



Cookson Electronics
A Division of Cookson Group plc

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Revised 3/26/08
Replaces 3/04/08
Printed 3/26/08
MSDS ID: FT002LF-5

38878
Lead-Free Solder

MATERIAL SAFETY DATA SHEET

Cookson Electronics
Assembly Materials
4100 Sixth Avenue
Altoona, PA 16602
(814) 946-1611
(814) 944-8094 fax
www.cooksonelectronics.com

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: TIN/SILVER/COPPER SOLDER (LEAD-FREE)/SAC 305, SAC 405
(OR8, FLO-TEMP, TRI-BAR, RIBBON, WIRE, BAR,
POWDER AND SAC ALLOY PRODUCTS)

MANUFACTURER'S NAME: COOKSON ELECTRONICS ASSEMBLY MATERIALS GROUP
ADDRESS: 4100 6th AVENUE
ALTOONA, PA 16602

TRANSPORT EMERGENCY #: CHEMTREC:1-800-424-9300

BUSINESS PHONE #: 1-814-946-1611

2. INGREDIENT AND EXPOSURE LIMIT INFORMATION

CHEMICAL NAME	CAS #	% W/W	OSHA PEL - TWA
TIN	7440-31-5		2.0mg/m3
SILVER	7440-22-4		0.01mg/m3
COPPER	7440-50-8		0.1mg/m3 (fume, CuO) 1.0 mg/m3 (dusts & mists as CU)

SEE PRODUCT LABEL FOR EXACT METAL COMPOSITION OF PRODUCT

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: MODERATE EYE IRRITANT. WILL NOT BURN. TOXIC BY
INHALATION. GASTROINTESTINAL TRACT IRRITANT.
RESPIRATORY TRACT IRRITANT. CAUSES SKIN IRRITATION.

HMS RATING SYSTEM:
Health: 2 ; Flammability: 0 ; Reactivity: 0 ; Protection: B

NFPA RATING SYSTEM:
Health: 2 ; Flammability: 0 ; Reactivity: 0

ROUTES OF ENTRY: INHALATION; INGESTION; EYE CONTACT

TARGET ORGANS: BLOOD; DIGESTIVE TRACT; KIDNEYS; HEART; LIVER; EYES;
RESPIRATORY SYSTEM; NASAL SEPTUM; SKIN.

MEDICAL CONDITIONS
AGGRAVATED: DIGESTIVE TRACT DISEASE; KIDNEY DISEASE.

IMMEDIATED (ACUTE) SYMPTOMS OVER-EXPOSURE BY ROUTE OF EXPOSURE:
INHALATION: CAN CAUSE MODERATE RESPIRATORY IRRITATION, DIZZINESS,
WEAKNESS, FATIGUE, NAUSEA AND HEADACHE.
EYES: CAN CAUSE MODERATE IRRITATION, TEARING AND REDDENING,



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3. HAZARDS IDENTIFICATION (Cont.)

BUT NOT LIKELY TO PERMANENTLY INJURE EYE TISSUE.
SKIN CONTACT: CAN CAUSE SLIGHT IRRITATION.
INGESTION: IRRITATING TO MOUTH, THROAT, AND STOMACH. CAN CAUSE
ABDOMINAL DISCOMFORT, NAUSEA, VOMITING AND DIARRHEA.

LONG TERM (CHRONIC) HEALTH EFFECTS:
REPRODUCTION: SEE SECTION 11 OF THIS MSDS.
MUTAGENICITY: SEE SECTION 11 OF THIS MSDS.

4. FIRST AID MEASURES

SKIN EXPOSURE: WASH WITH SOAP AND WATER. REMOVE CONTAMINATED
CLOTHING AND LAUNDRY. GET MEDICAL ATTENTION IF
IRRITATION DEVELOPS OR PERSISTS.
EYE EXPOSURE: FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 20
MINUTES RETRACTING EYELIDS OFTEN. TILT THE HEAD TO
PREVENT CHEMICAL FROM TRANSFERRING TO THE
UNCONTAMINATED EYE. GET IMMEDIATE MEDICAL ATTENTION.
INHALATION: REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, HAVE
TRAINED INDIVIDUAL ADMINISTER OXYGEN. IF NOT
BREATHING, GIVE ARTIFICIAL RESPIRATION AND HAVE A
TRAINED INDIVIDUAL ADMINISTER OXYGEN. GET MEDICAL
ATTENTION IMMEDIATELY.
INGESTION: SEEK MEDICAL ATTENTION IMMEDIATELY.
NOTES TO DOCTOR: NO ADDITIONAL FIRST AID INFORMATION AVAILABLE.

