Material Safety Data Sheet

NO. 601 FLUX

19107 flux

To the Purchaser: This MSDS contains important environmental health and toxicology information for your employees who have ordered this product. Please be sure this information is given to them. If you resell this product, a copy of the MSDS should be given to the Buyer.

Issue Date 4/4/94

Manufactured For:
The Easthill Group Dba/The Eastwood Company
263 Shoemaker Road
Pottstown,PA 19464
USA & Canada: 800-345-1178
Outside USA: 610-323-2200
Emergency contact: Chem-Trec: 800-424-9300

SECTION 1 - IDENTITY

Common Name: (used on label) / Trade Name & Synonyms: SILVER SOLDER FLUX NO. 601

Cas No.: SEE BELOW

Chemical Name: NA

Chemical Family: SILVER BRAZING PASTE FLUX

Formula: SEE BELOW

SECTION 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Component(s) (chemical & common name(s))	CAS #	%BY WT.	OSHA PEL (Units) ACGIH TLV (Units)
POTASSIUM FLUOROHYDROBORATE	14075-53-7	30-45	2.5 MG/M3
POTASSIUM TETRABORATE	1332-77-0	15-25	5.0 MG/M3
BORIC ACID	10043-35-3	15-30	10 MG/M3
POTASSIUM FLUOBORATE	14075-53-7	7-15	2.5MG/M3

INFORMATION FOR MIXTURES IS BASED ON CONSTITUENT MSDS

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point: NA

Specific Gravity (H2O = 1): 1.6

Vapor Pressure (mm Hg): NA

Percent Volatile by Volume (%): 30

Vapor Density (Air = 1): NA

Evaporation Rate (WATER = 1): 0.3

Melting Point: NA

Solubility in Water: MODERATE

Reactivity in Water: NONE

Appearance and Odor: WHITE ODORLESS PASTE

SECTION 4 - FIRE AND EXPLOSION HAZARD DATA

Flash Point (method used): NONE

Flammable Limits in air % by volume: Lower NA Upper NA

Auto-Ignition Temperature: NONE

Extinguishing Media: NOT NEEDED

Special Fire Fighting Procedures: NORMAL CAUTION WHEN DEALING WITH FLUX CHEMICALS

Unusual Fire and Explosion Hazards: WILL RELEASE BORON TRIOXIDE FUMES UPON DECOMPOSITION

NA = NOT APPLICABLE

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flux

SECTION 5 - PHYSICAL HAZARDS

Stability: Unstable ☐ Stable ☒ Conditions to Avoid: EXCESS HEAT

Incompatibility (Materials to Avoid): GLASS OR PORCELAIN

Hazardous Decomposition Products: B_2O_3 FUMES, KBF_4

Hazardous Polymerization: May Occur ☐ Will Not Occur ☒ Conditions to Avoid: NONE

SECTION 6 - HEALTH HAZARDS

Primary Route(s) of Entry to Body: Inhalation? YES Skin? YES Ingestion? YES

Signs and Symptoms of Exposure: 1. Acute Overexposure: SALIVATION, COUGHING, CHOKING & CHILLS

2. Chronic Overexposure: MAY CAUSE WEIGHT LOSS, BRITTLE BONES, ANEMIA, WEAKNESS & STIFF JOINTS.

Medical Conditions Generally Aggravated by Exposure: ANY WEAKNESS OF THE LUNGS, KIDNEYS OR LIVER WILL BE AGGRAVATED.

Health Hazards: THOSE ASSOCIATED WITH FLUORIDES

Chemical Listed as Carcinogen or Potential Carcinogen: NONE

National Toxicology Program: Yes ☐ No ☒

I.A.R.C. Monographs: Yes ☐ No ☒

OSHA: Yes ☐ No ☒

OSHA Permissible Exposure Limit (PEL): 2.5 MG/M3

ACGIH Threshold Limit Value (TLV): 2.5 MG/M3

Other Exposure Limit Used: 2.5 MG/M3

Emergency and First Aid Procedures: SEE BELOW

1. Inhalation: REMOVE FROM CONTAMINATED AREA

2. Eyes: WASH THOROUGHLY WITH WATER AND CALL A PHYSICIAN

3. Skin: WASH THOROUGHLY WITH WATER

4. Ingestion: DRINK WATER OR MILK AND CALL A PHYSICIAN

SECTION 7 - CONTROL MEASURES

Respiratory Protection (Specify Type): NIOSH APPROVED RESPIRATOR IN ABSENCE OF PROPER VENTILATION

Ventilation: TO REMOVE FUMES Local Exhaust: YES Mechanical (General): YES Special: NA Other: NA

Protective Gloves: RUBBER OR PLASTIC COATED Eye Protection: SAFETY GOGGLES

Other Protective Clothing or Equipment: RUBBER APRON

SECTION 8 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage: DO NOT STORE IN GLASS OR PORCELAIN CONTAINERS. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.

