.
Ingestion Harmful if swallowed. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.
Target organs Skin. Bone. Kidneys.
Chronic effects Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Sterility. Prolonged overexposure to fluorides may increase fluoride content of bones and teeth, and may result in fluorosis, and brittleness of bones. Prolonged or repeated contact may dry skin and cause dermatitis. Edema. Kidney injury may occur. Refer to Section 11 Toxicological Information for more details.
Signs and symptoms Contact with this material will cause burns to the eyes. Symptoms include itching, burning, redness, and tearing of eyes. Prolonged or repeated contact with the product may cause burns to the skin. Itching, redness, burning of skin. Edema. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
Potential environmental effects The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

3. Composition / Information on Ingredients

| Components | CAS # | Percent |
|----------------------|------------|---------|
| Boric acid | 10043-35-3 | 50 - 60 |
| Potassium bifluoride | 7789-29-9 | 20 - 30 |

Composition comments

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures**First aid procedures****Eye contact**

Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get immediate medical attention.

Skin contact

Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. A 2.5 pct calcium gluconate gel applied topically after skin has been thoroughly washed will help reduce severity of symptoms. Get medical attention if irritation develops and persists.

Inhalation

Remove person from contaminated area to fresh air. Apply artificial respiration if needed. Call a physician if symptoms develop or persist.

Ingestion

Do NOT induce vomiting. Immediately rinse mouth and drink a cupful of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

General advice

Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures**Flammable properties**

The product is not flammable.

Extinguishing media**Suitable extinguishing media**

Use fire-extinguishing media appropriate for surrounding materials. Water spray, foam, dry powder or carbon dioxide.

Protection of firefighters**Protective equipment and precautions for firefighters**

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental Release Measures**Personal precautions**

Keep unnecessary personnel away. Avoid inhalation of dust from the spilled material. Wear protective clothing as described in Section 8 of this MSDS. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment

Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas. Local authorities should be advised if significant spillages cannot be contained.

Methods for cleaning up

Should not be released into the environment. Prevent product from entering drains. Do not allow material to contaminate ground water system.

Large Spills: Sweep up and place into a proper container for disposal. Avoid the generation of dusts during clean-up.

Small Spills: Wipe up spilled material and place in a suitable container for disposal.

Never return spills in original containers for re-use. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. For waste disposal, see section 13 of the MSDS.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage**Handling**

Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Avoid inhalation of dust and fumes. Avoid contact with skin and eyes. Wear appropriate personal protective equipment (See Section 8). Do not get this material on clothing. Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Avoid release to the environment.

Storage

Store in tightly closed original container in a dry, cool and well-ventilated place. Store in a closed container away from incompatible materials. Do not store in container made of glass or silicate-based material. Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure Controls / Personal Protection**Occupational exposure limits****US. ACGIH Threshold Limit Values**

| Components | Type | Value | Form |
|----------------------------------|------|-----------|---------------------|
| Boric acid (10043-35-3) | STEL | 6 mg/m3 | Inhalable fraction. |
| | TWA | 2 mg/m3 | Inhalable fraction. |
| Potassium bifluoride (7789-29-9) | TWA | 2.5 mg/m3 | |
| Potassium fluoride (7789-23-3) | TWA | 2.5 mg/m3 | |

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

| Components | Type | Value | Form |
|----------------------------------|------|-----------|-------|
| Potassium bifluoride (7789-29-9) | PEL | 2.5 mg/m3 | |
| | TWA | 2.5 mg/m3 | Dust. |
| Potassium fluoride (7789-23-3) | PEL | 2.5 mg/m3 | |
| | TWA | 2.5 mg/m3 | Dust. |

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

| Components | Type | Value | Form |
|----------------------------------|------|-----------|-----------|
| Boric acid (10043-35-3) | STEL | 6 mg/m3 | Inhalable |
| | TWA | 2 mg/m3 | Inhalable |
| Potassium bifluoride (7789-29-9) | TWA | 2.5 mg/m3 | |
| Potassium fluoride (7789-23-3) | TWA | 2.5 mg/m3 | |

Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)

| Components | Type | Value | Form |
|----------------------------------|------|-----------|-----------|
| Boric acid (10043-35-3) | STEL | 6 mg/m3 | Inhalable |
| | TWA | 2 mg/m3 | Inhalable |
| Potassium bifluoride (7789-29-9) | TWA | 2.5 mg/m3 | |
| Potassium fluoride (7789-23-3) | TWA | 2.5 mg/m3 | |

