Material Safety Data Sheet

KESTER SOLDER

MSDS Number: 256

Date Prepared: 31-Aug-01

SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Identifier As Used On Label: **256 SOLDER PASTE**

Product Use: Mixture of solder powder with paste flux for soldering electrical or electronic connections.

Manufacturer's Name and Address

KESTER SOLDER
DIVISION OF LITTON SYSTEMS, INC.
515 E. TOUHY AVENUE
DES PLAINES, IL 60018 USA

Supplier's Name and Address (if different from manufacturer)

Telephone Number For Information: (847) 297-1600

CHEMTREC 24-Hour Emergency Telephone Number: (800) 424-9300

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	OSHA PEL mg/m³	ACGIH TLV TWA mg/m³	LD 50 ingested g / Kg	LC 50 inhaled g / m³
Lead	7439-92-1 *	**	0.05	0.15	NE	NE
Tin	7440-31-5	**	2	2	NE	NE
Silver	7440-22-4 *	**	0.01	0.1	NE	NE
Bismuth	7440-69-9	**	NE	NE	NE	NE
Antimony	7440-36-0 *	**	0.5	0.5	7.0 Rat	NE
Modified Rosin	61791-17-1	< 6	NE	NE	NE	NE
High boiling glycol ether	24991-55-7	3	NE	NE	NE	NE

NON-HAZARDOUS INGREDIENTS		
Nonionic Surfactants	68439-49-6	< 1

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 powder varies widely and can be determined by product label. Solder powder is typically 85-92% of the solder paste composition.

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Fumes during soldering are irritating to eyes and may cause headache and respiratory system irritation or damage. Prolonged or repeated exposure to rosin flux fumes during soldering may result in allergic reaction in a sensitive person, resulting in asthma symptoms. Harmful if inhaled or swallowed.

ECC (Europe) DANGEROUS SUBSTANCES HAZARD DESIGNATION:

Xn Harmful

R-PHRASES (Risks to Humans or the Environment):

R 61 - May cause harm to the unborn child.

R 62 - Possible risk of impaired fertility.

R 20 - Harmful by inhalation.

R 33 - Danger of cumulative effects.

R 42/43 - May cause sensitization by inhalation and skin contact.

PRIMARY EXPOSURE:

Contact with skin and eyes when handling. Fumes during soldering will contain evaporated solvent and droplets of rosin and/or organic decomposition products.

PRIMARY ROUTES OF ENTRY: ○ Skin ◉ Eyes ◉ Inhalation ◉ Ingestion

TARGET ORGANS:

Flux fumes: eyes, mucous membranes and respiratory system. Ingestion of lead metal can affect kidneys, gastrointestinal, reproductive and neurological systems.

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: Irritation from contact with smoke from soldering.

SKIN CONTACT: Possible local irritation by contact with flux or fumes.

INGESTION: May be harmful if swallowed. Most of the solder paste will pass through the body unabsorbed. Lead that is absorbed is caught by the liver and, in part, excreted in the bile.

SKIN ABSORPTION: None.

POTENTIAL HEALTH EFFECTS OF CHRONIC (prolonged) EXPOSURE:

Smoke during soldering will contain rosin which is an allergen that can cause eye irritation and respiratory system irritation and damage. Repeated inhalation or ingestion of lead can result in systemic poisoning. Prolonged or repeated contact with skin can cause a rash.

Medical Conditions Generally Aggravated by Exposure:

Chemical hypersensitivity, asthma and other respiratory conditions, existing eye and skin disorders. Lead: Diseases of the blood and blood-forming organs, kidneys, nerves and possibly reproductive systems.

CARCINOGENICITY/ TERATOGENICITY / MUTAGENICITY: ○ NTP ○ OSHA ◉ IARC ○ Not Listed

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: Flush eyes with plenty of water and get medical attention.

SKIN CONTACT: Wash thoroughly with soap and water.

INHALATION: Remove person from exposure to fumes.

INGESTION: Gastric lavage (stomach pumping) if physician advises. Get prompt medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

Flammability: ◉ No ○ Yes Conditions to avoid: NE

Flash Point (T.O.C): > 200 °F > 93.3 °C Auto-Ignition Temperature: > 500 °F > 260 °C

Flammability Limits percent by volume in air: LEL: NE UEL: NE

Extinguishing Means: ○ Water ◉ Carbon Dioxide ◉ Alcohol Foam ○ Dry Chemical

Hazardous Combustion Products: Carbon monoxide, carbon dioxide. Melted solder above 1000 °F will liberate toxic lead and/or antimony fumes.

Explosion Sensitivity: Impact - None Identified Static Discharge Sensitivity: ○ Yes ◉ No

Special Firefighting Procedures: Avoid breathing smoke. Wear self-contained breathing apparatus if this material is in the vicinity of a fire.

Unusual Fire and Explosion Hazards: None known.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Steps to be Taken if Material is Spilled or Released:

Scoop up paste and deposit in appropriate containers. Remove residual with glycol ether solvent.

SECTION 7 - HANDLING AND STORAGE

Storage Precautions: Store at or near 40 °F (5°C) in closed containers. Store in a dry place.

Handling Precautions: Keep containers sealed when not in use.

Personal Precautions: Wash hands after handling solder paste and before eating or smoking. Care should be taken to remove solder paste from under fingernails.

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: Safety glasses or goggles should be used.

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 °C: Solid

Boiling Point (760 mm Hg): NA °F NA °C

Vapor Pressure (mm Hg at 20 °C): ND

Vapor Density (air = 1): NA

Solubility in Water (% by weight): 0

pH: NA

Freezing Point (760 mm Hg): NA °F NA °C

Appearance and Odor: Gray metallic paste with mild odor.

Specific Gravity (water = 1 at 25 °C): >7

Melting Point: > 212 °F > 100 °C

Evaporation Rate (butyl acetate = 1): < 0.1

Percent Volatile (by volume): < 1 %

Volatile Organic Compound (VOC): 8 g / Liter

Odor Threshold: NE

Coefficient of Water / Oil Distribution: NE

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability: ◉ Stable ○ Unstable Conditions to avoid: NE

Incompatibility (materials to avoid): Strong acid, strong oxidizers

Hazardous Decomposition Products:

When heated, the solvents are evaporated and rosin may be thermally degraded to liberate aliphatic aldehydes, acids and terpenes.

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

Rosin is an allergen. Prolonged or repeated exposure to fumes during soldering may result in allergic reaction in a sensitive person, resulting in eye and skin irritation and asthma symptoms. 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 paste can be melted to reclaim the solder metal. Containers and extracted flux are hazardous waste if the solder containe lead.

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.

USEPA - Lead and its compounds are placed in Class B2, probably carcinogenic to humans.
IARC - Lead and its compounds are placed in Class 2B, possibly carcinogenic to humans.
*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 Xn - Harmful
- R-PHRASES (Risks to Humans or the Environment)
  - R 61 - May cause harm to the unborn child.
  - R 62 - Possible risk of impaired fertility.
  - R 20 - Harmful by inhalation.
  - R 33 - Danger of cumulative effects.
  - R 42/43 - May cause sensitization by inhalation and skin contact.
- 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 23 - Do not breathe the fumes.
  - S 24/25 - Avoid contact with skin and eyes.
  - S 26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

SECTION 16 - OTHER INFORMATION

NFPA Rating:	Health:	2	Flammability:	1	Reactivity:	0	Special:
HMIS Rating:	Health:	2	Flammability:	1	Reactivity:	0	Personal Protection: X

PREPARATION INFORMATION

Revision Summary: Change of format and new data in most sections.

Prepared By: D. Bernier
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