1 Identification

Trade name: NP545 Lead (Pb) Solder Paste
Relevant identified uses of the substance or mixture and uses advised against
No further relevant information available.

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Kester Inc.
800 West Thorndale Avenue
Itasca, IL 60143 USA
Tel (630) 616-4000
Tel International 00 1 630 616-4000

ITW Specialty Materials (Suzhou) Co., Ltd.
Heng Qiao Road
Wujiang Economic Development Zone
Suzhou, Jiangsu 215200 China
Tel +86 512 82060808

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

Information department: Product Compliance: EHS_Kester@kester.com
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 Hazard(s) identification

Classification of the substance or mixture

Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Carc. 2 H351 Suspected of causing cancer.
Repr. 1 H360 May damage fertility or the unborn child.
STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H332 Harmful if inhaled.
Skin Sens. 1 H317 May cause an allergic skin reaction.

Label elements
GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 2)
Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 04/17/2018
Version number 2
Reviewed on 04/17/2018

Trade name: NP545 Lead (Pb) Solder Paste

Hazard pictograms

![Hazard pictogram](image)

GHS07  GHS08

Signal word Danger

Hazard-determining components of labeling:
LEAD (Pb)
Modified Rosin
Ethoxylated Amines

Hazard statements
H302+H332 Harmful if swallowed or if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.
H360 May damage fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.
P302+P352 If on skin: Wash with plenty of water.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

![NFPA rating](image)

Health = 2
Fire = 0
Reactivity = 0

HMIS-ratings (scale 0 - 4)

![HMIS rating](image)

Health = *1
Fire = 0
Reactivity = 0

Other hazards

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

3 Composition/information on ingredients

Description: Mixture of the substances listed below with nonhazardous additions.
Trade name: NP545 Lead (Pb) Solder Paste

(Contd. of page 2)

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>Description</th>
<th>% Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7440-31-5</td>
<td>TIN (Sn)</td>
<td>55-70%</td>
</tr>
<tr>
<td>CAS: 7439-92-1</td>
<td>LEAD (Pb)</td>
<td>25-40%</td>
</tr>
<tr>
<td></td>
<td>Carc. 2; H351; Rep. 1B, H360; STOT RE 2, H373</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute Tox. 4, H302; Acute Tox. 4, H332</td>
<td></td>
</tr>
<tr>
<td>CAS: 9003-13-8</td>
<td>Tripropylene Glycol n-Butyl Ether</td>
<td>3-5%</td>
</tr>
<tr>
<td></td>
<td>Skin Irrit. 2, H315</td>
<td></td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Modified Rosin</td>
<td>1-3%</td>
</tr>
<tr>
<td></td>
<td>Skin Sens. 1, H317</td>
<td></td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Proprietary Acid</td>
<td>1-3%</td>
</tr>
<tr>
<td></td>
<td>Eye Irrit. 2A, H319</td>
<td></td>
</tr>
<tr>
<td>CAS: 7440-22-4</td>
<td>SILVER (Ag)</td>
<td>0-3%</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>Ethoxylated Amines</td>
<td>1-3%</td>
</tr>
<tr>
<td></td>
<td>Resp. Sens. 1, H334</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic Acute 3, H402</td>
<td></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.

4 First-aid measures

Description of first aid measures
General information:
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
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.
Information for doctor:
Most important symptoms and effects, both acute and delayed No further relevant information available.
Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents:
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Special hazards arising from the substance or mixture In case of fire, the following can be released:
Advice for firefighters
Protective equipment: No special measures required.

6 Accidental release measures

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

(Contd. on page 4)
Trade name: NP545 Lead (Pb) Solder Paste

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.

Protective Action Criteria for Chemicals

PAC-1:
- CAS: 7440-31-5 TIN (Sn) 6 mg/m³
- CAS: 7439-92-1 LEAD (Pb) 0.15 mg/m³
- CAS: 9003-13-8 Tripropylene Glycol n-Butyl Ether 27 mg/m³
- CAS: 7440-22-4 SILVER (Ag) 0.3 mg/m³

PAC-2:
- CAS: 7440-31-5 TIN (Sn) 67 mg/m³
- CAS: 7439-92-1 LEAD (Pb) 120 mg/m³
- CAS: 9003-13-8 Tripropylene Glycol n-Butyl Ether 300 mg/m³
- CAS: 7440-22-4 SILVER (Ag) 170 mg/m³

PAC-3:
- CAS: 7440-31-5 TIN (Sn) 400 mg/m³
- CAS: 7439-92-1 LEAD (Pb) 700 mg/m³
- CAS: 9003-13-8 Tripropylene Glycol n-Butyl Ether 1,800 mg/m³
- CAS: 7440-22-4 SILVER (Ag) 990 mg/m³

7 Handling and storage

Handling:
Precautions for safe handling
Thorough dundusting.
Prevent formation of dust.

Information about protection against explosions and fires: No special measures required.

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: Keep receptacle tightly sealed.

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.

Control parameters
Components with limit values that require monitoring at the workplace:
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
At this time, the other constituents have no known exposure limits.