Work/Hygienic Practices: WASH SKIN AND CLOTHING WELL ESPECIALLY BEFORE EATING

Other Precautions: KEEP CONTAINERS AWAY FROM EXCESSIVE HEAT

Steps to be Taken in Case Material is Released or Spilled: CLEAN UP PASTE AND FLUSH REMAINING MATERIAL WITH LOTS OF WATER.

Waste Disposal Methods: DISPOSE IN ACCORDANCE WITH LOCAL & STATE EPA REGULATIONS

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MATERIAL SAFETY DATA SHEET

V. FIRE AND EXPLOSION DATA

Flashpoint (°F):	53
Flammable limits in air (% by volume)	
LOWER:	2.1
UPPER:	13.7
Extinguishing media:	Alcohol-type or all-purpose type foams for large fires. CO_2 or dry chemical for small fires.
Special firefighting procedures:	Full protective equipment required. May release zinc oxide and HCl fumes. Toxic metal halide fumes produced.
Unusual fire and explosion hazards:	Dense smoke may be generated.

VI. REACTIVITY INFORMATION

Stability considerations:	Stable
Conditions to avoid:	None
Hazardous polymerization:	Will not occur
Conditions to avoid:	None
Incompatibility	
Materials to avoid:	Strong nitric, sulfuric acids, cyanide
Hazardous combustion or Decomposition products:	In presence of water and heat - HCl and HF; also zinc oxide

VII. SPILL AND LEAK RESPONSE

Steps to be taken if material is released or spilled:	If molten allowed to solidify, contain, absorb, sweep-up and dispose. Flush area to chemical sewer.
Waste disposal method:	Dispose of in accordance with all federal, state, and local regulations

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MATERIAL SAFETY DATA SHEET

VIII. SPECIAL PROTECTION INFORMATION

Respiratory protection:	If the work station is not properly ventilated to exhaust all fumes and dusts, use a NIOSH approved mask.
Ventilation:	Maintain air flow away from user to remove all fumes and dusts so that the PEL is never exceeded. Adhere to environmental regulations for exhausts.
Protective gloves:	Chemical and acid impervious
Eye protection:	Chemical tight safety goggles. Do NOT wear contact lenses.
Other protective equipment:	Full protective equipment normally used in a soldering operation so as to prevent any contact.

IX. STORAGE, HANDLING AND SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage:	Store flux at ambient conditions; keep under extremely dry and controlled conditions. Wash hands thoroughly after handling to remove all residue.
Other precautions:	Do not breathe fumes. May be fatal! Professionally wash contaminated clothing before re-use. Material will naturally absorb moisture and cake solid. Existing lung disorders will have increased toxic susceptibility.

X. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (°F @ 760 mmHg):	207
Specific gravity (H_2O = 1 @ 72°F):	2.71
Vapor density (air = 1):	2.1
Vapor pressure:	14.8 mm Hg
Percent volatiles by volume:	30%
Solubility in water:	Complete
Evaporation rate (butyl acetate = 1):	1.3
Appearance and odor:	See section I.

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XI. OPTIONAL INFORMATION

Department of Transportation:	Domestic ground
Proper shipping name:	Flammable Liquid, N.O.S. (n-Propyl alcohol; Zinc chloride)
Hazard Class:	3, Subsidiary 8
ID & Packing Group Number:	UN 2924, PG II
ERG Guide Number:	29
Toxic Substance Control Act:	All components of this compound are listed within the TSCA inventory.
Hazard Communication Program, 29 CFR 1910.1200:	Hazardous warnings and training requirements as mandated for corrosive powders.
SARA Title III Program:	Chemical components formulated within this product are not contained within any SARA III lists. RQ values apply.
State Right-to-Know Programs:	
Pennsylvania:	All components required by PA act 34 part VIII.
California:	As currently manufactured this material contains no compound subject to the reporting and labelling requirements of Proposition 65.
All other states:	Contact the manufacturer.
Foreign Programs:	
EC 92:	Contact the manufacturer.
Canadian WHMIS:	Available upon specific written request to the manufacturer.

Miscellaneous:

Material contains in excess 10% zinc chloride, classified as a marine pollutant.

