

# Okai Corporation

## Precious Metals Joining

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### SAFETY DATA SHEET

REVISION: 1

DATE: 12/10/2015

#### SECTION 1 - IDENTIFICATION

**Print Date:** 12/10/2015**Product Name:** Silver Brazing Paste With Flux**Products Covered:** This SDS covers a range of products as shown below:

Product Name	Flux/Binder	Alloy	Modifier
OKC 65 E2	OKC	65	E2

ANY FLUX-BINDER CODE	ANY ALLOY CODE	MODIFIER
AQC, AVA, OKC, B100, B110, B505, B510, B511, DAVIK, HIAF, HIAFT, IAF, IAFT, VIK	20-2, 30-3, 33, 34, 35-6, 38, 40-4, 45-0, 45-1, 45-2, 45-3, 55, 55-2, 56, 60, 60-1, 64, 65, 67-1, 67-2, 67-3, 70, 72, 75, 80, 80-LM	ANY COMBINATION OF NUMBERS AND LETTERS

**Product Description:** Silver-based brazing paste for use in joining metals. Contains a fluxing agent for use in open-air brazing.**Product Use:** Product is applied to metal parts which are heated to a temperature until the filler metal melts and joins the parts.**Synonyms:** Silver Solder Paste**Product Description:** Flux for brazing**Manufacturer:** Okai Corporation, 39A Myrtle Street, Cranford, NJ 07016**Manufacture Phone:** 1-800-223-0025 **Emergency Contact:** Chemtrec 1-800-424-9300

#### SECTION 2 - HAZARD IDENTIFICATION

##### GHS Classifications

Acute toxicity, Oral: Hazard Category 4

Reproductive Toxicity: Hazard Category 2

Acute Hazards to the Aquatic Environment: Category 1

Chronic Hazards to the Aquatic Environment: Category 1

**GHS Label Symbol(s):**

<b>Health Hazard</b>	<b>Exclamation Mark</b>	<b>Environment</b>
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**Signal Word(s):** 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

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**Precautionary Statement(s)**

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

**Response:**

P301+p312: If swallowed: Call a POISON CENTER or doctor/physician if you feel unwell  
P308+P313: If exposed or concerned: Get medical advice  
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:** Viscous paste with color ranging from golden-yellow to dark brown

**Immediate Concerns:** Warning! Product contains fluorides: during use above 930oF in the presence of water vapor, hydrogen fluoride gas is evolved, which can cause irritation to the respiratory tract and delayed burns to the eyes and skin. It can also cause pulmonary edema, and death. Avoid contact with skin, eyes, and inhalation of vapors. Fumes from the brazing process can be irritating to the eyes and respiratory system. Hot metal can cause eye and skin burns. Avoid breathing fumes from the 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.

**SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Weight %</u>
B010	--	10-25
Potassium difluorodihydroxyborate(1-)	85392-66-1	10-25
Silver	7440-22-4	15-70
Copper	7440-50-8	10-50
Zinc	7440-66-6	3-35
Tin	7440-31-5	0-15

The specific chemical identity of the flux/binder ingredients are being withheld as a trade secret. Disclosure will be provided to medical personnel in the event of an emergency.

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**SECTION 4 - FIRST AID MEASURES**

**Eyes:** Remove contact lenses. 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. 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:**

Eye contact may cause irritation and/or burning sensation. May cause irritation and burns to exposed skin. Hot material will cause burns to skin. If swallowed, may cause gastrointestinal discomfort, nausea and/or vomiting. Inhalation of powder, dust or fumes may be irritating to the respiratory system. Inhalation of fumes may cause Metal Fume Fever.

**Chronic Overexposure:**

Repeated exposure to fluoride dust or fume can result in embrittlement and decalcification of bones and increased calcification of ligaments and vertebrae (fluorosis), stiffness and limitation of motion can result. Symptoms of fluorosis include brittle bones, weight loss, anemia, calcified ligaments, general ill health, joint stiffness, mottling of teeth, and bone damage (osteosclerosis). Chronic exposure to silver can lead to argyria, a permanent blue-gray discoloration of the skin, eyes, and mucous membranes. Skin contact with silver powder produces localized irritation and/or argyria. Prolonged exposure to copper can cause skin and hair discoloration, skin irritation, dermatitis, runny nose, irritation of the mucous membranes. Repeated ingestion may cause damage to liver, kidneys. Repeated inhalation may cause chronic respiratory disease. Prolonged or repeated exposure to the metal may cause benign pneumoconiosis, producing distinctive changes in the lungs with no apparent disability or complications.