5. FIRE FIGHTING MEASURES

FLAMMABILITY SUMMARY: NOT COMBUSTIBLE
FLASH POINT: N/A
AUTOIGNITION TEMP: N/E
EXPLOSIVE LIMITS -
% IN AIR: N/E
FIRE FIGHTING METHODS: WILL NOT BURN, NO SPECIAL INSTRUCTIONS AVAILABLE. USE
METHODS APPROPRIATE FOR SURROUNDING MATERIALS.
HAZARDOUS COMBUSTION
PRODUCTS: METAL FUMES; TOXIC FUMES.

6. ACCIDENTAL RELEASE MEASURES

PRECAUTION AND
EQUIPMENT: EXPOSURE TO THE SPILLED MATERIAL MAY BE IRRITATING OR
HARMFUL. FOLLOW PERSONAL PROTECTIVE EQUIPMENT
RECOMMENDATIONS FOUND IN SECTION VIII OF THIS MSDS.

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6. ACCIDENTAL RELEASE MEASURES (Cont.)

METHODS FOR CLEAN-UP: WEAR COMPLETE AND PROPER PERSONAL PROTECTIVE EQUIPMENT FOLLOWING THE RECOMMENDATION OF SECTION VIII GATHER AND STORE IN A SEALED CONTAINER PENDING A WASTE DISPOSAL EVALUATION. DO NOT USE BROOM OR AIR CLEANING ETC.

7. HANDLING AND STORAGE

HANDLING MEASURES: HARMFUL OR IRRITATING MATERIAL. AVOID CONTACTING AND AVOID BREATHING THE MATERIAL. USE ONLY IN A WELL VENTILATED AREA.
AS WITH ALL CHEMICALS, GOOD INDUSTRIAL HYGIENE PRACTICES SHOULD BE FOLLOWED WHEN HANDLING THIS MATERIAL. AVOID CONTACT WITH MATERIAL, AVOID BREATHING DUSTS OR FUMES, USE ONLY IN A WELL VENTILATED AREA. WASH THOROUGHLY AFTER HANDLING; WASH HANDS BEFORE EATING; DO NOT GET IN EYES, ON SKIN AND CLOTHING; MINIMIZE DUST GENERATION AND ACCUMULATION; REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.

STORAGE MEASURES: NO SPECIAL REQUIREMENTS.
STORE IN A TIGHTLY CLOSED CONTAINER; KEEP AWAY FROM FOOD AND DRINKING WATER. STORE IN A COOL DRY PLACE; KEEP AWAY FROM HEAT, SPARKS, AND FLAME.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING MEASURES: USE LOCAL EXHAUST VENTILATION OR OTHER ENGINEERING CONTROLS TO MINIMIZE EXPOSURES AND MAINTAIN OPERATOR COMFORT.
ENGINEERING CONTROLS MUST BE DESIGNED TO MEET THE OSHA CHEMICAL SPECIFIC STANDARD IN 29 CFR 1910.
VENTILATION IS REQUIRED TO MAINTAIN OPERATOR EXPOSURE BELOW PUBLISHED EXPOSURE LIMITS. USE PROCESS ENCLOSURES, LOCAL EXHAUST VENTILATION, OR OTHER ENGINEERING CONTROLS TO CONTROL AIRBORNE LEVELS BELOW RECOMMENDED EXPOSURE LIMITS.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION MAY BE REQUIRED TO AVOID OVEREXPOSURE WHEN HANDLING THIS PRODUCT. GENERAL OR LOCAL EXHAUST VENTILATION IS THE PREFERRED MEANS OF PROTECTION. USE A RESPIRATOR IF GENERAL ROOM VENTILATION IS NOT AVAILABLE OR SUFFICIENT TO ELIMINATE SYMPTOMS.
FOLLOW A RESPIRATORY PROTECTION PROGRAM THAT MEETS 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS WHENEVER WORK PLACE CONDITIONS WARRANT THE USE OF A RESPIRATOR.
WEAR A NIOSH APPROVED RESPIRATOR IF ANY EXPOSURE IS



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8. EXPOSURE CONTROLS AND PERSONAL PROTECTION (Cont.)

POSSIBLE.

