MATERIAL SAFETY DATA SHEET

Solder Paste

Date Issued: 12/08/2006
MSDS No: Solder Paste: WC-360-XXX
Revision No: New MSDS

WC-360-XXX

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: WC-360-XXX
GENERAL USE: Product Identification:
This MSDS 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:

WC-360-800
(1) - (2) - (3)
↑ ↑ ↑
(1) The first segment [the binder code] must be as per the example shown.
(2) The middle segment [the alloy code] may appear in basic form [no suffix letter], or with one of several suffix letters.
(3) The last segment [3 characters: first 2 digits denote %metal of the paste, with last character being C,D,J,S,orX or a numeral].

MANUFACTURER

Fusion, Incorporated
4658 East 355th Street
Willoughby OH 44094
Product Stewardship: 01-800-626-9501
Service Number: 01-440-946-3300

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 Type: A solder paste consisting of powdered filler metal and non-rosin 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.

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Gray viscous material

IMMEDIATE CONCERNS: Lead: Poison!Danger! May be fatal if swallowed or inhaled. This material is a neurotoxin. Can affect the gum tissue, central nervous system, kidneys, blood, and reproductive system. Possible cancer hazard. May cause cancer based on animal data. Risk of cancer depends on duration and level of exposure. May cause allergic skin reaction.
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.

POTENTIAL HEALTH EFFECTS

EYES: Can cause irritation and abrasion. [Contains metal powder].

SKIN: May cause skin irritation. Prolonged or repeated skin contact may cause skin irritation and/or sensitivity which may result in allergic skin rashes. Hot molten metal may cause burns to the skin. Wear protective equipment when working with molten metal.

SKIN ABSORPTION: Lead and lead compounds may be absorbed through the skin on prolonged exposure, the symptoms of lead poisoning described for ingestion expsoure may occur.

INGESTION: Lead: Poison! The symptoms of lead poisoning include abdominal pain and spasms, nausea, vomiting, headache. Acute poisoning can lead to muscle weakness, "lead line" on the gums, metallic taste, definite loss of appetite, insomnia, dizziness, high lead levels in blood and urine with shock, coma and death in extreme cases.
Ingestion may cause severe irritation, burns. Moderately toxic by ingestion. rapid breathing, increased heart rate, kidney damage, decreased urine volume, and severe metabolic acidosis. Effects similar to those resulting from inhalation may occur.

INHALATION: Solvent: If inhaled, may cause central nervous system depression, headache, dizziness, nausea, euphoria, loss of balance / equilibrium, drowsiness, visual disturbances, fatigue, unconsciousness, and respiratory arrest. **Lead:** Dusts from this material can be absorbed through the respiratory system, local irritation of bronchia and lungs can occur.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

ACUTE TOXICITY: Lead is a cumulative poison. Inhalation effects of exposure to fumes of inorganic lead may not develop quickly. Symptoms may include decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, constipation, abdominal pains, and decreased appetite. The effects are reversible and complete recovery is possible. Inhalation of large amounts of lead fume may lead to seizures, coma and death.Solvent: Material if aspirated into lungs may cause chemical pneumonitis. Effects may include: skin irritation, eye irritation, gastrointestinal discomfort.

CHRONIC EFFECTS: Prolonged or repeated exposure to vapors may cause allergic reaction of the skin in some people. **Tin:** Prolonged or repeated exposure to the material may cause: benign pneumoconiosis, producing distinctive changes in the lungs with no apparent disability or complications. **Lead:** Long term exposure can result in a build-up of lead in the body and more severe symptoms. These include anaemia, pale skin, blue line at the gum margin, decreased handgrip strength, abdominal pain, severe constipation, nausea, vomiting and paralysis of the wrist joint. Prolonged exposure may also result in kidney damage. If the nervous system is affected, usually due to very high exposures, the resulting effects include severe headaches, convulsions, coma, delirium and death. Alcohol ingestion and physical exertion may bring on symptoms.

CARCINOGENICITY: Ingredient(s) of this product are listed as carcinogens. See Section 11 for further details.

REPRODUCTIVE TOXICITY

REPRODUCTIVE EFFECTS: Warning: Lead is listed under State of California Proposition 65 regulations as being known to cause male and female reproductive toxicity.

TERATOGENIC EFFECTS: Warning: Lead is listed under State of California Proposition 65 regulations as being known to cause developmental toxicity.

MEDICAL CONDITIONS AGGRAVATED: Persons with pre-existing disorders of the kidney, nerve, circulatory system, skin, and eye may be more susceptible to the effects of this material. Repeated overexposure may aggravate existing liver or kidney 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.

TARGET ORGAN STATEMENT: Affected target organs: eyes, skin, GI tract, mucous membranes, respiratory system, central nervous system, liver, kidneys blood, gingival tissue, reproductive system

SENSITIZATION: Prolonged or repeated exposure may cause allergic skin reaction in susceptible individuals.

3. COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS

Chemical Name	Wt.%	CAS
C644	--	--
C627	--	--
C039	--	--
C523	--	--
Tin	48	7440-31-5
Lead	31.7	7439-92-1
Antimony	0.3	7440-36-0

COMMENTS: 360 Alloy: Filler Metal Composition [nominal]:

Element	Weight%
Tin	60
Lead	39.6
Antimony	0.4

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].