**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. No components are readily absorbed through the skin, although contact may cause skin irritation.

**SECTION 5 - FIREFIGHTING MEASURES**

**Flammable Class:** Non-flammable

**Extinguishing Media:** Not applicable

**Explosion Hazards:** This product is non-flammable and non-explosive. If it is present in a fire or explosion, potential decomposition byproducts may include boron oxide, potassium oxide, and/or fluorides.

**Fire Fighting Instructions:** When fighting fires involving this product, wear full protective gear. For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

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**SECTION 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 protective clothing (gloves, safety glasses).

**Environmental Precautions:** Prevent spills from entering sewers or contaminating soil.

**SECTION 7 - HANDLING AND STORAGE**
**Handling Precautions:**

Avoid contact with skin and clothing, using protective equipment as needed.

**Work and Hygiene Practices:**

To prevent ingestion following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing or protective equipment before entering eating/drinking areas.

**Storage Precautions:**

Store away from incompatible materials (see Section #10).

**SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

CHEMICAL NAME	CAS NUMBER	OSHA PEL	ACGIH TLV	SUPPLIER OEL
B010	--	--	--	525 mg/m <sup>3</sup>
Silver	7440-22-4	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	
Copper	7440-50-8	1.00 mg/m <sup>3</sup>	1.00 mg/m <sup>3</sup>	
Zinc	7440-66-6	10.0 mg/m <sup>3</sup>	5.00 mg/m <sup>3</sup>	
Tin	7440-31-5	2.00 mg/m <sup>3</sup>	2.00 mg/m <sup>3</sup>	

**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.

**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

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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.

**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<b>Flashpoint and Method</b>	:	Not Applicable
<b>Odor</b>	:	Slight hydrocarbon odor
<b>Appearance</b>	:	Viscous paste
<b>Colour</b>	:	White to light grey
<b>Vapor Pressure</b>	:	Not Determined
<b>Vapor Density</b>	:	Not Determined
<b>Boiling Point</b>	:	450-530°F (Binder only)
<b>Solubility In Water</b>	:	Negligible
<b>Evaporation Rate</b>	:	No data available
<b>pH</b>	:	No data available
<b>Melting Point</b>	:	Alloy melting points >1100°F

**SECTION 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:** Acetic anhydride; alkali and alkali earth metals; zirconium; platinum; bromine trifluoride.

**Potential Hazardous Decomposition Products:** Boron oxide, potassium oxide, fluorides.

**SECTION 11 - TOXICOLOGICAL INFORMATION**

**Oral LD50 (rat):** This product has not been tested.

**Dermal LD50 (rabbit):** This product has not been tested.

**Inhalation LD50 (rat):** This product has not been tested.

**Eye Effects:** Can cause severe irritation and abrasion.

**Skin Effects:** Short and moderate term skin contact is usually not harmful. However, in sensitized individuals, or in contact with damaged skin, it may cause severe irritation, dermatitis.

**Ingestion:** Harmful if swallowed. Ingestion may cause severe irritation or burns, nausea, vomiting, diarrhea, abdominal irritation. Prolonged ingestion may lead to argyria.

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**Inhalation:** Inhalation of fumes may cause burns and severe irritation of the respiratory tract, coughing, sneezing, headache, dizziness, drowsiness, unconsciousness, central nervous system depression, metal fume fever characterized by flu-like symptoms such as chills, fever, nausea and vomiting.

**Possible Effects of Chronic Exposure:** The fluoride ion can reduce serum calcium levels, possibly causing fatal decalcification of the bones.

**Carcinogenicity:** This product was not tested as supplied. No ingredients in this product are listed as carcinogens by NTP, IARC, or OSHA.

**Sensitization:** No ingredients used in this material are 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:** Eyes, kidneys, liver, respiratory system, skin, central nervous system, bones, calcification of ligaments and vertebrae, teeth conjunctiva, mucous membranes, lungs.

