

**MATERIAL SAFETY DATA SHEET
KESTER SOLDER**

MSDS NUMBER: LEAD SOLDER

DATE PREPARED: 03-FEB-03

SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT IDENTIFIER AS USED ON LABEL: SOLDER ALLOYS CONTAINING LEAD

PRODUCT USE: USED WITH FLUX TO BOND MOST COMMON METALS.

**MANUFACTURER'S NAME AND ADDRESS: KESTER
DIVISION OF LITTON SYSTEMS, INC.
515 E. TOUHY AVENUE
DES PLAINES, IL 60018
USA**

**TELEPHONE NUMBER FOR INFORMATION: (847) 297-1600
CHEMTREC 24-HOUR EMERGENCY TELEPHONE NUMBER: (800) 424-9300**

SUPPLIER'S NAME AND ADDRESS (IF DIFFERENT FROM MANUFACTURER):

**NA = NOT APPLICABLE
NE = NOT ESTABLISHED
UN = UNKNOWN**

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS 1% OR GREATER CARCINOGENS 0.1% OR GREATER	C.A.S. NUMBER	WEIGHT PERCENT
LEAD*	7439-92-1*	**
TIN*	7440-31-5	**
SILVER*	7440-22-4*	**
BISMUTH	7440-69-9	**
ANTIMONY*	7440-36-0*	**
COPPER*	7440-50-8	**
INDIUM	7440-74-6	**

HAZARDOUS INGREDIENTS 1% OR GREATER CARCINOGENS 0.1% OR GREATER	OSHA PEL MG/M3	ACGIH TLV TWA MG/M3	LD50 INGESTED G/KG	LC50 INHALED PPM
LEAD*	0.05	0.15	NE	NE
TIN*	2.0	2.0	NE	NE
SILVER*	0.01	0.1	NE	NE
BISMUTH	NE	NE	NE	NE
ANTIMONY*	0.5	0.5	7.0 RAT	NE
COPPER*	NE	0.2	NE	NE
INDIUM	NE	0.1	NE	NE

NON-HAZARDOUS INGREDIENTS:

OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

PEL: PERMISSIBLE EXPOSURE LIMIT

ACGIH: AMERICAN CONFERENCE OF GOVERNMENT INDUSTRIAL HYGIENISTS

TLV: THRESHOLD LIMIT VALUES
STEL: SHORT-TERM EXPOSURE LIMIT
TWA: TIME WEIGHTED AVERAGE
C.A.S.: CHEMICAL ABSTRACT SERVICE

NOTES:

* SEE SECTION 15 FOR U.S.A. REGULATORY INFORMATION
** COMPOSITION AND WEIGHT % OF SOLDER ALLOYS VARIES WIDELY AND CAN BE DETERMINED BY PRODUCT LABEL.

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

HOT SOLDER CAN BURN EYES AND SKIN. FUMES DURING SOLDERING ARE IRRITATING TO EYES AND RESPIRATORY SYSTEM.

ECC (EUROPE) DANGEROUS SUBSTANCES:

HAZARD DESIGNATION:

T: TOXIC

R-PHRASES (RISKS TO HUMANS OR THE ENVIRONMENT):

R 20/22: HARMFUL BY INHALATION AND IF SWALLOWED.

R 33: DANGER OF CUMULATIVE EFFECTS.

R 61: MAY CAUSE HARM TO THE UNBORN CHILD.

R 62: POSSIBLE RISK OF IMPAIRED FERTILITY.

PRIMARY EXPOSURE:

FLUX FUMES DURING SOLDERING. SEE APPROPRIATE MATERIAL SAFETY DATA SHEET.

PRIMARY ROUTES OF ENTRY:

SKIN

EYES

INHALATION

INGESTION

TARGET ORGANS: NA

POTENTIAL HEALTH EFFECTS OF ACUTE (SEVERE SHORT-TERM) EXPOSURE:

INHALATION:

FLUX FUMES DURING SOLDERING MAY CAUSE IRRITATION AND DAMAGE OF MUCOUS

MEMBRANES AND RESPIRATORY SYSTEM.

EYE CONTACT: NONE.

SKIN CONTACT: NONE.

INGESTION: NOT LIKELY TO OCCUR.

SKIN ABSORPTION: NONE.

POTENTIAL HEALTH EFFECTS OF CHRONIC (PROLONGED) EXPOSURE:
REPEATED INHALATION OR INGESTION OF LEAD CAN RESULT IN SYSTEMIC POISONING.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

METAL:

DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS, KIDNEYS, NERVES AND POSSIBLY REPRODUCTIVE SYSTEM.

CARCINOGENICITY:

NTP

OSHA

IARC

NOT LISTED

TERATOGENICITY/MUTAGENICITY:

SEE SECTIONS 11 AND 15 FOR ADDITIONAL INFORMATION.

