SAFETY DATA SHEET

Brazing Paste

Date Prepared : 4/13/2015
MSDS No : STL-1205-XXX_US_GHS

STL-1205-XXX

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: STL-1205-XXX
GENERAL USE: Product Type: A braze paste consisting of powdered filler metal and flux suspended in a binder and used for joining metals by heating the parts to be joined and this product to or above the melting temperature of the filler metal.
PRODUCT DESCRIPTION: See Additional Information for explanation of Product Name.

MANUFACTURER

Fusion, Incorporated (USA)
4658 East 355th Street
Willoughby, OH 44094
Emergency Phone: 01-800-626-9501
Alternate Emergency Phone: 01-440-946-3300
E-Mail: MSDS@fusion-inc.com

24 HR. EMERGENCY TELEPHONE NUMBERS

In case of:	Contact:	Phone:
Chemical Emergency [spill, leak, fire, exposure or accident]	Chemtrec [domestic North America]	800-424-9300 {24 hours}
Chemical Emergency [spill, leak, fire, exposure or accident]	Chemtrec [International]	703-527-3887 {24 hours} [collect calls accepted]
Poisoning	Poison Control Center	800-222-1222 {24 hours}
MSDS Inquires	Fusion, Incorporated	440-946-3300 {8AM-5PM Eastern std time [Mon-Fri]}

COMMENTS: Product Identification:
This SDS is applicable to all pastes with product codes conforming to the following system:
First segment [binder] - second segment [alloy] - third segment [% metal code]
See ***example*** below:

ABC-9999-XXX
(1) - (2) - (3)
↑ ↑ ↑
(1) The first segment [the binder code] consists of three letters or a number and two letters.
(2) The middle segment [the alloy code] may appear in basic form [no suffix letter], or with one of several suffix letters.
[Special note: some alloys may also have a prefix letter.]
(3) The last segment consists of 3 characters: the first 2 digits denote the %metal of the paste, the last character will be a letter or numeral.
** Note: This SDS applies to products containing 60% metal or greater.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health:

Acute Toxicity (Oral), Category 4
Reproductive Toxicity, Category 2

Environmental:

Acute Hazards to the Aquatic Environment, Category 1
Chronic Hazards to the Aquatic Environment, Category 1

GHS LABEL

STL-1205-XXX


Exclamation mark


Health hazard


Environment

SIGNAL WORD: WARNING

HAZARD STATEMENTS

H302: Harmful if swallowed.
H361: Suspected of damaging fertility or the unborn child.
H410: Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENT(S)

Prevention:

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P264: Wash exposed skin thoroughly after handling.
P270: Do no eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P273: Avoid release to the environment.
P280: Wear protective gloves, clothing, eye protection and face protection.

Response:

P308+P313: IF exposed or concerned: Get medical attention.
P330: Rinse mouth.
P391: Collect spillage.

Storage:

P405: Store locked up.

Disposal:

P501: Dispose of container in accordance with local, regional and national regulations.

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Tan viscous material

IMMEDIATE CONCERNS: Warning! Product contains fluorides: In use above 500°C [930°F] in the presence of water vapor, hydrogen fluoride gas is evolved. Hydrogen fluoride gas can cause irritation to the respiratory tract, and delayed burns to the eyes and skin. It can also cause fluid in the lungs [pulmonary edema], and death. Avoid contact with skin, eyes, and inhalation of vapors.
Fumes from the soldering/brazing process are irritating to the eyes and respiratory system. Hot metal can cause eye and skin burns. Avoid breathing fumes from the soldering/brazing process. Use only with adequate ventilation.

MEDICAL CONDITIONS AGGRAVATED: May aggravate pre-existing skin conditions, liver disorders, kidney disorders, pulmonary function, Wilson's disease.

ROUTES OF ENTRY: Potential routes of entry include: eye contact, skin contact, inhalation of metallic fume and decomposition products from heating this material during the soldering/brazing process.

3. COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS

Chemical Name	Wt.%	CAS
Potassium difluorodihydroxyborate(1-)	<35	85392-66-1
Silver	15 - 70	7440-22-4
Copper	10 - 45	7440-50-8
Zinc	3 - 35	7440-66-6
Tin	0 - 15	7440-31-5

COMMENTS: The specific chemical identity of the flux/binder formulation ingredients are being withheld as a trade secret. Disclosure will be provided to medical personnel in the event of an emergency. See Section 8 for exposure limits of hazardous ingredients [where applicable].
Note: This SDS is prepared to cover multiple alloys with the same GHS Hazard Classification and may list substances not applicable to

the named product. Please see the Specification Sheet for product specific alloy composition and melt point range.

4. FIRST AID MEASURES

EYES: Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get medical attention if irritation persists.

SKIN: Immediately remove contaminated clothing. Do not attempt to remove any material bonded to the skin. Flush area of skin contact immediately with large amounts of water for at least 15 minutes. If irritation persists after flushing, get medical attention promptly. Launder contaminated clothing before reuse.

INGESTION: If swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

INHALATION: Remove victim to fresh air. If not breathing, trained personnel may give artificial respiration. If breathing is difficult, give oxygen by trained personnel. Seek medical attention.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: Eye contact may cause: irritation and/or burning sensation.

SKIN: May cause irritation and burns to exposed tissue. Hot molten metal may cause burns to the skin.

INGESTION: If swallowed, this product may cause gastrointestinal discomfort, nausea, vomiting.

INHALATION: Inhalation of powder, dust or fumes may be irritating to the respiratory system.
Inhalation of some metals may cause Metal Fume Fever: See section 11.

NOTES TO PHYSICIAN: Treat symptomatically. Fluorides can reduce serum calcium levels resulting in potentially fatal hypocalcemia. Focus medical efforts on combating shock and reducing systemic toxicity of fluoride ion.

5. FIRE FIGHTING MEASURES

GENERAL HAZARD: During the soldering/brazing process, hazardous decomposition products may be released: See section 10.

EXTINGUISHING MEDIA: For fires involving this product, use dry chemical, carbon dioxide, foam, water spray. Do not use water if metal is molten.

EXPLOSION HAZARDS: This material is classed as a non-flammible solid. Product will burn under fire conditions.
Emits toxic and corrosive fumes under fire conditions.

FIRE FIGHTING PROCEDURES: Move container from fire area if it can be done without risk. Avoid inhalation of vapors or mists.

FIRE FIGHTING EQUIPMENT: Exposure to decomposition products may be a hazard to health. Do not breathe smoke, gases or vapors generated. Wear goggles if eye protection is not provided. Wash away any material that comes into contact with the body, clothing or equipment. When fighting fires involving this product, wear full protective gear. For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

LARGE SPILL: Recover spilled material. Reclaim this material whenever possible. Collect material into sealed and labeled containers for reclamation or disposal.

ENVIRONMENTAL PRECAUTIONS

WATER SPILL: Avoid contamination of water bodies during cleanup and disposal. Do not flush to sewer. Advise relevant authorities if material enters sewers, water sources or low-lying areas.

LAND SPILL: No data available

AIR SPILL: No data available

GENERAL PROCEDURES: Waste disposal method: Scoop up excess material and wash affected areas with soap and water. Avoid contact with skin and eyes. Collect material into sealed and labeled containers for disposal. Clean contaminated surface thoroughly. Dispose in accordance with federal, state and local regulations.

SPECIAL PROTECTIVE EQUIPMENT: Avoid inhaling vapor and/or mists. Do not get spilled material on skin, clothing, or in eyes. Wear full protective clothing. See Section 8. Remove all contaminated clothing.

7. HANDLING AND STORAGE

HANDLING: Keep away from sources of ignition.

STORAGE: Keep lid tightly closed except when removing product.

