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WOLVERINE JOINING TECHNOLOGIES, LLC.

MATERIAL SAFETY DATA SHEET

Product: SILVABRITE 100 WATER SOLUBLE PASTE FLUX

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common Name : SILVABRITE 100 WATER SOLUBLE PASTE FLUX
Chemical Name : CHEMICAL MIXTURE
Formula : CHEMICAL MIXTURE
Product CAS No.: CHEMICAL MIXTURE
Product Use : Welding/Brazing/Soldering

Supplier : WOLVERINE JOINING TECHNOLOGIES, LLC.
Address : 235 KILVERT STREET
City, St, Zip : WARWICK, RI 02886
Phone : 1-401-739-9550

FOR CHEMICAL EMERGENCY CALL CHEMTREC (24 HOURS):
1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands)
1-703-527-3887 (Outside Above Area)

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	% Wt.
AMMONIUM CHLORIDE	12125-02-9	1-10
GLYCERINE	56-81-5	15-40
HYDROBROMIC ACID	10035-10-6	3-10

INGREDIENT NOTES

NOTE: The percentage by weight values reported for the ingredients in this product represent approximate formulation values. See Section 8 for Exposure Limits and Section 11 for Toxicological Information.

SECTION 3: HAZARDS IDENTIFICATION

TARGET ORGAN

STATEMENT: WARNING: May cause irritation to skin, eyes, and respiratory system. May be harmful if swallowed or inhaled.

ROUTES OF ENTRY

Eyes? YES Skin? YES Inhalation? YES Ingestion? YES

POTENTIAL HEALTH EFFECTS

EYE CONTACT: May cause irritation to eyes

SKIN CONTACT: Dermatitis possible may cause irritation to skin. Existing disorders may be aggravated.

INHALATION: May cause irritation to respiratory system. Existing lung disorders may be aggravated.

INGESTION: May cause damage to digestive system. Avoid contact to mucous membranes.

CARCINOGENICITY

NTP? NO IARC? NO OSHA? NO

CHRONIC HEALTH

HAZARDS: May cause irritation to skin, eyes, and respiratory system.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during this flushing with water. Call a physician immediately.

SKIN CONTACT: Flush area with water while removing contaminated clothing and shoes. Follow by washing with soap and large amounts of water until no evidence of chemical remains (15-20 minutes). Get medical attention if needed.

INHALATION: Remove to fresh air. If not breathing, give artificial Respiration, Call a physician immediately.

INGESTION: If swallowed, "DO NOT INDUCE VOMITING", give 3-4 glasses of water. Do not give anything by mouth to an unconscious or convulsing person. Get immediate medical attention.

NOTE: See Section 8 for Exposure Limits, Section 11 for Toxicological Information and Section 12 for Ecological Information.

SECTION 5: FIRE-FIGHTING MEASURES

Flash Point: Not Applicable
Auto-Ignition: Not Applicable
LEL: Not Applicable
UEL: Not Applicable

NFPA HAZARD CLASSIFICATION

Health: 2 Flammable: 0 Reactivity: 0

HMIS HAZARD CLASSIFICATION

Health: 2 Flammable: 0 Reactivity: 0 Special: 0

EXTINGUISHING MEDIA

Use water spray, dry chemical, alcohol foam, or carbon dioxide. Use water to keep fire-exposed containers cool.

SPECIAL FIRE FIGHTING PROCEDURES

Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing as specified in 29 CFR 1910.156. May release ammonia and HCL fumes. Toxic metal halide fumes may be Produced.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Not a fire or explosion hazard. Product will emit toxic and corrosive gases on thermal decomposition.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Wearing full protective clothing, control spill source, contain by diking and ventilate area. Soak up spill using an absorbent. Scoop into container. Notification of the National Response Center (800/424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and clean-up of spills, including reuse or disposal as appropriate (see Section 13: Disposal Considerations).

****NOTE**** In the event of an accidental release of this material, the above procedures should be followed. Additionally, proper exposure controls and personal protection equipment should be used (see Section 8: Exposure Control/Personal Protection), and disposal of the material should be in accordance with Section 13: Disposal Considerations.

SECTION 7: HANDLING AND STORAGE

Wash thoroughly after handling.

Keep container closed.

Store in a cool, dry location away from incompatible materials.

Avoid breathing any dust, mist or fumes resulting from the use of this product. Existing lung disorders will have increased toxic susceptibility.

Avoid contact with eyes, skin and clothing.

Use with adequate ventilation.

Provide a safety shower and eyewash close to where this material is being used.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMITS

INGREDIENT	PEL-OSHA	TLV-ACGIH
AMMONIUM CHLORIDE CAS NO.: 121125-02-9	-	10 mg/m ³ (Fume) 20 mg/m ³ (STEL)
GLYCERINE CAS NO.: 56-81-5	15 mg/m ³ (Total) 5 mg/m ³ (Resp)	10 mg/m ³ (Mist)
HYDROBROMIC ACID CAS NO.: 10035-10-6	10 mg/m ³	10 mg/m ³

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only). All ACGIH TLVs refer to the 2000 Standards. All OSHA PELs refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989.