SECTION 4 – FIRST AID MEASURES

SEEK MEDICAL ASSISTANCE FOR FURTHER TREATMENT, OBSERVATION AND SUPPORT IF NEEDED.

EYE CONTACT:

FOR BURNS FLUSH IMMEDIATELY WITH COOL WATER AND GET MEDICAL ATTENTION.

SKIN CONTACT: FOR BURNS FLUSH IMMEDIATELY WITH COOL WATER.

INHALATION: NA

INGESTION: NOT LIKELY TO OCCUR.

SECTION 5 – FIRE FIGHTING MEASURES

FLAMMABILITY:

NO

YES

CONDITIONS TO AVOID: NE

FLASH POINT (T.O.C.):

NA DEG. F

NA DEG. C

AUTO-IGNITION TEMPERATURE:

NA DEG. F

NA DEG. C

FLAMMABILITY LIMITS PERCENT BY VOLUME IN AIR:

LEL: NA

UEL: NA

EXTINGUISHING MEANS:

WATER

CARBON DIOXIDE

ALCOHOL FOAM

DRY CHEMICAL

HAZARDOUS COMBUSTION PRODUCTS:

MELTED SOLDER ABOVE 1000 DEG. F WILL LIBERATE TOXIC LEAD AND/OR ANTIMONY FUMES.

EXPLOSION SENSITIVITY: IMPACT – NONE IDENTIFIED

STATIC DISCHARGE SENSITIVITY:

YES

NO

SPECIAL FIREFIGHTING PROCEDURES: NONE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE KNOWN.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED:
MELTED SOLDER WILL SOLIDIFY ON COOLING AND CAN BE SCRAPED UP. USE CAUTION TO AVOID BREATHING FUMES IF A GAS TORCH IS USED TO CUT UP LARGE PIECES.

SECTION 7 – HANDLING AND STORAGE

STORAGE PRECAUTIONS:
EXPOSURE TO SULFUR OR TO HIGH HUMIDITY WILL TARNISH THE SOLDER SURFACE.

HANDLING PRECAUTIONS: NONE.

PERSONAL PRECAUTIONS:
AVOID BREATHING SMOKE/FUMES GENERATED DURING SOLDERING. WASH HANDS AFTER HANDLING SOLDER BEFORE EATING OR SMOKING.

SECTION 8 – EXPOSURE CONTROLS, PERSONAL PROTECTION

VENTILATION TO BE USED:
PROVIDE ADEQUATE EXHAUST VENTILATION (GENERAL AND/OR LOCAL) IF NECESSARY TO MEET EXPOSURE REQUIREMENTS. LOCAL EXHAUST VENTILATION IS PREFERRED TO MINIMIZE DISPERSION OF SMOKE AND FUMES INTO THE WORK AREA.

RESPIRATORY PROTECTION:
WHEN VENTILATION IS NOT SUFFICIENT TO REMOVE FUMES FROM THE BREATHING ZONE, A SAFETY APPROVED RESPIRATOR OR SELF-CONTAINED BREATHING APPARATUS SHOULD BE WORN.

PROTECTIVE GLOVES: WEAR RUBBER OR CLOTH GLOVES TO AVOID SKIN CONTACT.

EYE PROTECTION:
FULL FACE SHIELD SHOULD BE USED TO PREVENT SPLASHING ON EYES AND FACE.

OTHER PROTECTIVE CLOTHING AND EQUIPMENT: NONE.

HYGIENIC WORK PRACTICES:
WASH HANDS THOROUGHLY AFTER HANDLING CHEMICALS OR SOLDER CONTAINING LEAD BEFORE EATING OR SMOKING.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE AT 20 DEG. C: SOLID

SPECIFIC GRAVITY (WATER = 1 AT 25 DEG. C): >7

BOILING POINT (760 MMHg): NA DEG. F NA DEG. C

MELTING POINT: >212 DEG. F >100 DEG. C

VAPOR PRESSURE (MMHg AT 20 DEG. C): ND

EVAPORATION RATE (BUTYL ACETATE = 1): NA

VAPOR DENSITY (AIR = 1): NA

PERCENT VOLATILE (BY VOLUME): 0%

SOLUBILITY IN WATER (% BY WEIGHT): 0

VOLATILE ORGANIC COMPOUND (VOC): NA G/LITER

pH: NA

ODOR THRESHOLD: NE

FREEZING POINT (760 MMHg): NA DEG. F NA DEG. C

COEFFICIENT OF WATER/OIL DISTRIBUTION: NE

APPEARANCE AND ODOR:

SILVER-GRAY METAL IN BAR, WIRE, RIBBON, OR PREFORMED SHAPES, NO ODOR.

SECTION 10 – STABILITY AND REACTIVITY

CHEMICAL STABILITY:

STABLE

UNSTABLE

CONDITIONS TO AVOID: NE

INCOMPATIBILITY (MATERIALS TO AVOID): STRONG ACID, STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS: NONE.