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STORAGE TEMPERATURE: 5°C (41°F) Minimum to 25°C (77°F) Maximum

SHELF LIFE: See specification sheet or container label.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)					
		EXPOSURE LIMITS			
		OSHA PEL		ACGIH TLV	
Chemical Name		**ppm**	**mg/m³**	**ppm**	**mg/m³**
Silver	**LTEL (TWA)**	[1]	0.01 [1]	[1]	0.01 [1]
Copper	**LTEL (TWA)**	[1]	1 [1]	[2]	1 [2]
Zinc	**LTEL (TWA)**	[3]	10 [3]	[3]	5 [3]
	STEL			[3]	10 [3]
Tin	**LTEL (TWA)**		2		2

OSHA TABLE COMMENTS:
1. [dust]
2. [fume]
3. [zinc oxide fume]

ENGINEERING CONTROLS: The use of local ventilation is required to maintain the concentration of fumes evolved from the soldering/brazing process to well below the occupational exposure limits, within the operator's breathing zone and the general vicinity. Use of process enclosures, exhaust systems, and other engineering/administrative controls should be designed in accordance with local conditions. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices* [most recent edition], for details.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Wear safety glasses with side shields as a minimum level of protection. Consult ANSI Z87.1 for more information.

SKIN: Wear chemical resistant gloves. When material is heated, wear thermal-insulated gloves to protect against burns.

RESPIRATORY: When exposure limits (listed above) are exceeded or ventilation is inadequate, wear a NIOSH or European Standard approved respirator, in accordance with OSHA respirator regulations [29 CFR 1910.134] or European Standards [EN149]. Consult ANSI Z88.2 *American National Standard for Respiratory Protection* for guidance on proper selection, use and care of respirators.

PROTECTIVE CLOTHING: Avoid skin contact. Wear chemical resistant clothing (long-sleeved shirt buttoned at the wrist) as necessary to prevent contact. For soldering/brazing operations where hot metallic parts are handled and molten metal may be present, wear heat-resistant gloves and clothing to protect from burns.

WORK HYGIENIC PRACTICES: Minimize exposure in accordance with good hygiene practice. Good general hygienic practices include: Eating, drinking, and smoking should not be permitted in work areas. Wash thoroughly after handling, and before eating, drinking, using tobacco, applying cosmetics, or using the toilet. Keep area clean. Remove contaminated clothing promptly. Launder contaminated clothing before reuse. Avoid contact with eyes, skin, and clothing. Avoid breathing dust, vapor or mist.

OTHER USE PRECAUTIONS: Educate and train employees in the safe use and handling of this product.

COMMENTS: See American National Standard ANSI Z49.1, *Safety in Welding, Cutting and Allied Processes*, published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126; OSHA *Safety and Health Standards*, 29 CFR 1910, available from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Characteristic odor.

APPEARANCE: Viscous paste

COLOR: Tan

pH: Not Applicable

FLASHPOINT AND METHOD: Not Applicable

FLAMMABLE LIMITS: LEL/UEL: Not Determined

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AUTOIGNITION TEMPERATURE: Not Determined

VAPOR PRESSURE: 0.093 mm Hg at 68°F/20°C [for C039]

VAPOR DENSITY: >1 [air=1] [for C039]

BOILING POINT: 530-623°F [277-328°C] [for C039]

MELTING POINT: Alloy Melting Range: > 538°C (1000°F) (See Spec. Sheet for specific alloy melt point)

SOLUBILITY IN WATER: Negligible

EVAPORATION RATE: No data available

SPECIFIC GRAVITY: > 2 (water=1)

COMMENTS: Not Available

10. STABILITY AND REACTIVITY

REACTIVITY: This material is not expected to be reactive at ambient conditions.

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable under normal conditions of use.

CONDITIONS TO AVOID: Avoid contact with incompatible materials. Avoid extreme heat. Avoid prolonged exposure to air and moisture.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposition products may include, but are not limited to: smoke, fumes, carbon oxides (CO, CO_2), highly corrosive and toxic hydrofluoric acid fumes. Metallic decomposition products may include: metal oxide fumes, copper fume, zinc oxide fumes, tin oxides.