RESPIRATORY PROTECTION

If there is a potential to exceed the TLV, NIOSH approved respiratory protection is required. For airborne levels up to 10 times the appropriate TLV's, an air purifying acid gas cartridge respirator would be suitable. If used in a manner that generates a mist, a dust/mist cartridge as well as the acid gas cartridge would be necessary. Above 10 times the TLV, an air supplied full facepiece respirator would be required. If respiratory protection is used, follow all the requirements for respirator programs set forth in the OSHA regulations (29 CFR 1910.139).

VENTILATION

General; local exhaust ventilation as necessary to control any air contaminants to within their PELs or TLVs during the use of this product.

PROTECTIVE EQUIPMENT

Chemical goggles.

Rubber or neoprene gloves.

Body protection as necessary to prevent skin contact.

Refer to ANSI/ASC Z49.1-94 (Safety in Welding, Cutting and Allied Processes), published by the American Welding Society, for further information on the selection of personal protective equipment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Opaque white to yellowish paste

Odor: Odorless

Boiling Point: 220 F

Specific Gravity (H₂O=1): 1.014 - 1.33

Melting Point: Not Established

Vapor Pressure (mm Hg): Not Applicable

Vapor Density (Air=1): Not Applicable

Evaporation Rate: < 1

% Solubility In Water: 100 %

pH: Not Determined

SECTION 10: STABILITY AND REACTIVITY

Stability: Generally considered stable.

Avoid: None

INCOMPATIBILITY (Materials to Avoid)

Strong nitric, sulfuric acids, cyanides.

Combustible materials.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS

Thermal decomposition may produce hydrogen chloride, hydrogen bromide and ammonia.

Polymerization: Polymerization is not expected to occur.

Avoid: None.

SECTION 11: TOXICOLOGICAL INFORMATION

CHEMICAL NAME	% Wt. LD50	LC50
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No data available

NOTE: See Sections 3, 8 and 12 for additional information.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY

No data available.

ENVIRONMENTAL FATE

No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

US EPA Waste Number: None

Federal, state and local disposal laws and regulations will determine the proper waste disposal/recycling/reclamation procedure. All waste material should be reviewed to determine the applicable hazards (testing may be necessary). Any waste solution with a pH of ≤ 2 or ≥ 12.5 is considered a hazardous waste under EPA hazardous waste regulations. Disposal requirements are dependent on the hazard classification and will vary by location and the type of disposal selected.

****NOTE**** Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary; all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

SECTION 14: TRANSPORT INFORMATION

INTERNATIONAL

Non Regulated

UNITED STATES

EPA Waste Number: None

DOT Classification: Non Regulated

DOT Proper Shipping Name: Non Regulated

Packing Group: NA

CANADA

PIN Number: NA

TDG Class: NA

EC

DGL: Not Determined

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

TSCA: IN TSCA

SARA 311 AND 312 HAZARD CATEGORIES

IMMEDIATE (Acute) Health Hazard: NA
DELAYED (Chronic) Health Hazard: NA
FIRE Hazard: NO
REACTIVITY Hazard: NO
Sudden Release of PRESSURE: NO

SARA SECTION 313 NOTIFICATION

This product does not contain a toxic chemical (or chemicals) 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.

CHEMICAL NAME	CAS Number	% Wt.
None		

OZONE DEPLETING SUBSTANCES (ODS)

This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1990 and 40 CFR Part 82.

VOLATILE ORGANIC COMPOUNDS (VOC)

Not Determined

US STATE REGULATIONS

PENNSYLVANIA: This product contains ammonium chloride and hydrobromic acid, which are listed in PA Code Title 34, Hazardous Substance List.

VOLATILE ORGANIC COMPOUND (CARB): Not Determined

CANADIAN REGULATIONS

"This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*."

DSL/NDSL: NA

WHMIS Classification: Uncontrolled Product

EUROPEAN REGULATIONS

EINECS: Not Determined

OTHER REGULATIONS

MITI (Japan): NA

AICS (Australia): NA

SECTION 16: OTHER INFORMATION

REVISIONS

Revision Number: 5

PREPARATION INFORMATION

Prepared By: Wolverine Joining Technologies, and Wolverine Tube Inc.
Corporate Environmental, Health and Safety Group.

Phone Number/Address: See Section 1

This Material Data Sheet is offered pursuant to OSHA's Hazard Communication Standard (29 CFR 1910.1200). Other government regulations must be reviewed for applicability to these products. The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information has been prepared for the guidance of plant engineering, operations, and management and for persons working with or handling these products. The information presented in the MSDS is premised upon proper handling and anticipated uses and is for the material without chemical additions/alterations. We believe this information to be reliable and up-to-date as of the date of publication, but make no warranty that it is. Additionally, if this Material Safety Data Sheet is more than three years old, please contact the supplier at the phone number listed in Section 1 to make certain that this sheet is the most current. Copyright Wolverine Joining Technologies, LLC. License granted to make unlimited copies for internal use only.