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

| Components | Type | Value |
|----------------------------------|------|-----------|
| Potassium bifluoride (7789-29-9) | TWA | 2.5 mg/m3 |
| Potassium fluoride (7789-23-3) | TWA | 2.5 mg/m3 |

Mexico. Occupational Exposure Limit Values

| Components | Type | Value |
|----------------------------------|------|-----------|
| Potassium bifluoride (7789-29-9) | TWA | 2.5 mg/m3 |
| Potassium fluoride (7789-23-3) | TWA | 2.5 mg/m3 |

Engineering controls

Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust. Shower, hand and eye washing facilities near the workplace are recommended.

Personal protective equipment**Eye / face protection**

Wear safety glasses with side shields (or goggles).

Skin protection

Chemical resistant clothing is recommended.

Respiratory protection

Use a respirator when local exhaust or ventilation is not adequate to keep exposures below the TLV. In a confined space a supplied respirator may be required. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

| | |
|---|----------------|
| Appearance | White paste. |
| Color | White. |
| Odor | Odorless. |
| Odor threshold | Not available. |
| Physical state | Solid. |
| Form | Paste. |
| pH | Not available. |
| Melting point | Not available. |
| Freezing point | Not available. |
| Boiling point | Not available. |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability limits in air, upper, % by volume | Not available. |
| Flammability limits in air, lower, % by volume | Not available. |
| Vapor pressure | Not available. |
| Vapor density | Not available. |
| Specific gravity | 1.5 - 1.7 |
| Solubility (water) | Moderate. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |

10. Chemical Stability & Reactivity Information

| | |
|---|---|
| Chemical stability | Material is stable under normal conditions. |
| Conditions to avoid | Contact with incompatible materials. |
| Incompatible materials | Strong oxidizing agents. Strong acids. Halogenated compounds. Silicate-based materials. |
| Hazardous decomposition products | Hydrogen fluoride, fluorine-, boron- and potassium-containing compounds. |

11. Toxicological Information

Toxicological data

| Components | Test Results |
|--------------------------------|---|
| Boric acid (10043-35-3) | Acute Dermal LD50 Rabbit: > 2000 mg/kg Acute Oral LD50 Rat: 2660 mg/kg |
| Potassium fluoride (7789-23-3) | Acute Oral LD50 Rat: 245 mg/kg |
| Acute effects | Causes eye burns. Prolonged or repeated contact with the product may cause burns to the skin. Dust irritates the respiratory system, and may cause coughing and difficulties in breathing. Harmful if inhaled, absorbed through skin, or swallowed. |
| Local effects | Causes eye burns. Causes respiratory tract irritation. Prolonged or repeated contact with the product may cause burns to the skin. |
| Sensitization | Not classified. |

| | |
|---|--|
| Chronic effects | Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects. May cause damage to the kidneys. Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death. |
| Subchronic effects | Kidney injury may occur. |
| Carcinogenicity | This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. |
| ACGIH Carcinogens | |
| Boric acid (CAS 10043-35-3) | A4 Not classifiable as a human carcinogen. |
| Potassium bifluoride (CAS 7789-29-9) | A4 Not classifiable as a human carcinogen. |
| Potassium fluoride (CAS 7789-23-3) | A4 Not classifiable as a human carcinogen. |
| IARC Monographs. Overall Evaluation of Carcinogenicity | |
| Potassium bifluoride (CAS 7789-29-9) | 3 Not classifiable as to carcinogenicity to humans. |
| Potassium fluoride (CAS 7789-23-3) | 3 Not classifiable as to carcinogenicity to humans. |
| Epidemiology | No epidemiological data is available for this product. |
| Mutagenicity | No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic. |
| Reproductive effects | Possible reproductive hazard. |
| Teratogenicity | May cause birth defects. Avoid exposure to women during early pregnancy. |
| Symptoms and target organs | Contact with this material will cause burns to the skin, eyes and mucous membranes. Symptoms include itching, burning, redness, and tearing of eyes. Itching, redness, burning of skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Target organs: Skin. Bones. Kidney. |
| Further information | Symptoms may be delayed. |

