



LTS RESEARCH LABORATORIES, INC.  
MATERIAL SAFETY DATA SHEET  
TIN SILVER COPPER

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1. PRODUCT AND COMPANY IDENTIFICATION

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TRADE NAME: TIN SILVER COPPER  
CHEMICAL FORMULA: Sn-Ag-Cu

MANUFACTURER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.  
COMPANY'S STREET: 37 RAMLAND ROAD  
COMPANY'S CITY: OANGEBURG  
COMPANY'S STATE: NEW YORK  
COMPANY'S ZIP CODE: 10962

EMERGENCY CHEMTREC #: 800-262-8200  
COMPANY'S EMERGENCY TEL. #: 800-424-9300 (LOCAL)  
703-527-3887 (INTERNATIONAL)  
COMPANY'S TEL #: 845-494-2940

RECOMMENDED USE: SCIENTIFIC RESEARCH AND DEVELOPMENT

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2. HAZARDS IDENTIFICATION

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SIGNAL WORD: WARNING



HAZARD SYMBOLS: HIGHLY FLAMMABLE AS POWDER

HMS HEALTH RATINGS (0-4):

HEALTH: 1  
FLAMMABILITY: 0 (2 IF POWDER)  
REACTIVITY: 1

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3. COMPOSITION

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CHEMICAL FAMILY: METAL ALLOY  
ADDITIONAL NAMES: N/A

TIN (Sn):  
PERCENTAGE: 0-100 wt%  
CAS #: 7440-31-5  
SILVER (Ag):  
PERCENTAGE: 0-100 wt%  
CAS #: 7440-22-4  
COPPER (Cu):  
PERCENTAGE: 0-100 wt%  
CAS #: 7440-50-8

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4. FIRST AID PROCEDURES

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IMPORTANT SYMPTOMS: NONE  
SPECIAL TREATMENT: NONE  
INHALATION: REMOVE VICTIM TO FRESH AIR, KEEP WARM AND QUIET,  
GIVE OXYGEN IF BREATHING IS DIFFICULT AND SEEK  
MEDICAL ATTENTION IF SYMPTOMS PERSIST.

INGESTION: GIVE 1-2 GLASSES OF MILK OR WATER AND INDUCE VOMITING, SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST. NEVER INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SKIN: REMOVE CONTAMINATED CLOTHING, BRUSH MATERIAL OFF SKIN, WASH AFFECTED AREA WITH MILD SOAP AND WATER, AND SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

EYES: FLUSH EYES WITH LUKEWARM WATER, LIFTING UPPER AND LOWER EYELIDS, FOR AT LEAST 20 MINUTES. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

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#### 5. FIRE AND EXPLOSION HAZARDS DATA

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FLAMMABILITY: NON-FLAMMABLE, EXCEPT AS POWDER

FLASH POINT: N/A

AUTOIGNITION TEMPERATURE: N/A

EXTINGUISHING MEDIA: DO NOT USE WATER OR CO<sub>2</sub>. USE DRY CHEMICAL EXTINGUISHING AGENTS, GRAPHITE, DRY SAND, ETC.

SPEC. FIRE FIGHTING PROCEDURE: USE FULL-FACE, SELF-CONTAINED BREATHING APPARATUS WITH FULL PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES. FUMES FROM FIRE IS HAZARDOUS. ISOLATE RUNOFF TO PREVENT ENVIRONMENTAL POLLUTION.

UNUSUAL FIRE & EXPLOSION HAZ: WHEN HEATED TO DECOMPOSITION, MAY EMIT TOXIC METAL OXIDE FUMES.

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#### 6. ACCIDENTAL RELEASE MEASURES

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IF MATERIAL IS RELEASED/ SPILLED: WEAR APPROPRIATE RESPIRATORY AND PROTECTIVE EQUIPMENT SPECIFIED IN SPECIAL PROTECTION INFORMATION. ISOLATE SPILL AREA AND PROVIDE VENTILATION. VACUUM UP SPILL USING A HIGH EFFICIENCY PARTICULATE ABSOLUTE (HEPA) AIR FILTER AND PLACE IN A CLOSED CONTAINER FOR DISPOSAL. TAKE CARE NOT TO RAISE DUST.

ENVIRONMENTAL PRECAUTIONS: N/A

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#### 7. HANDLING AND STORAGE

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HANDLING CONDITIONS: WASH THOROUGHLY AFTER HANDLING.

HMS PROTECTIVE EQUIPMENT: GLASSES, GLOVES, APRON, DUST RESPIRATOR

STORAGE CONDITIONS: STORE IN A COOL DRY PLACE IN A TIGHTLY SEALED CONTAINER.

WORK/HYGIENIC MAINTENANCE: IMPLEMENT ENGINEERING AND WORK PRACTICE CONTROLS TO REDUCE AND MAINTAIN CONCENTRATION OF EXPOSURE AT LOW LEVELS. USE GOOD HOUSEKEEPING AND SANITATION PRACTICES. DO NOT USE TOBACCO OR FOOD IN WORK AREA. WASH THOROUGHLY BEFORE EATING AND SMOKING. DO NOT BLOW DUST OFF CLOTHING OR SKIN WITH COMPRESSED AIR.

VENTILATION: TO MAINTAIN CONCENTRATION AT OR BELOW TLV.

