1: PRODUCT AND COMPANY IDENTIFICATION

Trade name: R253-5 Sn96Ag4 Solder Paste
Application of the substance / the preparation: Solder paste

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Kester Inc.
300 West Thorndale Avenue
Itasca, IL 60143
Tel (630) 616-4000

ITW Specialty Materials (Suzhou) Co., Ltd.
Heng Qiao Road
Wujian Economic Development Zone
Suzhou, Jiangsu 215200 China
Tel +86 512 8206808

Information department: Product Compliance: EHS_Kester@kester.com
1.4 Emergency telephone number:
CHEMTREC 24-Hour Emergency Response Telephone Number : (800) 424-9300
CHEMTREC 24-Hour Emergency Response (Outside US & Canada) Telephone Number : (703) 527-3887

2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008

GHS08 Health hazard

Repr. 1B  H360  May damage fertility or the unborn child.

GHS07

Skin Sens. 1  H317  May cause an allergic skin reaction.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008
The product is classified and labeled according to the CLP regulation.

Hazard pictograms

GHS07  GHS08

Signal word Danger

Hazard-determining components of labeling:
Rosin
Rosin

Hazard statements
May cause an allergic skin reaction.
May damage fertility or the unborn child.
Precautionary statements
Avoid breathing dust/fume/gas/mist/vapors/spray
Wear protective gloves.
Contaminated work clothing must not be allowed out of the workplace.

(Contd. on page 2)
Trade name: R253-5 Sn96Ag4 Solder Paste

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. Wash contaminated clothing before reuse. If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If skin irritation or rash occurs: Get medical advice/attention. IF ON SKIN: Wash with plenty of water. Store locked up. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard description:
WHMIS Symbols

Classification system:
NFPA ratings (scale 0 - 4)

Health = 1
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH [1] Health = 1
FIRE [1] Fire = 1
REACTIVITY [0] Reactivity = 0

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3: COMPOSITION OF MIXTURE

Description: Mixture of the substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Description</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7440-31-5</td>
<td>Sn (Sn)</td>
<td>70-85%</td>
</tr>
<tr>
<td>EINECS: 231-141-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin Sens. 1; H317</td>
<td></td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td>CAS: 7440-22-4</td>
<td>Silver (Ag)</td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td>EINECS: 231-131-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycol ether</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin Sens. 1; H317</td>
<td></td>
<td>3.0-5.0%</td>
</tr>
<tr>
<td>CAS: 872-50-4</td>
<td>N-Methyl-2-pyrrolidone</td>
<td>0.1-1%</td>
</tr>
<tr>
<td>EINECS: 212-828-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repr. 1B, H360</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flam. Liq. 4, H227</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Trade name: R253-5 Sn96Ag4 Solder Paste

4: FIRST AID MEASURES

4.1 Description of first aid measures
General information: Follow general first aid procedures.
After inhalation: Supply fresh air; consult doctor in case of complaints.
After skin contact: Immediately wash with water and soap and rinse thoroughly.
After eye contact: Rinse opened eye for several minutes under running water.
After swallowing: Seek immediate medical advice.

4.2 Most important symptoms and effects, both acute and delayed: No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed: No further relevant information available.

5: FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing agents:
CO2, sand, extinguishing powder. Do not use water.
Use fire fighting measures that suit the environment.

5.2 Special hazards arising from the substance or mixture: In case of fire, the following can be released:

5.3 Advice for firefighters
Protective equipment: Wear self-contained respiratory protective device.

6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Ensure adequate ventilation.
6.2 Environmental precautions: Do not allow to enter sewers/surface or ground water.
6.3 Methods and material for containment and cleaning up:
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7: HANDLING AND STORAGE

7.1 Precautions for safe handling: Prevent formation of aerosols.
Information about protection against explosions and fires: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: Store in a cool location.
Information about storage in one common storage facility: Not required.
Further information about storage conditions: None.

7.3 Specific end use(s): No further relevant information available.

8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Additional information about design of technical systems: No further data; see item 7.
8.1 Control parameters

Components with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>PEL</th>
<th>REL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-31-5 TIN (Sn)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEL</td>
<td>Long-term value: 2 mg/m³ metal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REL</td>
<td>Long-term value: 2 mg/m³ metal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLV</td>
<td>Long-term value: 2 mg/m³ metal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7440-22-4 SILVER (Ag)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEL</td>
<td>Long-term value: 0.01 mg/m³ metal: dust and fume</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REL</td>
<td>Long-term value: 0.01 mg/m³ metal: dust and fume</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLV</td>
<td>Long-term value: 0.1 mg/m³ metal: dust and fume</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>872-50-4 N-methyl-2-pyrroldione</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEEL</td>
<td>Long-term value: 10 ppm Skin</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional information:
PEL = Permissible Exposure Limit (OSHA)
TLV = Threshold Limit Value (ACGIH)
OSHA = Occupational Safety and Health Administration
ACGIH = American Conference of Governmental Industrial Hygienists

8.2 Exposure controls

Personal protective equipment:

General protective and hygienic measures:
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.

