



SAFETY DATA SHEET
according to Regulation (EC) No. 453/2010
Brazing Paste

BHL-1310-XXX

SDS No : BHL-1310-XXX_EU_GHS

Date Issued : 04/27/2015

SECTION 1 : Identification of the substance/preparation and of the company/undertaking

1.1. Product identifier

Product name : BHL-1310-XXX
Product description : See Additional Information for explanation of Product Name.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : 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.

1.3. Details of the supplier of the safety data sheet

Manufacturer

Fusion Automation Incorporated
Barrows Road, The Pinnacles
HARLOW, ESSEX CM19 5FD UNITED KINGDOM

Emergency Contact : Safety Officer +44 (0)1279 443122
Service Number : +44 (0)1279 443122
E-Mail : Jerishia D. Fouts: MSDS@fusion-inc.com

Additional information

: 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.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]

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 2

2.2. Label elements

Classification according to Regulation (EC) No 1272/2008 [CLP]

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 Hazard pictogram(s)

Signal Word

: WARNING

Hazard statement(s)

: 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 not 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.

2.3. Other hazards
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.

SECTION 3: Composition / information on ingredients
3.1. Substances

Not Applicable

3.2. Mixtures

Chemical Name	CAS No.	EINECS No.	Wt.%	Classification according to Regulation (EC) No 1272/2008 [CLP]
Potassium difluorodihydroxyborate(1-)	85392-66-1	286-925-2	<35	Acute Tox. (O),Cat. 4; Rep. Tox.,Cat. 2; H302; H361-1
Copper	7440-50-8	231-159-6	40 - 90	Acute Tox. (O),Cat. 4; Aquatic Acute,Cat. 1; Aquatic Chronic,Cat. 2; H302; H410
**Phosphorus	7723-14-0	231-768-7	1 - 10	Flam. Sol.,Cat. 1; Aquatic Chronic,Cat. 3; H228; H412
Silver	7440-22-4	231-131-3	0 - 20	Aquatic Acute,Cat. 1; Aquatic Chronic,Cat. 1; H400; H410
Tin	7440-31-5	231-141-8	0 - 10	Not classified

Additional information

: 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.

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**Phosphorus is expected to be in the form of tricopper phosphide. There is no specific data on health dangers or toxicity of this substance.

For full text of H-statements: see SECTION 16.

SECTION 4: First aid measures**4.1. Description of first aid measures**

- Following eye contact** : 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.
- Following skin contact** : 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.
- Following 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.
- Following 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.

4.2. Most important symptoms and effects, both acute and delayed

- 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.

4.3. Indication of any immediate medical attention and special treatment needed

- 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.

SECTION 5: Fire fighting measures**5.1. Extinguishing media**

- Extinguishing media** : For fires involving this product, use dry chemical, carbon dioxide, foam, water spray. Do not use water if metal is molten.

5.2. Special hazards arising from the substance or mixture

- General hazard** : During the soldering/brazing process, hazardous decomposition products may be released: See section 10.
- Explosion hazards** : This material is classed as a non-flammable solid. Product will burn under fire conditions. Emits toxic and corrosive fumes under fire conditions.

5.3. Advice for firefighters

- 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.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

- 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

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eyes. Wear full protective clothing. See Section 8. Remove all contaminated clothing.

6.2. 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

6.3. Methods and material for containment and cleaning up

- Large spill** : Recover spilled material. Reclaim this material whenever possible. Collect material into sealed and labeled containers for reclamation or disposal.

6.4. Reference to other sections

- Reference to other sections** : See Section 8 for Personal Protective Equipment
- See Section 13 for Product Disposal considerations

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

- Handling** : Keep away from sources of ignition.
- Storage** : Keep lid tightly closed except when removing product.

7.2. Conditions for safe storage, including any incompatibilities

- Storage temperature** : 5°C (41°F) Minimum to 25°C (77°F) Maximum
- Shelf life** : See specification sheet or container label.

7.3. Specific end use(s)

- Specific end use(s)** : Solder or Braze Paste for joining metals.

SECTION 8: Exposure controls / personal protection**8.1. Control parameters**

- Control parameters** : **Phosphorus is expected to be in the form of tricopper phosphide. There is no specific data on health dangers or toxicity of this substance.