HAZARDOUS POLYMERIZATION:

MAY OCCUR

WILL NOT OCCUR

CONDITIONS TO AVOID: NOT APPLICABLE.

SECTION 11 – TOXICOLOGICAL INFORMATION

EXPOSURE LIMITS:

NOT DETERMINED FOR THE PRODUCT. SEE SECTION 2 FOR INGREDIENTS

LEAD CAN ACCUMULATE IN BONE AND BODY ORGANS, AND ELIMINATION FROM THE BODY IS SLOW. MEDICAL EXAMINATIONS ARE ADVISED FOR PERSONS REPEATEDLY EXPOSED TO LEVELS ABOVE THE EXPOSURE LIMIT FOR LEAD. LEAD IS CLASSIFIED AS A GROUP 2B CARCINOGEN BY THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA). WOMEN OF CHILD-BEARING AGE SHOULD AVOID CHRONIC EXPOSURE TO LEAD BECAUSE OF POSSIBLE EFFECTS ON REPRODUCTION AND POTENTIAL INJURY TO A DEVELOPING FETUS.

SECTION 12 – ECOLOGICAL INFORMATION

KEEP OUT OF WATERWAYS.

SECTION 13 – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS: SOLDER CAN BE RECLAIMED.

CAUTION:

EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE. OBSERVE ALL LABEL PRECAUTIONS.

SECTION 14 – TRANSPORT INFORMATION

DOT (U.S.A.): NOT REGULATED

TDG (CANADA): NOT REGULATED

SECTION 15 – REGULATORY INFORMATION

U.S.A.:

ALL CHEMICAL SUBSTANCES IN THIS PRODUCT ARE LISTED IN THE EPA (ENVIRONMENTAL PROTECTION AGENCY) TSCA (TOXIC SUBSTANCES CONTROL ACT) INVENTORY.

* THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE USA SUPERFUND AMENDMENT AND REAUTHORIZATION ACT (SARA) OF 1986 AND 40 CFR, PART 372.

CALIFORNIA PROPOSITION 65:

THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

CANADA:

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM) CLASSIFICATION: THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCT REGULATIONS (CPR) AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.

D2A:

EUROPE:

EUROPEAN COUNCIL DIRECTIVE 67/548/EEC

DANGEROUS SUBSTANCES HAZARD CLASSIFICATION:

T: TOXIC

R-PHRASES (RISKS TO HUMANS OR THE ENVIRONMENT):

R 20/22: HARMFUL BY INHALATION AND IF SWALLOWED.

R 33: DANGER OF CUMULATIVE EFFECTS.

R 61: MAY CAUSE HARM TO THE UNBORN CHILD.

R 62: POSSIBLE RISK OF IMPAIRED FERTILITY.

S-PHRASES (SAFETY PRECAUTIONS FOR STORING, HANDLING AND USING THE PRODUCT):

S 2: KEEP OUT OF REACH OF CHILDREN.

S 20/21: WHEN USING DO NOT EAT, DRINK OR SMOKE.

S 24: AVOID CONTACT WITH SKIN.

S 37: WEAR SUITABLE GLOVES.

S 45: IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY.

SECTION 16 - OTHER INFORMATION

NFPA RATING:

HEALTH 2

FLAMMABILITY 0

REACTIVITY 0

SPECIAL

HMIS RATING:

HEALTH 2

FLAMMABILITY 0

REACTIVITY 0

PERSONAL PROTECTION X

PREPARATION INFORMATION:

REVISION SUMMARY: UPDATED INFORMATION IN SECTIONS 3, 15, AND 16.

PREPARED BY: H. HOLICH

TELEPHONE NUMBER: (847) 297-1600

DATE PREPARED: 03-FEB-03

SUPERSEDES: 31-AUG-01

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE AND IS OFFERED SOLELY FOR INFORMATION, CONSIDERATION AND INVESTIGATION, KESTER SOLDER EXTENDS NO WARRANTIES, MAKES NO REPRESENTATIONS AND ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY, COMPLETENESS OR SUITABILITY OF THIS DATA FOR ANY PURCHASER'S USE. THE DATA ON THIS MATERIAL SAFETY DATA SHEET RELATES ONLY TO THIS PRODUCT AND DOES NOT RELATE TO USE WITH ANY OTHER MATERIAL OR IN ANY PROCESS. ALL CHEMICAL PRODUCTS SHOULD BE USED ONLY BY OR UNDER THE DIRECTION OF TECHNICALLY QUALIFIED PERSONNEL WHO ARE AWARE OF THE HAZARDS INVOLVED AND THE NECESSITY FOR REASONABLE CARE IN HANDLING. HAZARD COMMUNICATION REGULATIONS REQUIRE THAT EMPLOYEES MUST BE TRAINED HOW TO USE A MATERIAL SAFETY DATA SHEET AS A SOURCE FOR HAZARD INFORMATION.

FORM NUMBER: 1F-RD-G-02-011