EYE PROTECTION: WEAR CHEMICALLY RESISTANT SAFETY GLASSES WITH SIDE SHIELDS WHEN HANDLING THIS PRODUCT. DO NOT WEAR CONTACT LENSES.

SKIN PROTECTION: WEAR PROTECTIVE GLOVES. INSPECT GLOVES FOR CHEMICAL BREAK-THROUGH AND REPLACE AT REGULAR INTERVALS. CLEAN PROTECTIVE EQUIPMENT REGULARLY. WASH HANDS AND OTHER EXPOSED AREAS WITH MILD SOAP AND WATER BEFORE EATING, DRINKING, AND WHEN LEAVING WORK. WHERE CONTACT IS LIKELY, WEAR CHEMICAL RESISTANT GLOVES, A CHEMICAL SUIT, RUBBER BOOTS, AND CHEMICAL SAFETY GOGGLES PLUS A FACE SHIELD.

CONTROL PARAMETERS:	-----ACGIH EXPOSURE LIMITS-----		
	TLV-TWA	STEL	CEILING
CHEMICAL NAME			
TIN	2 mg/m3 TWA		
SILVER	0.1mg/m3		
COPPER	1 mg/m3		
	0.1mg/m3(as copper fume)		

9. PHYSICAL AND CHEMICAL PROPERTIES

COLOR: GREY
ODOR: NONE
pH: N/A
SOLUBILITY IN WATER: NEGLIGIBLE; 0-1%

OTHER PHYSICAL AND CHEMICAL PROPERTIES DEPEND ON ALLOY COMPOSITION.

10. STABILITY AND REACTIVITY

DECOMPOSITION PRODUCTS: METAL FUMES; TOXIC FUMES.

INCOMPATIBLE MATERIALS: PEROXIDES; STRONG ACIDS; STRONG OXIDIZING AGENTS; STRONG REDUCING AGENTS; ACIDS; CHLORINE; MOISTURE; STRONG ALKALIES

CONDITIONS TO AVOID: NONE KNOWN.
CONTAMINATION; CONTACT WITH AIR. CONTACT WITH WATER.

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11. TOXICOLOGICAL INFORMATION

INHALATION AND

INGESTION: INGESTION OF DUST OR FUME MUST BE AVOIDED.

TIN: TIN IS NOT REGARDED AS TOXIC BUT EXCESSIVE EXPOSURE CAN CAUSE FEVER, NAUSEA, STOMACH CRAMPS OR DIARRHEA. EXPECTED TO BE SIGNIFICANT IN COMPARISON WITH OTHER METALS PRESENT. DUST OR FUME MAY CAUSE IRRITATION OF THE SKIN AND MUCOUS MEMBRANES AND MAY RESULT IN A BENIGN PNEUMOCONIOSIS (STANNOSIS).

COPPER: COPPER DUST AND FUME AFFECT THE RESPIRATORY SYSTEM, LUNGS, SKIN, LIVER AND EYES.

SILVER: SILVER MAY CAUSE DISCOLORATION OF THE EYES AND SKIN (ARGYRIA).

12. ECOLOGICAL INFORMATION

OVERVIEW: ECOLOGICAL HAZARD. IN HIGH CONCENTRATIONS, THIS PRODUCT MAY BE DANGEROUS TO PLANTS AND/OR WILDLIFE.

13. DISPOSAL CONSIDERATIONS

WASTE DESCRIPTION: RETURN TO SUPPLIER TO BE RECYCLED FOR METAL UNIT VALUE SPENT OR DISCARDED MATERIAL IS PROBABLY A HAZARDOUS WASTE.

DISPOSAL METHODS: DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE, LOCAL OR PROVINCIAL LAWS AND REGULATIONS.

14. TRANSPORTATION INFORMATION

SHIPPING BASIC

DESCRIPTION: DOT & IATA: NOT RESTRICTED UNLESS IN FINE PARTICLE SIZE LESS THAN 0.004 INCHES IN DIAMETER. DEPENDS ON ALLOY. CONSULT LABEL OR MANUFACTURER FOR ADDITIONAL INFORMATION.

15. REGULATORY INFORMATION

TSCA STATUS: ALL COMPONENTS OF THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY OF EXISTING CHEMICAL SUBSTANCES.

REGULATED CHEMICALS:

CHEMICAL NAME

REGULATION



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15. REGULATORY INFORMATION (Cont.)

SILVER	7440-22-4	SARA 313
COPPER	7440-50-8	SARA 313

16. OTHER INFORMATION

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Additionally, Alpha Metals, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.