INCOMPATIBLE MATERIALS: Materials to avoid: strong reducing agents such as metal hydrides or alkali metals (Reaction with these materials may generate hydrogen gas, which could create an explosive hazard), acids, alkalies, oxidizing agents, strong oxidizers, acetylene, ammonia, hydrogen peroxide, bromine azide, chlorine trifluoride, ethyleneimine, oxalic acid, tartaric acid, nitric acid, sulfuric acid, bromates, strong bases, magnesium, chlorates, iodates, halogens, halogenated hydrocarbons, moisture, cupric nitrate, peroxides, sulfur.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD_{50} (rat)	DERMAL LD_{50} (rabbit)	INHALATION LC_{50} (rat)
Copper	Not established	Not established	Not established

EYES: Flux ingredient(s): Eye contact may cause: burns, severe eye damage.
Binder: Eye contact may cause: irritation.
Alloy: Can cause irritation and abrasion.

SKIN: Flux ingredient(s): Skin contact may cause: severe irritation, burns.
Binder: Skin contact may cause: irritation.
Alloy: Hot molten metal may cause burns to the skin. Wear protective equipment when working with molten metal.
Silver: Skin contact with silver powder may produce localized irritation and/or argyria [permanent blue-gray discoloration of the skin].
Copper: Skin contact may cause irritation and dermatitis.
Tin: No adverse effects expected. May cause skin irritation.

SKIN ABSORPTION: This material contains one or more components which may cause adverse effects if absorbed through the skin.

INGESTION: Flux ingredient(s): Harmful if swallowed. Ingestion may cause: severe irritation, burns.
Binder: Ingestion may cause: gastrointestinal discomfort, diarrhea.
Silver: Prolonged ingestion of silver compounds may cause a permanent bluish discoloration of the skin, eyes, and mucous membranes.
Copper: Ingestion may cause nausea, vomiting, diarrhea.
Zinc: Ingestion of soluble salts of this material may cause abdominal irritation resulting in nausea and vomiting.
Tin: Ingestion of large doses may cause: nausea, vomiting, diarrhea.

INHALATION: Flux ingredient(s): If inhaled, may cause: burns, severe irritation.
Binder: If inhaled, may cause: irritation of the respiratory tract, coughing, sneezing.
Silver: Prolonged inhalation of silver compounds may cause a permanent bluish discoloration of the skin, eyes, and mucous membranes.
Copper: If inhaled, may cause: sneezing, nausea, weakness, fever. Fumes from heating may cause metal fume fever.
Zinc: This material is relatively non-toxic to humans by inhalation. However, acute overexposure to zinc oxide fume may cause metal

fume fever, characterized by flu-like symptoms such as chills, fever, nausea and vomiting.
Tin: No adverse effects expected. Inhalation of dust may cause mechanical irritation.

NOTES: If excessive quantities of copper fume or zinc oxide fume are inhaled, it can result in the condition called metal fume fever. The symptoms of metal fume fever will occur within 3 to 10 hours, and include immediate dryness and irritation of the throat, tightness of the chest, and coughing which may later be followed by flu-like symptoms of fever, malaise, perspiration, frontal headache, muscle cramps, low back pain, occasionally blurred vision, nausea, and vomiting. There are no recognized complications, after effects, or chronic effects that result from this condition.

CHRONIC: The fluoride ion can reduce serum calcium levels, possibly causing fatal decalcification of the bones.

CARCINOGENICITY

Notes: This product was not formulated with any ingredients that are classified as carcinogenic by IARC, NTP, ACGIH, OSHA or the UK HSC.

SENSITIZATION: This material was not made with any components known to be skin or respiratory sensitizers.

REPRODUCTIVE EFFECTS: Contains Borates: Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

TARGET ORGANS: Affected target organs: eyes, kidneys, liver, respiratory system, skin, central nervous system, bones (fluorosis), calcification of ligaments and vertebrae, teeth, conjunctiva, mucous membranes, lungs.

MUTAGENICITY: This material was not made with components identified as being mutagenic.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: Material - Expected to be toxic to aquatic organisms.
Material - May cause long-tem adverse effects in the aquatic environment.

