

SAFETY DATA SHEET

Aluminum Paste



Date Prepared : 11/05/2014
 SDS No : ASN-845-XXX_US_GHS
 Date Revised : 06/05/2017
 Revision No : 5

ASN-845-XXX

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ASN-845-XXX

GENERAL USE: Product Type: An Aluminum 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}
SDS 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 40% metal or greater.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Health:

Acute Toxicity (Oral), Category 4
 Acute Toxicity (Dermal), Category 4
 Acute Toxicity (Inhalation), Category 4
 Skin Irritation, Category 2

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Eye Corrosion, Category 1
 Carcinogenicity, Category 1B
 Reproductive Toxicity, Category 2
 Target Organ Toxicity (Single exposure), Category 3
 Target Organ Toxicity (Repeated exposure), Category 2

Environmental:

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

GHS LABEL

Exclamation
mark



Corrosion



Health hazard



Environment

SIGNAL WORD: DANGER**HAZARD STATEMENTS**

H302 + H312 + H332: Harmful if swallowed, in contact with skin or if inhaled.
 H315: Causes skin irritation.
 H318: Causes serious eye damage.
 H350: May cause cancer.
 H361: Suspected of damaging fertility or the unborn child.
 H336: May cause drowsiness or dizziness.
 H373: May cause damage to organs through prolonged or repeated exposure.
 H410: Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS**Prevention:**

P201: Obtain special instructions before use.
 P202: Do not handle until all safety precautions have been read and understood.
 P260: Do not breathe fumes or vapours.
 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:

P310: Immediately call a POISON CENTER or doctor.
 P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P302+P352: IF ON SKIN: Wash with plenty of soap and water.
 P362+P364: Take off contaminated clothing and wash it before reuse.
 P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P391: Collect spillage.

Storage:

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

Disposal:

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

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS: Danger! Corrosive! Causes skin and eye irritation and/or burns. Causes respiratory tract irritation.

Fumes from the soldering/brazing process may be 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.

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 INGREDIENTS

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Chemical Name	Wt. %	CAS	Classification according to Regulation (EC) No 1272/2008 [CLP]
C077	--	--	Acute Tox. (I),Cat. 3; Acute Tox. (D),Cat. 3; Acute Tox. (O),Cat. 3; Skin Corr.,Cat. 1B; H301; H311; H314; H331
C576	--	--	Asp. Haz.,Cat. 1; Flam. Liq.,Cat. 4; Acute Tox. (I),Cat. 4; Skin Irr.,Cat. 2; Carc.,Cat. 1B; STOT SE,Cat. 3; STOT RE,Cat. 2; H304; H227; H332; H315; H350-A; H336; H373-1
Zinc	48 - 95	7440-66-6	Aquatic Acute,Cat. 1; Aquatic Chronic,Cat. 1; H410
Aluminum	1 - 20	7429-90-5	Flam. Sol.,Cat. 1; H228

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. Symptoms may be delayed.

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-flammable 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

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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.

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				
Chemical Name	Type		ppm	mg/m ³
C077	OSHA PEL	TWA	[1]	2.5 [1]
	ACGIH TLV	TWA	[1]	2.5 [1]
C576	OSHA PEL	TWA	[2]	[2]
	ACGIH TLV	TWA	200	
Zinc	OSHA PEL	TWA	[3]	10 [3]
	ACGIH TLV	TWA	[3]	5 [3]
		STEL	[3]	10 [3]
Aluminum	OSHA PEL	TWA	[4]	15 [4]
	ACGIH TLV	TWA	[5]	1.0 [5]

Footnotes:

- [as F]
- No data available
- [zinc oxide fume]
- [dust]
- [respirable fraction]

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

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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: Gray

pH: Not Applicable

FLASH POINT AND METHOD: Not Applicable

FLAMMABLE LIMITS: LEL/UEL: Not Determined

AUTOIGNITION TEMPERATURE: Not Determined

VAPOR PRESSURE: >0.1 mm Hg at 68°F/20°C [for C576]

VAPOR DENSITY: 4.5 [air=1] [for C576]

BOILING POINT: 360 - 480°F [182.22 - 248.89°C] [for C576]

MELTING POINT: Alloy Melting Range: 371°C - 482°C (700°F - 900°F). See Product Specification Sheet for the specific melt range.

THERMAL DECOMPOSITION: No data available

SOLUBILITY IN WATER: Negligible

PARTITION COEFFICIENT: N-OCTANOL/WATER: No data available

EVAPORATION RATE: 0.34 [n-butyl acetate=1] [for C576]

SPECIFIC GRAVITY: > 1 (water=1)

OXIDIZING PROPERTIES: No data available

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: carbon oxides (CO, CO₂), cesium oxides, highly corrosive and toxic hydrofluoric acid fumes. Metallic decomposition products may include: zinc oxide fumes, metal oxide fumes.

INCOMPATIBLE MATERIALS: Materials to avoid: acids (produces HF gas), benzenediazonium tetrafluoroborate, difluoroamine, oxidizing agents, halogens, water, strong oxidizers, alkalies, ammonium nitrate, strong bases, halogenated hydrocarbons, moisture.