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#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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OSHA PEL: 0.1 mg/m<sup>3</sup> (AS SILVER)

ACGIH TLV: 0.05 mg/m<sup>3</sup> (AS COPPER)

LD50/LC50: N/A

SPECIAL EQUIPMENT: NONE

RESPIRATORY PROTECTION: NIOSH APPROVED DUST/MIST RESPIRATOR

PROTECTIVE GLOVES: RUBBER GLOVES

EYE PROTECTION: SAFETY GLASSES  
OTHER: PROTECTIVE GEAR SUITABLE TO PREVENT  
CONTAMINATION.

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### 9. PHYSICAL AND CHEMICAL CHARACTERISTICS

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COLOR: SILVER  
FORM: POWDER, PIECES, PELLETS, GRANULES, SPUTTERING  
TARGET  
ODOR: ODORLESS  
SOLUBILITY IN H<sub>2</sub>O: INSOLUBLE  
BOILING POINT: N/A  
MELTING POINT: 231.9 °C AS PURE TIN, UP TO 1084 °C AS PURE COPPER  
SPECIFIC GRAVITY (H<sub>2</sub>O=1): N/A  
MOLECULAR WEIGHT: N/A

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### 10. REACTIVITY


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STABILITY: STABLE  
INCOMPATIBILITY: EXCESSIVE HEAT, AIR, MOISTURE, STRONG ACIDS,  
ALKALIS, BROMATES, STRONG BASES, ACETYLENE,  
ACETALDEHYDE, MAGNESIUM, CHLORATES AND IODATES.  
POTASSIUM PEROXIDE, ETHYLENE OXIDE, IODATES,  
CHLORATES, SODIUM PEROXIDE, SODIUM AZIDE,  
ACTYLINIC COMPOUNDS, AMMONIUM NITRATE,  
DIMETHYSULFOXIDES.  
HAZ. DECOMPOSITION PRODUCTS: METAL OXIDE FUME  
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

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### 11. TOXICOLOGICAL INFORMATION

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POTENTIAL HEALTH EFFECTS:  MAY CAUSE IRRITATION.  
EYE: MAY CAUSE IRRITATION  
SKIN: MAY CAUSE IRRITATION  
INGESTION: MAY CAUSE NAUSEA, VOMITING, ABDOMINAL PAIN,  
METALLIC TASTE, AND DIARRHEA. INGESTION OF LARGE  
DOSES MAY CAUSE STOMACH AND INTESTINE  
ULCERATION, JAUNDICE, AND KIDNEY AND LIVER DAMAGE  
INHALATION: MAY CAUSE SNEEZING, IRRITATION, ULCERATION OF  
MUCUS MEMBRANE INCLUDING PERFORATION OF NASAL  
SEPTUM. NAUSEA, WEAKNESS, AND METAL FUME FEVER.  
MAY CAUSE PNEUMONOCOCONIOSIS AND TIN POISONING.  
ROUTES OF ENTRY: INHALATION, SKIN, EYES, AND INGESTION.  
TARGET ORGANS: N/A  
SIGNS & SYMPTOMS OF EXPOSURE: MAY CAUSE BLUE-GREY SKIN DISCOLORATION AFTER  
PROLONGED EXPOSURE  
MEDICAL CONDITIONS  
AGGRAVATED BY EXPOSURE: PRE-EXISTING RESPIRATORY DISORDERS.  
CARCINOGEN:  
NTP: NO  
IARC MONOGRAPHS: NO  
OSHA REGULATED: NO

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### 12. ECOLOGICAL INFORMATION

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ECOLOGICAL DATA IS NOT AVAILABLE.

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### 13. DISPOSAL CONSIDERATIONS

DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

#### 14. TRANSPORTATION DATA

NOTES: NOT HAZARDOUS EXCEPT AS POWDER  
UN NUMBER: UN3089  
UN PROPER SHIPPING NAME: METAL POWDER, FLAMMABLE, N.O.S.



HAZARD CLASS: 4.1  
PACKING GROUP: III  
ROAD TRAN. ADR//RID CLASS: 4.1 (F3) FLAMMABLE SOLIDS, SELF-REACTIVE SUBSTANCES AND SOLID DESENSITISED EXPLOSIVES  
AIR TRAN. ICAO/IATA CLASS: 4.1  
MARITIME TRAN. IMDG CLASS: 4.1

#### 15. REGULATORY INFORMATION

NO SPECIAL REGULATIONS ARE IMPOSED ON THIS MATERIAL.

SEC.302 (EHS): YES  
SEC.304 (RQ): N/A  
SEC.313 (SARA): NO

#### 16. OTHER INFORMATION

THIS SAFETY DATA SHEET SHOULD BE USED IN CONJUNCTION WITH TECHNICAL SHEETS. IT DOES NOT REPLACE THEM. THE INFORMATION GIVEN IS BASED ON OUR KNOWLEDGE OF THIS PRODUCT, AT THE TIME OF PUBLICATION. IT IS GIVEN IN GOOD FAITH. THE ATTENTION OF THE USER IS DRAWN TO THE POSSIBLE RISKS INCURRED BY USING THE PRODUCT FOR ANY OTHER PURPOSE OTHER THAN THAT FOR WHICH IT WAS INTENDED. THIS DOES NOT IN ANY WAY EXCUSE THE USER FROM KNOWING AND APPLYING ALL THE REGULATIONS GOVERNING HIS ACTIVITY. IT IS THE SOLE RESPONSIBILITY OF THE USER TO TAKE ALL PRECAUTIONS REQUIRED IN HANDLING THE PRODUCT. THE AIM OF THE MANDATORY REGULATIONS MENTIONED IS TO HELP THE USER TO FULFILL HIS OBLIGATIONS REGARDING THE USE OF HAZARDOUS PRODUCTS.

DATE MSDS PREPARED: 06/25/14  
DATE LAST REVISED: N/A