BIOACCUMULATION/ACCUMULATION: No data available

DISTRIBUTION: No data available

AQUATIC TOXICITY (ACUTE): No data available

CHEMICAL FATE INFORMATION: No data available

GENERAL COMMENTS: No data available

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of in accordance with EC, national and local regulations, or sell to refiner.

PRODUCT DISPOSAL: Disposal of waste material from the use of this product may be subject to federal, state and local regulations. Waste characterizations and compliance with applicable laws are the sole responsibility of the waste generator. Reclaimed scrap metal has monetary value. Contact a commercial reclaimer for information on recycling scrap metals. All recovered material should be packaged, labeled, transported and disposed or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices.

EMPTY CONTAINER: Do not reuse empty containers. Dispose of empty container in accordance with EC, national and local regulations.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Environmentally hazardous substances, solid, n.o.s. [Copper metal powder]

PRIMARY HAZARD CLASS/DIVISION: 9 Environmentally Hazardous Substance

UN/NA NUMBER: 3077

PACKING GROUP: III

BULK FREIGHT CLASS: Per 49CFR 171.4: For ground, rail or air shipments, Marine pollutants are regulated as a hazardous material in bulk quantities only. Non-bulk shipments are not regulated for shipping.

MARINE POLLUTANT #1: Copper metal powder

AIR (ICAO/IATA)

SHIPPING NAME: Environmentally hazardous substances, solid, n.o.s. [Copper metal powder]

UN/NA NUMBER: 3077

PRIMARY HAZARD CLASS/DIVISION: 9 Environmentally Hazardous Substance

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PACKING GROUP: III

SPECIAL PROVISIONS: A197: May be shipped as "Not restricted" provided that the net quantity in any receptacle does not exceed 5 kg or 5 L.

VESSEL (IMO/IMDG)

SHIPPING NAME: Environmentally hazardous substances, solid, n.o.s. [Copper metal powder]

UN/NA NUMBER: 3077

PRIMARY HAZARD CLASS/DIVISION: 9 Environmentally Hazardous Substance

PACKING GROUP: III

MARINE POLLUTANT #1: Copper metal powder

SPECIAL PROVISIONS: Marine Pollutants having a net quantity of 5 L or less for liquids or a net mass per single or inner packaging of 5 kg or less for solids are not subject to any other provision of the Code relevant to marine pollutants.

COMMENTS: This product is classified for transport per US DOT, ADR/RID, ICAO/IATA, and IMO/IMDG.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

FIRE: No **PRESSURE GENERATING:** No **REACTIVITY:** No **ACUTE:** Yes **CHRONIC:** Yes

EPCRA SECTION 313 SUPPLIER NOTIFICATION

Chemical Name	Wt.%	CAS	Comments
Silver	15 - 70	7440-22-4	Material subject to reporting requirements of SARA Section 313. Listed as: Silver Compounds
Copper	10 - 45	7440-50-8	Material subject to reporting requirements of SARA Section 313. Listed as: Copper Compounds
Zinc	3 - 35	7440-66-6	Material subject to reporting requirements of SARA Section 313. Listed as: Zinc Compounds, Zinc (as fume or dust)

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

Chemical Name	Wt.%	CERCLA RQ
Silver	15 - 70	1000 lbs.
Copper	10 - 45	5000 lbs.
Zinc	3 - 35	1000 lbs.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS: The components of this product are included on the TSCA Inventory.

CALIFORNIA PROPOSITION 65: This product does not contain any components that are regulated under California Proposition 65.

16. OTHER INFORMATION

APPROVED BY: Regulatory Affairs

PREPARED BY: Jerishia D. Fouts **Date Prepared:** 4/13/2015

INFORMATION CONTACT: Regulatory Affairs

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HMIS RATING

HEALTH	*	3
FLAMMABILITY		1
PHYSICAL HAZARD		0
PERSONAL PROTECTION		I

HMIS RATINGS NOTES: HMIS III personal protection index: '**I**' = safety glasses + gloves + vapor respirator

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