11. TOXICOLOGICAL INFORMATION**ACUTE TOXICITY**

Chemical Name	ORAL LD ₅₀	DERMAL LD ₅₀	INHALATION LC ₅₀
C077	100 Not established	300 Not established	3 Not established
C576	> 5000 mg/kg [rat]	> 2000 mg/kg [rabbit]	1.78 mg/L/4 hr (Rat, Dust)

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DERMAL LD₅₀: Classified as Acute Toxicity (Dermal), Category 4

The calculation method was used for this evaluation.

Notes: Binder: Skin contact may cause: irritation, burns.

Alloy: May cause skin irritation. Hot molten metal may cause burns to the skin. Wear protective equipment when working with molten metal.

ORAL LD₅₀: Classified as Acute Toxicity (Oral), Category 4

The calculation method was used for this evaluation.

Notes: Binder: Ingestion may cause: gastrointestinal discomfort, burns, pain, central nervous system (CNS) depression.

Aluminum: Ingestion may cause: nausea, vomiting, gastrointestinal irritation.

Zinc: Ingestion of soluble salts of this material may cause abdominal irritation resulting in nausea and vomiting.

INHALATION LC₅₀: Classified as Acute Toxicity (Inhalation), Category 4

The calculation method was used for this evaluation.

Notes: Binder: If inhaled, may cause: irritation of the respiratory tract, pulmonary edema, pain, burns of the mucous membranes, nausea, headache, dizziness, unconsciousness, central nervous system depression.

Aluminum: If inhaled, may cause: irritation of the respiratory tract.

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.

NOTES: If excessive quantities of 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.

SKIN CORROSION/IRRITATION: Classified as Skin irritation, Category 2

The calculation method was used for this evaluation.

SERIOUS EYE DAMAGE/IRRITATION: Classified as Eye Corrosion, Category 1.

The calculation method was used for this evaluation.

Binder: Eye contact may cause: burns

RESPIRATORY OR SKIN SENSITISATION: Not Classified.

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

GERM CELL MUTAGENICITY: Not Classified.

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

CARCINOGENICITY

Chemical Name	Other
C576	This material is classified as carcinogenic by the vendor.

NOTES: Classified as Carcinogenicity Category 1B

REPRODUCTIVE TOXICITY: Classified as Reproductive toxicity Category 2, Oral

STOT-SINGLE EXPOSURE: Classified as Target Organ Toxicity (Single exposure), Category 3

The calculation method was used for this evaluation.

STOT-REPEATED EXPOSURE: Classified as Target Organ Toxicity (Repeated exposure), Category 2.

The calculation method was used for this evaluation.

ASPIRATION HAZARD: Not Applicable

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: Material - Expected to be toxic to aquatic organisms.

Material - May cause long-term 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

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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.

EUROPEAN WASTE CATALOGUE: 16 03 03*: Inorganic wastes containing dangerous substances

14. TRANSPORT INFORMATION**DOT (DEPARTMENT OF TRANSPORTATION)**

PROPER SHIPPING NAME: Environmentally hazardous substances, solid, n.o.s. [Zinc 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.

AIR (ICAO/IATA)

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

UN/NA NUMBER: 3077

PRIMARY HAZARD CLASS/DIVISION: 9 Environmentally Hazardous Substance

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. [Zinc metal powder]

UN/NA NUMBER: 3077

PRIMARY HAZARD CLASS/DIVISION: 9 Environmentally Hazardous Substance

PACKING GROUP: III

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:** No

EPCRA SECTION 313 SUPPLIER NOTIFICATION

Chemical Name	Wt. %	CAS	Comments
Zinc	48 - 95	7440-66-6	Material subject to reporting requirements of SARA Section 313. Listed as: Zinc Compounds, Zinc (as fume or dust)
Aluminum	1 - 20	7429-90-5	Material subject to reporting requirements of SARA Section 313. Listed as: Aluminum (as fume or dust)

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT)

Chemical Name	Wt. %	CERCLA RQ
Zinc	48 - 95	1000 lbs.

ASN-845-XXX**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 Revised:** 06/05/2017

INFORMATION CONTACT: Regulatory Affairs

REVISION SUMMARY: This SDS replaces the 07/26/2016 SDS. Revised: **Section 11:** ASPIRATION HAZARD, STOT-SINGLE EXPOSURE. **Section 13:** EUROPEAN WASTE CATALOGUE. **Section 14:** ROAD AND RAIL (ADR/RID) - PROPER SHIPPING NAME SECTION 14: Transport information, UN number, Packing group.

HMIS RATING

HEALTH	<input type="checkbox"/>	3
FLAMMABILITY	<input type="checkbox"/>	1
PHYSICAL HAZARD	<input type="checkbox"/>	0
PERSONAL PROTECTION	<input type="checkbox"/>	I

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

MANUFACTURER DISCLAIMER: This Material Safety Data Sheet is prepared in accordance with U.S. OSHA, Canadian WHMIS, and European Community Safety Data Sheet directives. This document is offered pursuant to OSHA's Hazard Communication Standard 29 CFR 1910.1200. The information and recommendations contained in this Material Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared, and are offered in good faith. However, no warranty, guaranty or representation is expressed or implied as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable EC, national or state laws. Fusion, Incorporated assumes no responsibility for injury to the end user caused by the material even if proper safety procedures are followed. The end user should determine the suitability of the information for their particular usage. The end user assumes the risk in the use of this material. The information in this document may be changed periodically. Contact Fusion to determine if you possess the most current version of the document.