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Chemical Name: Potassium difluorodihydroxyborate(1-)			
Type	ppm	mg/m ³	Comments
TWA		2.5 mg/m ³	(inorganic fluorides, as F)
Chemical Name: Copper			
Type	ppm	mg/m ³	Comments
TWA		0.2 mg/m ³	[fume, as Cu]
STEL		2 mg/m ³	[dusts & mists, as Cu]
TWA		1 mg/m ³	[dusts & mists, as Cu]
STEL		2 mg/m ³	[dusts & mists, as Cu]
Chemical Name: **Phosphorus			
Type	ppm	mg/m ³	Comments
TWA		0.1 mg/m ³	[for yellow-form phosphorus (brazing fume by-product: diphosphorus pentoxide has LTEL of 1 mg/m ³)]
STEL		0.3 mg/m ³	[for yellow-form phosphorus (brazing fume by-product: diphosphorus pentoxide has STEL of 2 mg/m ³)]
Chemical Name: Silver			
Type	ppm	mg/m ³	Comments
TWA		0.1 mg/m ³	
Chemical Name: Tin			
Type	ppm	mg/m ³	Comments
TWA		2 mg/m ³	
STEL		4 mg/m ³	

8.2. Exposure controls**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.

Eye/face protection

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

Skin protection

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

Respiratory protection

: 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 precautions

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

Additional information

: 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,

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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.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Appearance	: Viscous paste
Colour	: Gray
Odour	: Characteristic odor.
pH	: Not Applicable
Melting temperature	: Alloy Melting Range: 640°C - 925°C (1184°F - 1697°F). See Product Specification Sheet for the specific melt range.
Boiling temperature	: 464-528°F [239-276°C] [for C003]
Flash point	: Not Applicable
Evaporation rate	: <0.01 [n-butyl acetate=1] [for C003]
Flammable limits	: LEL/UEL: Not Determined
Vapor pressure	: 0.02 mm Hg at 68°F/20°C [for C003]
Vapor density	: 7.5 [air=1] [for C003]
Specific gravity	: > 2 (water=1)
Solubility in water	: Negligible
Auto-ignition temperature	: Not Determined

9.2. Other information

Additional information	: Not Available
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SECTION 10: Stability and reactivity**10.1. Reactivity**

Reactivity	: This material is not expected to be reactive at ambient conditions.
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10.2. Chemical stability

Chemical stability	: Stable under normal conditions of use.
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10.3. Possibility of hazardous reactions

Hazardous Polymerization	: Will not occur.
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10.4. Conditions to avoid

Conditions to avoid	: Avoid contact with incompatible materials. Avoid extreme heat. Avoid prolonged exposure to air and moisture.
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10.5. Incompatible materials

Incompatible materials	: Materials to avoid: oxidizing agents, 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, sulfur, halogens, acetylene, nitric acid, sulfuric acid, bromates, strong bases, ammonia, magnesium, chlorates, iodates, strong oxidizers, hydrogen peroxide, bromine azide, chlorine trifluoride, ethyleneimine, oxalic acid, tartaric acid, cupric nitrate, peroxides.
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10.6. Hazardous decomposition products

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: white phosphorous, phosphorus oxides, phosphine, phosphoric acid [if water is present], copper fume, metal oxide fumes, tin oxides.
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SECTION 11: Toxicological information**11.1. Information on toxicological effects**

Acute

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Chemical Name	Oral LD ₅₀	Dermal LD ₅₀	Inhalation LC ₅₀
Copper	Not established	Not established	Not established

