SAFETY DATA SHEET (SDS)
according to 1907/2006/EC, Article 31

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Trade name: 282 Lead-free Alloy Solder Wire
1.2 Relevant identified uses of the substance or mixture and uses advised against
   No further relevant information available.

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier:
   Kester Inc.
   800 West Thordale Avenue
   Itasca, IL 60143
   Tel 00+1 + 630 616 4000

   ITW Specialty Materials (Suzhou) Co., Ltd.
   Hengqiao Road, Wujiang Economic Development Zone
   Suzhou, Jiangsu Province, China 215200
   Tel +86 512 82060807

   Kester GmbH
   Ganghofer Strasse 45
   D-82216 Gernlinden Germany
   Tel +49 (0) 8142 4785 0

   Further information obtainable from: 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

SECTION 2: Hazards identification

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

   ! 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 labelled according to the CLP regulation.

   Hazard pictograms

   ! GHS07

   Signal word Warning

   Hazard-determining components of labelling:
   Rosin

   Hazard statements
   H317 May cause an allergic skin reaction.

   Precautionary statements
   P261  Avoid breathing dust/fume/gas/mist/vapours/spray.
   P280  Wear protective gloves.
   P332+P313 If skin irritation occurs: Get medical advice/attention.
   P501  Dispose of contents/container in accordance with local/regional/national/international regulations.

(Continued on page 2)
SECTION 3: Composition/information on ingredients

Description: Mixture of substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>Chemical components:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7440-22-4</td>
<td>SILVER (Ag)</td>
</tr>
<tr>
<td>EINECS: 231-131-3</td>
<td>substance with a Community workplace exposure limit 0-5%</td>
</tr>
<tr>
<td>CAS: 8050-09-7</td>
<td>Rosin</td>
</tr>
<tr>
<td>EINECS: 232-475-7</td>
<td>☑ Skin Sens. 1, H317</td>
</tr>
</tbody>
</table>

SVHC
This product does not contain any Substance of Very High Concern (SVHC) on the European Chemicals Agency (ECHA) candidate list.

SECTION 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.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents: CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

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: No special measures required.

SECTION 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: Pick up mechanically.
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.
SECTION 7: Handling and storage

7.1 Precautions for safe handling No special measures required.
Information about fire - and explosion protection: 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.

SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities: No further data; see item 7.

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>CAS</th>
<th>SILVER (Ag)</th>
<th>Long-term value: 0.1 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>ANTIMONY (Sb)</td>
<td>Long-term value: 0.5 mg/m³</td>
</tr>
<tr>
<td></td>
<td>as Sb</td>
<td></td>
</tr>
<tr>
<td>CAS</td>
<td>Rosin</td>
<td>Short-term value: 0.15 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long-term value: 0.05 mg/m³</td>
</tr>
</tbody>
</table>

8.2 Exposure controls
Personal protective equipment:
General protective and hygienic measures:
The usual precautionary measures are to be adhered to when handling chemicals.
Wash hands before breaks and at the end of work.
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.
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.
SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance:
Form: Solid
Colour: Silver grey
Odour: Mild
pH-value: Not applicable.
Change in condition
Melting point/freezing point: 245 °C
Undetermined.
Flash point: Not Applicable
Flammability (solid, gas): Not determined.
Auto-ignition temperature: Product is not selfigniting.
Explosive properties: Product does not present an explosion hazard.
Vapour pressure: Not applicable.
Density: Not determined.
Vapour density Not applicable.
Solubility in / Miscibility with water: Insoluble.
Solvent content: 
Solids content: 99.8 %

SECTION 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.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity Based on available data, the classification criteria are not met.
Primary irritant effect:
Skin corrosion/irritation Based on available data, the classification criteria are not met.
Serious eye damage/irritation Based on available data, the classification criteria are not met.
Respiratory or skin sensitisation
May cause an allergic skin reaction.
CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
Germ cell mutagenicity Based on available data, the classification criteria are not met.
Carcinogenicity Based on available data, the classification criteria are not met.
Reproductive toxicity Based on available data, the classification criteria are not met.
STOT-single exposure Based on available data, the classification criteria are not met.
STOT-repeated exposure Based on available data, the classification criteria are not met.
Aspiration hazard Based on available data, the classification criteria are not met.

SECTION 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.

SECTION 13: Disposal considerations

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

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

SECTION 14: Transport information

14.1 UN-Number
IMDG, IATA Void

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

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

14.4 Packing group
ADR, IMDG, IATA Void

14.5 Environmental hazards:
Marine pollutant: No

14.6 Special precautions for user
Not applicable.

14.7 Transport in bulk according to Annex II of Marpol
and the IBC Code
Not applicable.
SECTION 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
All ingredients are listed on the following Government Inventories:
China: Inventory of Existing Chemical Substances in China (IECSC)
Korea: Korea Existing Chemicals List (ECL)
Europe: European Inventory of Existing Commercial Chemical Substances (EINECS)
Japan: Inventory of Existing and New Chemical Substances (ENCS)
Philippines: Philippine Inventory of Chemicals and Chemical Substances (PICCS)
USA: TSCA (Toxic Substances Control Act) TSCA Inventory of Chemical Substances

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

Hazard pictograms

GHS07

Signal word Warning

Hazard-determining components of labelling:
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Hazard statements
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Directive 2012/18/EU
Named dangerous substances - ANNEX I None of the ingredients is listed.
15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

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 Safety Data Sheet (SDS) 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 Safety Data Sheet (SDS) as a source for hazard information.

Department issuing SDS: Product Compliance / EHS Department
Contact: EHS.Kester@kester.com

Abbreviations and acronyms:
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
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
## Trade name: 282 Lead-free Alloy Solder Wire

| ELINCS: European List of Notified Chemical Substances |
|CAS: Chemical Abstracts Service (division of the American Chemical Society) |
PBT: Persistent, Bioaccumulative and Toxic |
SVHC: Substances of Very High Concern |
vPvB: very Persistent and very Bioaccumulative |
Skin Sens. 1: Skin sensitisation – Category 1 |

* Data compared to the previous version altered.