Other regulations may apply when shipping this material and are in the process of change and update, verify applicable regulations prior to shipment either domestically or internationally via ground, air, or water.

RQ aggregate values apply for RCRA, CERLA, and SARA.

EMERGENCY PHONE NUMBER * CALL CHEMTREC (800) 424-9300 * AVAILABLE 24 HOURS

19107-rods

Material Safety Data Sheet

Alloy Composition: 60Sn/40Zn **Ref. Kapp ID No.** 129 **Trade Name:** NA

Manufacturer: Kapp Alloy & Wire, Inc.
Telephone: 814 676 0613 **FAX:** 814 676 5565 **E-mail:** www.kappalloy.com
Address: One Klein Street PO Box 1188 Oil City, PA 16301 USA

Prepared by: Pamela Wightman *Revision: 1 Date: 02/1998*

Attention: Safety or Health Coordinator:

Please retain this sheet for your files. Kapp Alloy maintains a file of Material Safety Data Sheets (MSDS) for each alloy produced in compliance with Federal Hazard Communication Standard (29 CFR 1910.1200) and various right-to-know laws.

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Section I - MATERIAL IDENTIFICATION / COMPONENTS

*(Hazardous components 1% or greater; Carcinogens 0.1% or greater)

Component	CAS No.	OSHA PEL	ACGIH TLV	OTHER	% (optional)
Tin (Sn)	7440-31-5	2 mg/m^3	2 mg/m^3	Molecular wt.: .264 lbs./in.^{3}	60
Zinc (Zn)	7440-66-6	5mg/m^3	5 mg/m3	" .257 lbs./in.^{3}	40

NA = Not Applicable, NE = Not Established NAIF = No Applicable Information found

Section II - PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point: Sn @4120°F / 2270°C Zn @ 1663°F / 906°C **Melting Point:** 390 - 650°F / 199 - 343°C

Vapor Pressure (mm Hg.): N/A **Vapor Density (AIR = 1):** N/A

Specific Gravity: .2612 lbs./in.^{3}

Solubility in Water: 0 (solid) **Evaporation Rate (Butyl Acetate = 1) :** N/A

Appearance and Odor: Lustrous, silver metal; odorless / various shapes and sizes.

Section III- FIRE AND EXPLOSION HAZARD DATA

Flash point & Methods Used:	Auto Ingition Temperature:	Flammability Limits (in air, % by volume):	LEL	UEL
N/A	N/A		N/A	N/A

Extinguisher Media: CO_2 or dry chemical extinguisher.
DO NOT USE WATER ON MOLTEN METAL.
Large fires may be flooded with water from a distance.

Special Fire Fighting Procedures: Use NIOSH/MSHA -approved self-contained breathing apparatus and full protective clothing if involved in fire.

Unusual Fire and Explosion Hazards: Finely Divided dust may form explosive mixture with air.
NEVER DROP WATER OR LIQUIDS INTO MOLTEN SOLDER.
Do not plunge damp or wet solder bars/pieces into molten solder.

Section IV - REACTIVITY HAZARD DATA

Stability: STABLE **Conditions to avoid:** NONE

Incompatibility (materials to avoid): Strong Acids, Strong Alkalis

Hazardous Decomposition Products: NONE HAZARDOUS POLYMERIZATION WILL NOT OCCUR

Section V - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY:	Inhalation:	Fumes
	Ingestion:	Solid metal - not edible; highly unlikely
	Skin Absorption:	N/A

Material Safety Data Sheet

Alloy Composition: 60Sn/40Zn **Ref. Kapp ID No.** 129 **Trade Name:** NA

SIGNS AND SYMPTOMS OF OVEREXPOSURE:
Flu-like symptoms (nausea, constipation, headache, dizziness) - self-limiting, usually disappear within 24 hours

Section VI - EMERGENCY AND FIRST AID PROCEDURES

INGESTION: Drink large quantities of water - induce vomiting.
Call a physician at once; advise of chemical composition (section II).
SKIN: Wash thoroughly with water to remove all residue. If a rash develops, call a physician.
INHALATION: Terminate exposure and remove to fresh air. Call physician, advise of chemical composition (section II).
EYES: Flush with water for at least 15 minutes to remove irritant. Consult a physician.

Section VII - EFFECTS OF ACUTE EXPOSURE

(Sn) Tin: Elemental Tin is NOT generally considered to be toxic.
(Zn) Zinc: Excessive inhalation of zinc oxide fumes may produce symptoms known as "zinc shakes" which are flu-like and usually cease when the individual is removed from the source.