Skin	<p>: Flux ingredient(s): Skin contact may cause: severe irritation, burns.</p> <p>Binder: Skin contact may cause: irritation, dermatitis.</p> <p>Alloy: Hot molten metal may cause burns to the skin. Wear protective equipment when working with molten metal.</p> <p>Silver: Skin contact with silver powder may produce localized irritation and/or argyria [permanent blue-gray discoloration of the skin].</p> <p>Copper: Skin contact may cause irritation and dermatitis.</p> <p>Tin: No adverse effects expected. May cause skin irritation.</p>
Ingestion	<p>: Flux ingredient(s): Harmful if swallowed. Ingestion may cause: severe irritation, burns.</p> <p>Binder: Ingestion may cause: gastrointestinal discomfort, diarrhea, nausea, vomiting.</p> <p>Silver: Prolonged ingestion of silver compounds may cause a permanent bluish discoloration of the skin, eyes, and mucous membranes.</p> <p>Copper: Ingestion may cause nausea, vomiting, diarrhea.</p> <p>Tin: Ingestion of large doses may cause: nausea, vomiting, diarrhea.</p> <p>Phosphorus: Red phosphorus is not readily absorbed and, in pure form, is considered non-poisonous. However, possible contamination with the yellow form must be considered, and symptoms such as nausea, vomiting, abdominal pain, or garlic odor on breath will indicate poisoning by the latter. The estimated lethal human dose for white phosphorus is 50-100 mg.</p>
Inhalation	<p>: Flux ingredient(s): If inhaled, may cause: burns, severe irritation.</p> <p>Binder: If inhaled, may cause: irritation of the respiratory tract, coughing, sneezing, headache, dizziness, drowsiness, unconsciousness, central nervous system depression.</p> <p>Phosphorus: Diphosphorus pentoxide (P₂O₅) fume is corrosive and irritating to the mucous membranes, respiratory system, eyes and skin. If inhaled, may cause coughing, bronchitis, possible kidney damage or liver damage if contaminated with yellow phosphorus.</p> <p>Copper: If inhaled, may cause: sneezing, nausea, weakness, fever. Fumes from heating may cause metal fume fever.</p> <p>Silver: Prolonged inhalation of silver compounds may cause a permanent bluish discoloration of the skin, eyes, and mucous membranes.</p> <p>Tin: No adverse effects expected. Inhalation of dust may cause mechanical irritation.</p>
Notes	<p>: If excessive quantities of copper 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.</p>
Respiratory or skin sensitisation	<p>: This material was not made with any components known to be skin or respiratory sensitizers.</p>
Germ cell mutagenicity	<p>: This material was not made with components identified as being mutagenic.</p>
Carcinogenicity	<p>: This product was not formulated with any ingredients that are classified as carcinogenic by IARC, NTP, ACGIH, OSHA or the UK HSC.</p>
Reproductive toxicity	<p>: 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.</p>
STOT-single exposure	<p>: Affected target organs: eyes, kidneys, liver, respiratory system, skin, central nervous system, bones (fluorosis), calcification of ligaments and vertebrae, teeth, GI tract, lungs, conjunctiva, mucous membranes.</p>

SECTION 12: Ecological information**12.1. Toxicity**

Toxicity	<p>: Material - Expected to be toxic to aquatic organisms.</p> <p>Material - May cause long-term adverse effects in the aquatic environment.</p>
Aquatic toxicity (acute)	<p>: No data available</p>

BHL-1310-XXX**12.2. Persistence and degradability**

Persistence and degradability : No data available

12.3. Bioaccumulative potential

Bioaccumulative potential : No data available

12.4. Mobility in soil

Mobility in soil : No data available

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment : No data available

12.6. Other adverse effects

General comments : No data available

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

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.

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

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

SECTION 14: Transport information**14.1. UN number**

UN number : 3077

14.2. UN proper shipping name

UN proper shipping name : Environmentally hazardous substances, solid, n.o.s. [Copper metal powder]

14.3. Transport hazard class(es)

Primary hazard class/division : 9 Environmentally Hazardous Substance

14.4. Packing group

Packing group : III

14.5. Environmental hazards

Marine pollutant : Copper metal powder

14.6. Special precautions for user

IMDG - sea : 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.

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

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Transport in bulk : No further instructions, see above.

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

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

RoHS : This product was not made with any components regulated under the RoHS Directive 2011/65/EU.

International regulations :
European Union:

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This safety datasheet complies with the requirements of Regulations (EC) No. 1907/2006 and No. 1272/2008.

15.2. Chemical safety assessment

Chemical safety assessment : A Chemical Safety Assessment has not been completed for this material.

SECTION 16: Other information

Relevant H-statements (number and full text) : Acute Tox. (O), Cat. 4: Acute Toxicity (Oral), Category 4
 Aquatic Acute, Cat. 1: Acute Hazards to the Aquatic Environment, Category 1
 Aquatic Chronic, Cat. 1: Chronic Hazards to the Aquatic Environment, Category 1
 Aquatic Chronic, Cat. 2: Chronic Hazards to the Aquatic Environment, Category 2
 Aquatic Chronic, Cat. 3: Chronic Hazards to the Aquatic Environment, Category 3
 Flam. Sol., Cat. 1: Flammable Solids, Category 1
 Rep. Tox., Cat. 2: Reproductive Toxicity, Category 2
 H228: Flammable solid.
 H302: Harmful if swallowed.
 H361-1: Suspected of damaging fertility or the unborn child.
 H400: Very toxic to aquatic life.
 H410: Very toxic to aquatic life with long lasting effects.
 H412: Harmful to aquatic life with long lasting effects.

Approved by : Regulatory Affairs

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