

# Material Safety Data Sheet

KESTER SOLDER

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MSDS Number: HM531

Date Prepared: 05-Sep-02

## SECTION 1 - CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Identifier As Used On Label: **HM531 WATER SOLUBLE SOLDER PASTE**

Product Use: Mixture of solder powder with paste flux for soldering electrical or electronic connections. MSDS NOT FOR DISTRIBUTION IN CANADA.

Manufacturer's Name and Address

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

**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

*NA = Not Applicable NE = Not Established UN = Unknown*

## SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

| HAZARDOUS INGREDIENTS 1 % or greater<br>CARCINOGENS 0.1 % or greater | C.A.S.<br>Number | Weight<br>Percent | OSHA<br>PEL<br>mg/m <sup>3</sup> | ACGIH TLV<br>TWA<br>mg/m <sup>3</sup> | LD 50<br>ingested<br>g / Kg | LC 50<br>inhaled<br>ppm |
|--|------------------|-------------------|----------------------------------|---------------------------------------|-----------------------------|-------------------------|
| Lead*  | 7439-92-1 *      | **                | 0.05                             | 0.15                                  | NE                          | NE                      |
| Tin*   | 7440-31-5*       | **                | 2.0                              | 2.0                                   | NE                          | NE                      |
| Diethanolamine*  | 111-42-2*        | <1                | 3                                | 2.0                                   | 1.4                         | NE                      |
| Triethanolamine*   | 102-71-6*        | <1                | NE                               | 5.0                                   | 5 Rat                       | NE                      |
|  |                  |                   |                                  |                                       |                             |                         |
|  |                  |                   |                                  |                                       |                             |                         |
|  |                  |                   |                                  |                                       |                             |                         |
|  |                  |                   |                                  |                                       |                             |                         |
|  |                  |                   |                                  |                                       |                             |                         |
|  |                  |                   |                                  |                                       |                             |                         |

### NON-HAZARDOUS INGREDIENTS

|                        |         |     |   |  |  |  |
|------------------------|---------|-----|---|--|--|--|
| Surfactants & Alcohols | MIXTURE | <15 | <small>OSHA: Occupational Safety and Health Administration<br/>PEL: Permissible Exposure Limit<br/>ACGIH: American Conference of Government Industrial Hygienists<br/>TLV: Threshold Limit Values<br/>STEL: Short-Term Exposure Limit<br/>TWA: Time Weighted Average<br/>C.A.S. Chemical Abstract Service</small> |  |  |  |
|                        |         |     |   |  |  |  |
|                        |         |     |   |  |  |  |
|                        |         |     |   |  |  |  |

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. Harmful if 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.

**PRIMARY EXPOSURE:**

Fumes during soldering may contain droplets of rosin and/or other 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:**

Fumes may cause irritation of eyes and mucous membranes, headache, and/or respiratory system irritation or damage. Prolonged or repeated contact with skin can cause a rash. Repeated inhalation or ingestion of lead can result in systemic poisoning.

**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/**    ☐ 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:** 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

**Specific Gravity (water = 1 at 25 °C):** NE

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

**Melting Point:** NE °F NE °C

**Vapor Pressure (mm Hg at 20 °C):** ND

**Evaporation Rate (butyl acetate = 1):** NE

**Vapor Density (air = 1):** NA

**Percent Volatile (by volume):** NE %

**Solubility in Water (% by weight):** 0

**Volatile Organic Compound (VOC):** NE g / Liter

**pH:** NA

**Odor Threshold:** NE

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

**Coefficient of Water / Oil Distribution:** NE

**Appearance and Odor:** Gray metallic paste with mild 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**

When heated to soldering temperatures, the rosin may be thermally degraded to liberate aliphatic aldehydes, acids and terpenes. No lead or antimony are detected in fumes from soldering below 1000 °F (537 °C).

**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 paste can be melted to reclaim the solder metal. Containers and extracted flux are hazardous waste if the solder contained 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.

\*This product contains chemical(s) subject to the reporting requirements of Section 110 & 313 of Title III of the USA Superfund Amendment and Reauthorization Act (SARA) of 1986 and 40 CFR, Part 372.

\*This product contains chemical(s) that appear on the right-to-know lists for IL, MA, MI, NJ and PA.

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 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.

• 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:**

Prepared By: N. Montag

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Telephone Number: (847) 297-1600

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