NOTE: IT IS UNLIKELY THAT NORMAL EXPOSURE (USING APPROPRIATE PROTECTIVE EQUIPMENT) TO THIS SOLDER WOULD RESULT IN ILLNESS.

Section VIII - CONTROL AND PROTECTIVE MEASURES

Respiratory Protection: Use NIOSH-approved breathing apparatus to prevent exposure to dusts and fumes.
Eye Protection: Approved safety glasses or welding goggles, appropriate to your procedure, should be worn.
Ventilation: Local Exhaust: YES Mechanical: YES Special: Conform with your regulatory statutes.
Protective gloves are recommended, *especially for high temperature applications to prevent burns.*
Other: Standard protective equipment used in soldering (/applicable) operations.
Conform with all local, state, federal regulations.

Section IX - PRECAUTIONS FOR SAFE HANDLING AND USE / LEAK PROCEDURES

Steps to be taken if material is spilled or released: SOLDER IS SOLID/RECYCLABLE. Vacuuming is recommended for accumulated metal dust from saw/grind operations.
Waste Disposal Method: DISPOSE OF ACCORDING TO FEDERAL, STATE, LOCAL AND OSHA REGULATIONS.
Precautions to be taken in handling and storage: DRY STORAGE; AMBIENT TEMPERATURE
Other Precaution / Special Handling: Wet or moist ingot(s) WILL present an explosion hazard when submerged in molten solder.
AVOID FIRE RISKS. Always preheat ingot before charging into furnace.

*0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

NFPA RATING:	Health:	1	Flammability:	0	Reactivity:	0	Special:	0
HMIS RATING:	Health:	1	Flammability:	0	Reactivity:	0	Special:	0

Section X. OPTIONAL INFORMATION

DEPARTMENT OF TRANSPORTATION:

Proper shipping name:	Solder alloy - NOT REGULATED
Hazard Class:	NAIF
ID & Packing Group Number:	NAIF
ERG Guide Number:	NAIF

SARA Title III Program: This product contains no toxic chemicals subject to the reporting requirements of EPCRA of 1986 and 40 CFR 372

This information must be included in all MSDS that are copied and distributed for this material.

**GOOD HOUSEKEEPING PROCEDURES SHOULD BE MAINTAINED.
PERSONNEL SHOULD WASH THOROUGHLY BEFORE SMOKING OR EATING
FOOD AND DRINK SHOULD NOT BE CONSUMED OR TOBACCO PRODUCTS USED.
NOR COSMETICS APPLIED IN AREAS WHERE EXPOSURES EXIST.**

Kapp Alloy & Wire, Inc. Address: One Klein Street PO Box 1188 Oil City, PA 16301 USA
Telephone: 814 676 0613 FAX: 814 676 5565 E-mail: www.kappalloy.com

19107 - rods

Material Safety Data Sheet

Alloy Composition: 60Sn/40Zn **Ref. Kapp ID No.** 129 **Trade Name:** NA

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*(Hazardous components 1% or greater; Carcinogens 0.1% or greater)

Component	CAS No.	OSHA PEL	ACGIH TLV	OTHER	% (optional)
Tin (Sn)	7440-31-5	2 mg/m^3	2 mg/m^3	Molecular wt.: .264 lbs./in.^{3}	60
Zinc (Zn)	7440-66-6	5mg/m^3	5 mg/m3	" .257 lbs./in.^{3}	40

NA = Not Applicable, NE = Not Established NAIF = No Applicable information found

Section II - PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point: Sn @4120°F / 2270°C Zn @ 1663°F / 906°C **Melting Point:** 390 - 650°F / 199 - 343°C

Vapor Pressure (mm Hg.): N/A **Vapor Density (AIR = 1):** N/A

Specific Gravity: .2612 lbs./in.^{3}

Solubility in Water: 0 (solid) **Evaporation Rate (Butyl Acetate = 1) :** N/A

Appearance and Odor: Lustrous, silver metal; odorless / various shapes and sizes.

Section III- FIRE AND EXPLOSION HAZARD DATA

Flash point & Methods Used:	Auto Ingition Temperature:	Flammability Limits (in air, % by volume):	LEL	UEL
N/A	N/A		N/A	N/A

Extinguisher Media: CO_2 or dry chemical extinguisher.
DO NOT USE WATER ON MOLTEN METAL.
Large fires may be flooded with water from a distance.

Special Fire Fighting Procedures: Use NIOSH/MSHA -approved self-contained breathing apparatus and full protective clothing if involved in fire.