Breathing equipment:
When ventilation is not sufficient to remove fumes from the breathing zone, a safety approved respirator or self-contained breathing apparatus should be worn.
Not necessary if room is well-ventilated.
Use suitable respiratory protective device in case of insufficient ventilation.

Protection of hands:

Protective gloves

Material of gloves:
Nitrile rubber, NBR
Natural rubber, NR

Penetration time of glove material:
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:
Safety glasses

Face Shield with Safety Glasses when refilling.
9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
General Information
Appearance:
Form: Pasty
Color: Silver grey
Odor: Mild
pH-value: Not determined.
Change in condition
Melting point/Melting range: Undetermined.
Boiling point/Boiling range: 243 °C (469 °F)
Flash point: 116 °C (241 °F)
Auto igniting: Product is not selfigniting.
Danger of explosion: Product does not present an explosion hazard.
Vapor pressure: Not Applicable
Density: Not determined.
Solubility in / Miscibility with
Water: Not miscible or difficult to mix.
Solvent content:
Organic solvents: 0.6 %
Solids content: 95.7 %

10: STABILITY AND REACTIVITY

10.1 Reactivity No further relevant information available.
10.2 Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
10.3 Possibility of hazardous reactions No dangerous reactions known.
10.4 Conditions to avoid No further relevant information available.
10.5 Incompatible materials: Strong acids, strong oxidizers.
10.6 Hazardous decomposition products: No dangerous decomposition products known.

11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity: Based on available data, the classification criteria are not met.
LD/LC50 values that are relevant for classification:

<table>
<thead>
<tr>
<th>Substance</th>
<th>LD50 (mg/kg)</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycol ether</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>3200</td>
<td>rat</td>
</tr>
<tr>
<td>Dermal</td>
<td>&gt;20000</td>
<td>rab</td>
</tr>
<tr>
<td>Rosin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>&gt;4000</td>
<td>Rat</td>
</tr>
<tr>
<td>Dermal</td>
<td>&gt;2500</td>
<td>rabbit</td>
</tr>
</tbody>
</table>
Primary irritant effect:
on the skin: Based on available data, the classification criteria are not met.
on the eye: Based on available data, the classification criteria are not met.
Sensitization:
May cause an allergic skin reaction.
Additional toxicological information:

Carcinogenic categories

IARC (International Agency for Research on Cancer)
None of the ingredients is listed.

NTP (National Toxicology Program)
None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

12: ECOLOGICAL INFORMATION

12.1 Toxicity
Aquatic toxicity: No further relevant information available.
Additional ecological information:
General notes:
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Recommendation:
Disposal must be made according to official regulations.
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14: TRANSPORT INFORMATION

14.1 UN-Number
DOT, ADR, ADN, IMDG, IATA

14.2 UN proper shipping name
DOT, ADR, ADN, IMDG, IATA

14.3 Transport hazard class(es)
DOT, ADR, ADN, IMDG, IATA

Class

14.4 Packing group
DOT, IMDG, IATA

14.6 Special precautions for user

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.
## 15: REGULATORY INFORMATION

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### USA

The following information relates to product regulation specific to the USA.

**SARA (Superfund Amendments and Reauthorization Act)**

<table>
<thead>
<tr>
<th>Section 355 (extremely hazardous substances):</th>
<th>None of the ingredient is listed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 313 (Specific toxic chemical listings):</td>
<td></td>
</tr>
<tr>
<td>7440-22-4</td>
<td>SILVER (Ag)</td>
</tr>
<tr>
<td>872-50-4</td>
<td>N-methyl-2-pyrrolidone</td>
</tr>
</tbody>
</table>

**TSCA (Toxic Substances Control Act):** Kester certifies that all components listed below for the subject finished product are on the TSCA Inventory of Chemical Substances and are not subject to any chemical specific regulation under TSCA Section 12(b) export notification requirements delineated at 40 CFR part 707, subpart D.

All ingredients are listed or exempt from listing.

**California Proposition 65**

**Chemicals known to cause cancer:**

- diethanolamine

**Chemicals known to cause reproductive toxicity:**

- N-methyl-2-pyrrolidone

**Carcinogenic categories**

**EPA (Environmental Protection Agency)**

| 7440-22-4 | SILVER (Ag) |

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

### CANADA:

Not classified.

**Workplace Hazardous Materials Identification (WHMIS):**

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation (CPR) and the Safety Data Sheet (SDS) contains all of the information required by the CPR.

**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labeled according to the CLP regulation.

#### Hazard pictograms

- GHS07
- GHS08

**Signal word** Danger

**Hazard-determining components of labeling:**

- Rosin
- Rosin

**Hazard statements**

- May cause an allergic skin reaction.
- May damage fertility or the unborn child.
16: OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Kester 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 on how to use a Material Safety Data Sheet as a source for hazard information.

Department issuing Safety Data Sheet (SDS): Product Compliance / EHS Department
Contact: EHS_Kester@kester.com
Date of preparation / last revision 01/18/2016 / 6

Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flam. Liq. 4: Flammable liquids, Hazard Category 4
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Repr. 1B: Reproductive toxicity, Hazard Category 1B
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

* Data compared to the previous version altered.