12. Ecological Information

Ecotoxicological data

| Components | Test Results |
|--|---|
| Boric acid (10043-35-3) | LC50 Bonytail (<i>Gila elegans</i>): > 100 mg/l 96 hours |
| Ecotoxicity | The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Large amounts of the product may affect the acidity (pH-factor) in water with possible risk of harmful effects to aquatic organisms. |
| Environmental effects | An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. |
| Aquatic toxicity | Not classified. |
| Persistence and degradability | No data is available on the degradability of this product. |
| Bioaccumulation / Accumulation | No data available. |
| Partition coefficient (n-octanol/water) | Not available. |
| Mobility in environmental media | The product is partly soluble in water. May spread in the aquatic environment. |

13. Disposal Considerations

| | |
|--|--|
| Waste codes | D002: Waste Corrosive material [pH ≤2 or ≥12.5, or corrosive to steel] |
| Disposal instructions | Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations. |
| Waste from residues / unused products | Dispose of in accordance with local regulations. |
| Contaminated packaging | Empty containers should be taken to an approved waste handling site for recycling or disposal. |

14. Transport Information

DOT

Basic shipping requirements:

| | |
|-----------------------------|--|
| UN number | UN2923 |
| Proper shipping name | Corrosive solids, toxic, n.o.s. (Boric acid, Potassium bifluoride) |

| | |
|--------------------------------|--------------------|
| Hazard class | 8 |
| Subsidiary hazard class | 6.1 |
| Packing group | III |
| Labels required | 8, 6.1 |
| Additional information: | |
| Special provisions | IB8, IP3, T1, TP33 |
| Packaging exceptions | 154 |
| Packaging non bulk | 213 |
| Packaging bulk | 240 |

IATA

Basic shipping requirements:

| | |
|--------------------------------|--|
| UN number | UN2923 |
| Proper shipping name | Corrosive solids, toxic, n.o.s. (Boric acid, Potassium bifluoride) |
| Hazard class | 8 |
| Subsidiary hazard class | 6.1 |
| Packing group | III |
| Labels required | 8, 6.1 |
| Additional information: | |
| Packaging exceptions | 154 |
| Packaging non bulk | 213 |
| Packaging bulk | 240 |

IMDG

Basic shipping requirements:

| | |
|--------------------------------|--|
| UN number | UN2923 |
| Proper shipping name | Corrosive solids, toxic, n.o.s. (Boric acid, Potassium bifluoride) |
| Hazard class | 8 |
| Subsidiary hazard class | 6.1 |
| Packing group | III |
| Labels required | 8, 6.1 |
| Additional information: | |
| Packaging exceptions | 154 |

TDG

Basic shipping requirements:

| | |
|-------------------------------------|--|
| Proper shipping name | Corrosive solids, toxic, n.o.s. (Boric acid, Potassium bifluoride) |
| Hazard class | 8 |
| Subsidiary hazard class | 6.1 |
| UN number | UN2923 |
| Packing group | III |
| Additional information: | |
| Special provisions | IB8, IP3, T1, TP33 |
| Basic shipping requirements: | |
| Labels required | 8, 6.1 |
| Additional information: | |
| Packaging exceptions | 154 |
| Packaging non bulk | 213 |
| Packaging bulk | 240 |

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

TSCA Section 12(b) Export Notification(40 CFR 707, Subpt. D)

Not regulated.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)
No

Section 311/312 (40 CFR 370)
No

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)
Not controlled

Canadian regulations
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status
Controlled

WHMIS classification
D1B - Immediate/Serious-TOXIC
D2A - Other Toxic Effects-VERY TOXIC
E - Corrosive

WHMIS labeling**Inventory status**

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|--|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations
This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - California Hazardous Substances (Director's): Listed substance

Potassium bifluoride (CAS 7789-29-9) Listed.
Potassium fluoride (CAS 7789-23-3) Listed.

US - New Jersey RTK - Substances: Listed substance

Boric acid (CAS 10043-35-3) Listed.
Potassium bifluoride (CAS 7789-29-9) Listed.
Potassium fluoride (CAS 7789-23-3) Listed.

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Potassium bifluoride (CAS 7789-29-9) Listed.
Potassium fluoride (CAS 7789-23-3) Listed.

Mexico regulations
This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 3*

Flammability: 0

Physical hazard: 0

NFPA ratings

Health: 3

Flammability: 0

Instability: 0

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.

Issue date

05-20-2011