

**SAFETY DATA SHEET (SDS)**

According to 1907/2006/EC, Article 31

Printing Date 04/25/2017

Version number 4

Reviewed on 04/25/2017

**1 PRODUCT AND COMPANY IDENTIFICATION****Trade name: 331 Lead-free Alloy Solder Wire****Relevant identified uses of the substance or mixture and uses advised against Solder****1.3 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 Gernlinden Germany  
Tel +49 (0) 8142 4785 0

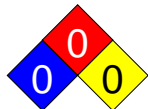
**Information department:** Product Compliance: EHS\_Kester@kester.com**1.4 Emergency telephone number:**

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

CHEMTREC 24-Hour Emergency Response (Outside US &amp; 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** The product is not classified according to the CLP regulation.**2.2 Label elements****Labelling according to Regulation (EC) No 1272/2008** Not applicable**Hazard pictograms** Not applicable**Signal word** Not applicable**Hazard statements** Not applicable**Hazard description:****WHMIS Symbols**

D2B - Toxic material causing other toxic effects

**Classification system:****NFPA ratings (scale 0 - 4)**

Health = 0  
Fire = 0  
Reactivity = 0

**HMIS-ratings (scale 0 - 4)**

Health = 0  
Fire = 0  
Reactivity = 0

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

(Contd. on page 2)

US

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vPvB: Not applicable.

(Contd. of page 1)

**3 COMPOSITION OF MIXTURE**

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

CAS No.	Description	% Range
CAS: 7440-31-5 EINECS: 231-141-8	TIN (Sn)	85-100%
Trade Secret	Polyethylene glycol	3.0-5.0%
CAS: 7440-22-4 EINECS: 231-131-3	SILVER (Ag)	1.0-3.0%

**4 FIRST AID MEASURES**

**4.1 Description of first aid measures**

**General information:** No special measures required.

**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:**

CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**5.2 Special hazards arising from the substance or mixture**

Nitrogen oxides (NO<sub>x</sub>)

In case of fire, the following can be released:

**5.3 Advice for firefighters**

**Protective equipment:** No special measures required.

**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.

**Protective Action Criteria for Chemicals**

**PAC-1:**

CAS: 7440-31-5	TIN (Sn)	6 mg/m <sup>3</sup>
	Polyethylene glycol	30 mg/m <sup>3</sup>
CAS: 7440-22-4	SILVER (Ag)	0.3 mg/m <sup>3</sup>

(Contd. on page 3)

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(Contd. of page 2)

CAS: 7440-50-8	COPPER (Cu)	3 mg/m3
<b>PAC-2:</b>		
CAS: 7440-31-5	TIN (Sn)	67 mg/m3
	Polyethylene glycol	1,300 mg/m3
CAS: 7440-22-4	SILVER (Ag)	170 mg/m3
CAS: 7440-50-8	COPPER (Cu)	33 mg/m3
<b>PAC-3:</b>		
CAS: 7440-31-5	TIN (Sn)	400 mg/m3
	Polyethylene glycol	7,700 mg/m3
CAS: 7440-22-4	SILVER (Ag)	990 mg/m3
CAS: 7440-50-8	COPPER (Cu)	200 mg/m3

**7 HANDLING AND STORAGE**

**7.1 Precautions for safe handling** No special measures required.  
**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:**

**CAS: 7440-31-5 TIN (Sn)**

PEL	Long-term value: 2 mg/m <sup>3</sup> metal
REL	Long-term value: 2 mg/m <sup>3</sup>
TLV	Long-term value: 2 mg/m <sup>3</sup> metal

**Polyethylene glycol**

WEEL	Long-term value: 10 mg/m <sup>3</sup> (H); MW>200
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**CAS: 7440-22-4 SILVER (Ag)**

PEL	Long-term value: 0.01 mg/m <sup>3</sup>
REL	Long-term value: 0.01 mg/m <sup>3</sup>
TLV	Long-term value: 0.1 mg/m <sup>3</sup> metal: dust and fume

**Additional information:**

(Contd. on page 4)

**SAFETY DATA SHEET (SDS)**  
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Version number 4

Reviewed on 04/25/2017

**Trade name: 331 Lead-free Alloy Solder Wire**

(Contd. of page 3)

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.

**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

**9 PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

**General Information**

**Appearance:**

**Form:** Solid  
**Color:** Silver grey  
**Odor:** Mild

**pH-value:** Not applicable.

**Change in condition**

**Melting point/Melting range:** 217 °C (423 °F)  
Undetermined.  
**Boiling point/Boiling range:** 2362 °C (4284 °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.

(Contd. on page 5)

**SAFETY DATA SHEET (SDS)**  
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Version number 4

Reviewed on 04/25/2017

**Trade name: 331 Lead-free Alloy Solder Wire**

(Contd. of page 4)

**Density:** Not determined.  
**Vapor density** Not applicable.  
**Solubility in / Miscibility with Water:** Insoluble.  
**Solvent content:**  
**Organic solvents:** 0.0 %  
0.0 g/l / 0.00 lb/gl  
**Solids content:** 100.0 %

**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.  
**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:** Based on available data, the classification criteria are not met.  
**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.

(Contd. on page 6)

**SAFETY DATA SHEET (SDS)**  
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Trade name: 331 Lead-free Alloy Solder Wire

vPvB: Not applicable.

(Contd. of page 5)

**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 Not applicable

**14.2 UN proper shipping name**  
DOT, ADR, ADN Not applicable  
IMDG, IATA Not regulated

**14.3 Transport hazard class(es)**  
DOT, ADR, ADN, IMDG, IATA Class Not applicable

**14.4 Packing group**  
DOT, IMDG, IATA Not applicable  
**Marine pollutant:** No

**14.6 Special precautions for user** Not applicable.

**14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.  
**UN "Model Regulation":** Not applicable

**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

**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: 7440-22-4	SILVER (Ag)
CAS: 7440-50-8	COPPER (Cu)

(Contd. on page 7)

# SAFETY DATA SHEET (SDS)

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Version number 4

Reviewed on 04/25/2017

**Trade name: 331 Lead-free Alloy Solder Wire**

(Contd. of page 6)

**Chemicals known to cause cancer:**

None of the ingredients is listed.

**Chemicals known to cause reproductive toxicity:**

None of the ingredients is listed.

**Carcinogenic categories**

**EPA (Environmental Protection Agency)**

CAS: 7440-22-4	SILVER (Ag)	D
CAS: 7440-50-8	COPPER (Cu)	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.

**Labelling according to Regulation (EC) No 1272/2008** Not applicable

**Hazard pictograms** Not applicable

**Signal word** Not applicable

**Hazard statements** Not applicable

**15.2 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

**Date of preparation / last revision** 04/25/2017 / 3

**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

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)

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

**\* Data compared to the previous version altered.**