Material Safety Data Sheet

1. Identification of Substance

Product details
Trade name: LEAD-FREE SOLDER ALLOYS
Manufacturer/Supplier/Contact:

Adhera Technologies LLC.
Toyota Tsusho America Inc.
1285 Avenue of the Americas
NY, NY 10019

212-252-3848
info@adheratech.com

2. Composition/Data on Components

Chemical characterization
Description: Mixture of the substances listed below

7440-31-5	tin	0-100%
7439-94-3	lutetium	0-100%
7440-50-8	copper	0-100%
7440-22-4	silver	0-100%
7440-69-9	bismuth	0-100%
7440-52-0	erbium	0-100%
7440-57-5	gold	0-100%
7440-74-6	indium	0-100%

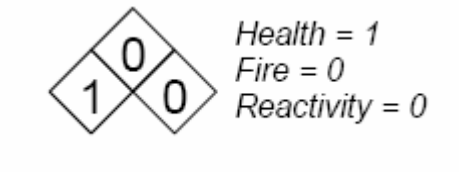
Additional information:
Composition and weight percent of solder alloys varies widely and can be determined by product label.

3. Hazards Identification

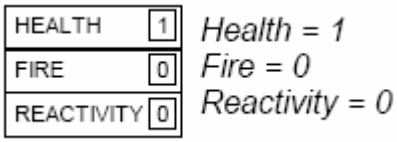
WHMIS Hazard Symbols

(cont'd. on page 2)

Information pertaining to particular dangers for man and environment:
The product does not have to be labelled due to the calculation procedure of international guidelines.
NFPA ratings (scale 0 - 4)



HMIS ratings (scale 0 – 4)



4. First Aid Measures

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: Induce vomiting, if person is conscious. Seek medical help.

5. Fire Fighting Measures

Suitable extinguishing agents:
$C0_2$, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Special hazards caused by the material, its products of combustion or resulting gases:
Melted solder above 1000°F may liberate toxic metal fumes.
Protective equipment: Wear self-contained respiratory protective device.

6. Accidental Release Measures

Person-related safety precautions: Ensure adequate ventilation

Measures for cleaning/collecting:
Melted solder will solidify on cooling and can be scraped up. Use caution to avoid breathing fumes if a gas is used to cut up large pieces.

7. Handling and Storage

(cont'd on page 3)

Handling:
Information for safe handling: Ensure good ventilation/exhaustion at the workplace.
Information about protection against explosions and fires: No special measures required.
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: Not required.
Further information about storage conditions:
Avoid storage near acidic sources.
Store in dry conditions.
Exposure to sulfur or to high humidity will tarnish solder surface.

8. Exposure Controls and Personal Protection

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

Components with limit values that require monitoring at the workplace:	
7440-31-5 tin	
PEL REL TLV	2 mg/m^3 Metal 2 mg/m^3 Tin, Metal 2 mg/m^3
7439-94-3	lutetium
PEL REL TLV	Not established# Not established# Not established#
7440-50-8	copper
PEL REL TLV 	0. 1*;1** mg/m^3 *fume **dusts & mists 0. 1*;1** mg/m^3 *Copper fume, as Cu **Copper dusts & mists, as Cu 0.2*, 1**mg/m3 *fume; ** dusts & mists, as Cu
7440-22-4	silver
PEL REL TLV	0.01 mg/m^3 0.01 mg/m^3 0.1 mg/m^3
7440-69-9	bismuth
PEL REL TLV	Not established# Not established# Not established#
7440-52-0	erbium
PEL REL TLV	Not established# Not established# Not established#
	(cont'd on page 4)

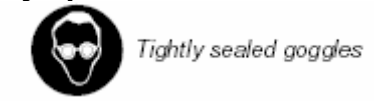
7440-57-5	gold
PEL REL TLV	Not established[#] Not established[#] Not established[#]
7440-74-6	indium
PEL REL TLV	0.1 mg/m^3 0.1 mg/m^3 0.1 mg/m^3

[#] Particulates not otherwise regulated 0-100 15 mg/m^3 (dust), 5 mg/m^3 (resp) 10 mg/m^3 total dust

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

Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages, and feed.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
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.
Protection of hands:

Material of gloves:
Cloth 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

General Information
Form: Solid
Color: Silver grey
Odor: Mild
Melting point/Melting range:> 100°C (> 212°F)
Boiling point/Boiling range: Undetermined
Flash point: Not applicable.
Danger of explosion: Product does not present an explosion hazard.
Density at 20°C (68°F): > 7 g/cm^3
Solubility in / Miscibility with water: Insoluble

10. Stability and Reactivity

Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Materials to be avoided: Strong acids, halogens, strong oxidizers
Dangerous reactions: No dangerous reactions known.
Dangerous products of decomposition: No dangerous decomposition products known.

11. Toxicological Information

Acute toxicity:
Primary irritant effect:
Skin: No irritant effect.
Eye: Smoke during soldering can cause eye irritation.
Through ingestion: May be harmful if swallowed.
Sensitization: No sensitizing effects known.

12. Ecological Information

General notes: Do not allow product to reach ground water, water course or sewage system.

13. Disposal Considerations

Product: Lead free solder alloys
Recommendation:
Must not be disposed of together with household garbage. Do not allow product to reach sewage system. Disposal must be made according to official regulations.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14. Transport Information

DOT regulations:
Land transport ADRIRID (cross-border):
ADRIRID class: - Not regulated.
Maritime transport IMDG:
IMDG Class: - Not regulated.
(cont'd on page 6)

Marine pollutant: No
Air transport ICAO-TI and IATA-DGR:
ICA 0/IA TA Class: - Not regulated.

15. Regulations

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):

7440-50-8 copper
7440-22-4 silver

TSCA (Toxic Substances Control Act): All ingredients are listed.

IARC (International Agency for Research on Cancer)
None of the ingredients is listed.
NTP (National Toxicology Program)
None of the ingredients is listed.
NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.
OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

CANADA: The following information relates to product regulation specific to 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 MSDS contains all of the information required by the CPR.
WHMIS Classification: D2B
Components on Ingredient List for WHMIS:
tin
copper
silver

16. Other Information

The information contained herein is based on data considered accurate and is offered solely for information, consideration and investigation. Adhera Technologies 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.