4. FIRST AID MEASURES

EYES: 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.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: Not Applicable

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

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.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposition products may include: carbon monoxide, carbon dioxide, smoke, nitrogen oxides, irritating fumes, ammonia, HCL, hydrocarbons. Metallic decomposition products may include: tin oxide fumes, toxic lead or lead oxide fumes, metal oxide fumes.

6. ACCIDENTAL RELEASE MEASURES

GENERAL PROCEDURES: Waste disposal method: Scoop up excess material and wash affected areas with soap and water. Avoid contact with skin and eyes.

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 and store at ambient temperatures of 5-25 ºC [41-77 ºF] [to maximise shelf life of product].

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**
C644	**LTEL (TWA)**	[1]	[1]	[1]	[1]
C627	**LTEL (TWA)**	[2]	[2]	[2]	[2]
C039	**LTEL (TWA)**	[3]	5 [3]	[3]	5 [3]
C523	**LTEL (TWA)**	[4]	[4]	[4]	[4]
Tin	**LTEL (TWA)**		2		2
Lead	**LTEL (TWA)**	[5]	50 µg/m3 [5]	[5]	0.05 [5]
	STEL	[6]	30 µg/m3 [6]		

OSHA TABLE COMMENTS:
1. Not Established
2. Not Specified
3. [oil mist]
4. Not Listed
5. [dust and fume]
6. [action level]

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: Gray

VAPOR PRESSURE: 0.093 mm Hg at 68ºF/20ºC [for C039]

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

BOILING POINT: 530-623ºF [277-328ºC] [for C039]

MELTING POINT: 360 Filler Metal: 183-190ºC [361-374ºF]

FLASHPOINT AND METHOD: Not Applicable

SOLUBILITY IN WATER: Negligible

EVAPORATION RATE: No data

SPECIFIC GRAVITY: > 2.000 (water=1)

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions of use.

POLYMERIZATION: Will not occur.

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

INCOMPATIBLE MATERIALS: Materials to avoid: strong oxidizers, strong acids, strong alkalies, chlorine, peroxides. halogens and halogen trifluorides, cupric nitrate, sulfur, reducing agents, oxidizing agents, ammonium nitrate, zirconium, sodium azide, alkalies.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Severely irritating

SKIN EFFECTS: This material will cause skin burns. Prolonged exposure may cause an allergic reaction in some people.

CHRONIC: Overexposure to fumes may cause respiratory tract irritation. **Lead:** Is a cumulative poison and exposure to even small amounts can raise the body's content to toxic levels. Symptoms of lead poisoning include abdominal pain and spasms, 'lead line' on the gums, metallic taste, restlessness, central nervous system effects, hypertension, and gray facial color may be noted. Red blood cells may be damaged resulting in anemia. Injury to kidneys, liver, male reproductive system, and central nervous system may occur.

CARCINOGENICITY

Chemical Name	NTP Status	IARC Status	OSHA Status	Other	General Toxicity
Lead	Not a known or anticipated carcinogen.	Lead: IARC Group 2B listed- 'possible human carcinogen'. Inorganic lead compounds: IARC Group 2A listed- 'probable human carcinogen'.	OSHA listed as a 'possible select carcinogen'. U.S. EPA Group B2- 'probable human carcinogen, inadequate evidence, inconclusive'.	ACGIH: Group A3- 'confirmed animal carcinogen, unknown relevance to humans. Not likely to cause cancer in humans except under unlikely routes/levels of exposure.'	Lead compounds are EU Repr Cat 1:R61 and Repr Cat 3:R62.

SENSITIZATION: Prolonged or repeated exposure may cause an allergic skin reaction in some individuals.

REPRODUCTIVE EFFECTS: Lead: Identified by the State of California [Proposition 65] as causing both male and female reproductive harm. See Section 15. **Lead:** Investigated as a reproductive effector. Women of child-bearing age should avoid chronic exposure to lead because of possible effects on reproduction and potential injury to a developing fetus.

12. ECOLOGICAL INFORMATION

DISTRIBUTION: Ecological information on this product and its ingredients is not known.

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

COMMENTS: Not restricted for transport

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

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

EPCRA SECTION 313 SUPPLIER NOTIFICATION

Chemical Name	Wt.%	CAS	Comments
Lead	31.7	7439-92-1	Material subject to reporting requirements of SARA Section 313. Listed as: Lead Compounds

TSCA (TOXIC SUBSTANCE CONTROL ACT)

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

CALIFORNIA PROPOSITION 65: Warning: Lead is known to the State of California to cause cancer, birth defects or other developmental harm, male reproductive harm, and female reproductive harm.

Chemical Name	Wt.%	Listed
Lead	31.7	• Cancer • Developmental Toxicity • Female Reproductive • Male Reproductive

EUROPEAN COMMUNITY

EEC LABEL SYMBOL AND CLASSIFICATION [overall preparation]

"Xn" - Harmful
R20/22: Harmful by inhalation and if swallowed.
R33: Danger of cumulative effects.
R61: May cause harm to the unborn child.
R62: Possible risk of impaired fertility.
S36: Wear suitable protective clothing.
S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S51: Use only in well-ventilated areas.
S53: Avoid exposure — obtain special instructions before use.

"N" - Dangerous for the environment
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S60: This material and its container must be disposed of as hazardous waste.
S61: Avoid release to the environment. Refer to special instructions/safety data sheets.

16. OTHER INFORMATION

APPROVED BY: Regulatory Affairs

PREPARED BY: Craig Mikin

INFORMATION CONTACT: Regulatory Affairs

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

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

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