**Mutagenicity:** No ingredients in this material are known to be mutagenic.

**SECTION 12 - ECOLOGICAL INFORMATION**

**Ecotoxicological Information:** This product has not been tested.

**Bioaccumulation/Accumulation:** No data available.

**Distribution:** No data available.

**Aquatic Toxicity (Acute):** No data available.

**Chemical Fate Information:** No data available.

**General Comments:** None

**SECTION 13 - DISPOSAL CONSIDERATIONS**

Do not discharge waste product into sanitary or storm sewers or allow it to contaminate soil. Disposal of products containing fluorides and/or borates may be subject to restrictions. Consult applicable Federal, State/ Provincial, and local regulations. Because of the precious metal content of this product, recycling with a responsible refining company is the preferred method of disposal. Do not reuse empty containers. Wipe residue from empty containers with paper towel and refine. Dispose of used containers in compliance with applicable Federal, State/ Provincial, and local regulations.

**SECTION 14 - TRANSPORT INFORMATION**

**DOT (DEPARTMENT OF TRANSPORTATION)**

**PROPER SHIPPING NAME:** Environmentally hazardous substance, solid, n.o.s. (copper powder)

**PRIMARY HAZARD CLASS/DIVISION:** 9 Environmentally Hazardous Substance

**UN/NA NUMBER:** 3077

**PACKING GROUP:** III

**MARINE POLLUTANT#1:** Copper metal powder

**OTHER SHIPPING INFORMATION:** Note: Exceptions may apply allowing this material to ship as non-regulated.

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ROAD AND RAIL (ADR/RID)

**PROPER SHIPPING NAME:** Environmentally hazardous substance, solid, n.o.s. (copper powder)  
**PRIMARY HAZARD CLASS/DIVISION:** 9 Environmentally Hazardous Substance  
**UN/NA NUMBER:** 3077  
**PACKING GROUP:** III

AIR (ICAO/IATA)

**PROPER SHIPPING NAME:** Environmentally hazardous substance, solid, n.o.s. (copper powder)  
**PRIMARY HAZARD CLASS/DIVISION:** 9 Environmentally Hazardous Substance  
**UN/NA NUMBER:** 3077  
**PACKING GROUP:** III  
**SPECIAL PROVISIONS:** A197: May be shipped as "Not restricted" provided that the net quantity in any receptacle does not exceed 5kg or 5L.

VESSEL (IMO/IMDG)

**PROPER SHIPPING NAME:** Environmentally hazardous substance, solid, n.o.s. (copper powder)  
**PRIMARY HAZARD CLASS/DIVISION:** 9 Environmentally Hazardous Substance  
**UN/NA NUMBER:** 3077  
**PACKING GROUP:** III  
**MARINE POLLUTANT#1:** Copper metal powder  
**SPECIAL PROVISIONS:** Marine pollutants having a net quantity of 5L 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.  
**NOTE:** Not restricted for transport

COMMENTS

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

SECTION 15 - REGULATORY INFORMATION

**UNITED STATES**

**SARA TITLE III**

**Fire:** No  
**Pressure Generating:** No  
**Reactivity:** No  
**Acute:** Yes  
**Chronic:** Yes

Reportable Ingredients Section 313:

Silver CAS# 7440-22-4 15-70 wt% as Silver Compounds  
Copper CAS# 7440-50-8 10-45 wt% as Copper Compounds  
Zinc CAS# 7440-66-6 3-35 wt% as Zinc Compounds, Zinc fume or dust

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

Reportable Ingredients      Wt%      Cercla Reporting Quantity

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Silver CAS# 7440-22-4	15-70	1000 lbs
Copper CAS# 7440-50-8	10-45	5000 lbs
Zinc CAS# 7440-66-6	3-35	1000 lbs

**TSCA (TOXIC SUBSTANCE CONTROL ACT)**

The components of this material are included on the TSCA inventory

**California Proposition 65**

This material does not contain any ingredients regulated under Proposition 65

**SECTION 16 - OTHER INFORMATION**
**HMIS Ratings**

<b>HEALTH</b>	*	<b>3</b>
<b>FLAMMABILITY</b>		<b>1</b>
<b>PHYSICAL HAZARD</b>		<b>0</b>
<b>PERSONAL PROTECTION</b>		<b>I</b>

PPE - Protective eyewear and gloves (Personal Protection Index "B") as standard PPE. HMIS recommends that its ratings be used only in conjunction with a fully implemented HMIS program, and that specific PPE codes be created by the user, who is familiar with the actual conditions under which the product is used. We cannot anticipate every condition of the product's use, and it is the user's responsibility to evaluate the hazards pertinent to its specific operations, and to determine the specific PPE required.

**NFPA Ratings**

Health - 3 Flammability - 0 Reactivity - 0

**Revision Summary:**

Current Document: 12/10/2015

Original Document: 02/20/2014

**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. Okai Corporation 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.*