Unusual Fire and Explosion Hazards: Finely Divided dust may form explosive mixture with air.
NEVER DROP WATER OR LIQUIDS INTO MOLTEN SOLDER.
Do not plunge damp or wet solder bars/pieces into molten solder.

Section IV - REACTIVITY HAZARD DATA

Stability: STABLE **Conditions to avoid:** NONE

Incompatibility (materials to avoid): Strong Acids, Strong Alkalis

Hazardous Decomposition Products: NONE HAZARDOUS POLYMERIZATION WILL NOT OCCUR

Section V - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY:	Inhalation:	Fumes
	Ingestion:	Solid metal - not edible; highly unlikely
	Skin Absorption:	N/A

Material Safety Data Sheet

Alloy Composition: 60Sn/40Zn **Ref. Kapp ID No.** 129 **Trade Name:** NA

SIGNS AND SYMPTOMS OF OVEREXPOSURE:
Flu-like symptoms (nausea, constipation, headache, dizziness) - self-limiting, usually disappear within 24 hours

Section VI - EMERGENCY AND FIRST AID PROCEDURES

INGESTION: Drink large quantities of water - induce vomiting.
Call a physician at once; advise of chemical composition (section II).
SKIN: Wash thoroughly with water to remove all residue. If a rash develops, call a physician.
INHALATION: Terminate exposure and remove to fresh air. Call physician, advise of chemical composition (section II).
EYES: Flush with water for at least 15 minutes to remove irritant. Consult a physician.

Section VII - EFFECTS OF ACUTE EXPOSURE

(Sn) Tin: Elemental Tin is NOT generally considered to be toxic.
(Zn) Zinc: Excessive inhalation of zinc oxide fumes may produce symptoms known as "zinc shakes" which are flu-like and usually cease when the individual is removed from the source.

NOTE: IT IS UNLIKELY THAT NORMAL EXPOSURE (USING APPROPRIATE PROTECTIVE EQUIPMENT) TO THIS SOLDER WOULD RESULT IN ILLNESS.

Section VIII -CONTROL AND PROTECTIVE MEASURES

Respiratory Protection: Use NIOSH-approved breathing apparatus to prevent exposure to dusts and fumes.
Eye Protection: Approved safety glasses or welding goggles, appropriate to your procedure, should be worn.
Ventilation: Local Exhaust: YES Mechanical: YES Special: Conform with your regulatory statutes.
Protective gloves are recommended, *especially for high temperature applications to prevent burns.*
Other: Standard protective equipment used in soldering (/applicable) operations.
Conform with all local, state, federal regulations.

Section IX - PRECAUTIONS FOR SAFE HANDLING AND USE / LEAK PROCEDURES

Steps to be taken if material is spilled or released: SOLDER IS SOLID/RECYCLABLE. Vacuuming is recommended for accumulated metal dust from saw/grind operations.
Waste Disposal Method: DISPOSE OF ACCORDING TO FEDERAL, STATE, LOCAL AND OSHA REGULATIONS.
Precautions to be taken in handling and storage: DRY STORAGE; AMBIENT TEMPERATURE
Other Precaution / Special Handling: Wet or moist ingot(s) WILL present an explosion hazard when submerged in molten solder.
AVOID FIRE RISKS. Always preheat ingot before charging into furnace.

*0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme

NFPA RATING:	Health:	1	Flammability:	0	Reactivity:	0	Special:	0
HMIS RATING:	Health:	1	Flammability:	0	Reactivity:	0	Special:	0

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19107 - rods

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Incompatibility (materials to avoid): Strong Acids, Strong Alkalis

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Other Precaution / Special Handling: Wet or moist ingot(s) WILL present an explosion hazard when submerged in molten solder.
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DEPARTMENT OF TRANSPORTATION:

Proper shipping name:	Solder alloy - NOT REGULATED
Hazard Class:	NAIF
ID & Packing Group Number:	NAIF
ERG Guide Number:	NAIF

SARA Title III Program: This product contains no toxic chemicals subject to the reporting requirements of EPCRA of 1986 and 40 CFR 372

This information must be included in all MSDS that are copied and distributed for this material.

**GOOD HOUSEKEEPING PROCEDURES SHOULD BE MAINTAINED.
PERSONNEL SHOULD WASH THOROUGHLY BEFORE SMOKING OR EATING
FOOD AND DRINK SHOULD NOT BE CONSUMED OR TOBACCO PRODUCTS USED.
NOR COSMETICS APPLIED IN AREAS WHERE EXPOSURES EXIST.**

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