CAS: 7440-31-5 TIN (Sn)

<table>
<thead>
<tr>
<th>PEL</th>
<th>Long-term value: 2 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>Long-term value: 2 mg/m³</td>
</tr>
</tbody>
</table>
### Safety Data Sheet

**Trade name:** NP545 Lead (Pb) Solder Paste

### TLV
<table>
<thead>
<tr>
<th>CAS:</th>
<th>Long-term value: 2 mg/m³ metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>Long-term value: 0.05* mg/m³</td>
</tr>
</tbody>
</table>
| REL  | Long-term value: 0.05* mg/m³  *
|      | 8-hr TWA ;See PocketGuide App.C |
| TLV  | Long-term value: 0.05* mg/m³*  |
|      | and inorganic compounds, as Pb; BEI |

### CAS: 7440-22-4 SILVER (Ag)

| PEL  | Long-term value: 0.01 mg/m³ metal: dust and fume |
| REL  | Long-term value: 0.01 mg/m³                        |
| TLV  | Long-term value: 0.1 mg/m³                         |

### 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

### 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:**
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]

### 9 Physical and chemical properties

**Information on basic physical and chemical properties**

**General Information**

**Appearance:** Pasty
Safety Data Sheet
acc. to OSHA HCS 29CFR1910.1200

Printing Date 04/17/2018
Version number 2
Reviewed on 04/17/2018

Trade name: NP545 Lead (Pb) Solder Paste

Color: Silver grey
Odor: Mild
pH-value: Not applicable.

Change in condition
Melting point/Melting range: Undetermined.
Boiling point/Boiling range: >999 °C (>1,830.2 °F)

Flash point: Not applicable.
Flammability (solid, gaseous): Not determined.
Auto igniting: Product is not selfigniting.
Danger of explosion: Product does not present an explosion hazard.
Vapor pressure: Not applicable.
Density: Not determined.
Vapor density: Not applicable.
Solubility in / Miscibility with
Water: Insoluble.

Solvent content:
Solids content: 100.0 %

10 Stability and reactivity

Reactivity No further relevant information available.
Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Possibility of hazardous reactions No dangerous reactions known.
Conditions to avoid No further relevant information available.
Incompatible materials: No further relevant information available.
Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

Information on toxicological effects
Acute toxicity:

<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7439-92-1 LEAD (Pb)</td>
</tr>
<tr>
<td>Oral LD50          500 mg/kg (ATE)</td>
</tr>
<tr>
<td>Inhalative LC50/4 h 1.5 mg/l (ATE)</td>
</tr>
</tbody>
</table>

Modified Rosin

| Oral LD50          >4,000 mg/kg (Rat)       |
| Dermal LD50        >2,500 mg/kg (rabbit)   |

Primary irritant effect:
on the skin: No irritant effect.
on the eye: Irritating effect.
Sensitization:
Sensitization possible through inhalation.
Trade name: NP545 Lead (Pb) Solder Paste

Sensitization possible through skin contact.

Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant

Carcinogenic categories

<table>
<thead>
<tr>
<th>IARC (International Agency for Research on Cancer)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7439-92-1 LEAD (Pb)</td>
<td>2B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NTP (National Toxicology Program)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7439-92-1 LEAD (Pb)</td>
<td>R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OSHA-Ca (Occupational Safety &amp; Health Administration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None of the ingredients is listed.</td>
</tr>
</tbody>
</table>

12 Ecological information

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. Danger to drinking water if even small quantities leak into the ground.

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

13 Disposal considerations

Waste treatment methods
Recommendation: 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

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, ADN, IMDG, IATA</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOT, ADR, ADN, IMDG, IATA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Packing group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOT, IMDG, IATA</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</td>
<td>Not applicable.</td>
<td></td>
</tr>
</tbody>
</table>

(Contd. on page 8)
Trade name: NP545 Lead (Pb) Solder Paste

UN "Model Regulation": Not applicable

15 Regulatory information

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

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

SARA (Superfund Amendments and Reauthorization Act)
Section 355 (extremely hazardous substances):
None of the ingredient is listed.

Section 313 (Specific toxic chemical listings):
CAS: 7439-92-1 LEAD (Pb)
CAS: 7440-22-4 SILVER (Ag)

TSCA (Toxic Substances Control Act):
All ingredients are listed or exempt from listing.

California Proposition 65
Chemicals known to cause cancer:
LEAD (Pb)

Chemicals known to cause reproductive toxicity:
LEAD (Pb)

Carcinogenic categories

EPA (Environmental Protection Agency)
CAS: 7439-92-1 LEAD (Pb) B2
CAS: 7440-22-4 SILVER (Ag) D

NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.

CANADA:
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.

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS07 GHS08

Signal word Danger

(Contd. on page 9)
Safety Data Sheet  
acc. to OSHA HCS 29CFR1910.1200

Trade name: NP545 Lead (Pb) Solder Paste

Hazard-determining components of labeling:
LEAD (Pb)  
Modified Rosin  
Ethoxylated Amines  

Hazard statements:
H302+H332 Harmful if swallowed or if inhaled.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H360 May damage fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  

Precautionary statements:
P260 Do not breathe dust/fume/gas/mist/vapors/spray.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P332 If swallowed: Call a poison center/doctor if you feel unwell.  
P302+P352 If on skin: Wash with plenty of water.  
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.  

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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 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

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  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
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)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
SVHC: Substances of Very High Concern  
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  
Acute Tox. 4: Acute toxicity – Category 4  
Skin Irrit. 2: Skin corrosion/irritation – Category 2  
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A  
Resp. Sens. 1: Respiratory sensitisation – Category 1

(Contd. on page 10)
<table>
<thead>
<tr>
<th>Trade name: NP545 Lead (Pb) Solder Paste</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Contd. of page 9)</td>
</tr>
</tbody>
</table>

- Skin Sens. 1: Skin sensitisation – Category 1
- Carc. 2: Carcinogenicity – Category 2
- Carc. 2: Carcinogenicity – Category 2
- Repr. 1: Reproductive toxicity – Category 1
- Repr. 1B: Reproductive toxicity – Category 1B
- STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
- Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3

* Data compared to the previous version altered.