

Henkel

PRODUCT NUMBER: 84-1LMISR4

ISSUE DATE: 14-December-2010

IDH# 1199559



**\*\*\* MATERIAL SAFETY DATA SHEET \*\*\***

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME: ABLEBOND® 84-1LMISR4  
SILVER-FILLED EPOXY

COMPANY ADDRESS: Henkel Electronic Materials LLC  
14000 Jamboree Road  
Irvine, CA 92606

EMERGENCY CONTACT NUMBERS:  
MEDICAL: 1-877-671-4608 (toll free) or 1-303-592-1711  
(24 hours - Poison Control Center)  
TRANSPORT: CHEMTREC: 1-800-424-9300 (24 hours)  
CHEMTREC International: 1-703-527-3887 (call collect)  
Contact Information: 1-888-9-HENKEL (1-888-943-6535)  
Internet: www.henkel.com/electronics

**2. HAZARDS IDENTIFICATION**

EMERGENCY OVERVIEW

WARNING.

Suspected of causing genetic defects.

EYE IRRITANT.

SKIN IRRITANT.

SKIN SENSITIZER.

Silver Paste Mild Odor

EYE: Will cause eye irritation. May cause argyria.  
SKIN CONTACT: Irritating to the skin. Repeated and/or prolonged contact may cause skin sensitization.  
May be absorbed through the skin.  
INHALATION: Irritating and/or toxic vapors may be released at elevated temperatures. Vapor may be  
irritant to the respiratory tract.  
INGESTION: May cause irritation to mouth, throat, and stomach. May cause nausea and vomiting.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

COMPONENT	CAS NUMBER	CONCENTRATION (% by weight)
Silver	7440-22-4	>50
Epoxy resin (Trade Secret - 10030)	TS ref# 10030	10 - 20
1,4-Butanedioldiglycidyl ether	2425-79-8	5 - 10
Amine (Trade Secret - 10039)	TS ref# 10039	1 - 5

**4. FIRST-AID MEASURES**

EYE: Immediately irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 15 minutes. Obtain immediate medical attention.

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SKIN CONTACT	Flush exposed areas thoroughly with soap and water until all chemical is removed. Remove contaminated clothing and laundry before reuse. If symptoms (irritation or blistering) persist obtain medical attention.
INHALATION	Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention.
INGESTION	DO NOT attempt to give anything by mouth to an unconscious person. Treat symptomatically and supportively. Get medical attention.

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### 5. FIREFIGHTING MEASURES

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AUTOIGNITION	Not available
FLASH POINT	Not available
EXTINGUISHING MEDIA	CO2; Dry Chemical; Foam
SPECIAL FIREFIGHTING PROCEDURES	A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.; Cool exposed equipment with water spray.
FIRE & EXPLOSION HAZARDS	Combustible at high temperatures. Polymerization may take place at elevated temperatures.
HAZARDOUS COMBUSTION PRODUCTS	Carbon dioxide, carbon monoxide, oxides of nitrogen and unknown organics.
LOWER EXPLOSION LIMIT (%)	Not applicable
UPPER EXPLOSION LIMIT (%)	Not applicable

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### 6. ACCIDENTAL RELEASE MEASURES

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SPILL AND LEAK PROCEDURES	May cause allergic skin reaction. Use suitable protective clothing. Scrape up and place in suitably labeled container for silver recovery. If recovery is not practical, disposal should be in accordance with approved site procedures.
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For safety and environmental precautions, please review entire Material Safety Data Sheet for necessary information.

### 7. HANDLING AND STORAGE

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STORAGE TEMPERATURE	-40 °C
HANDLING/STORAGE	Empty containers may contain product residue; follow MSDS and label warnings even after they have been emptied.
SENSITIVITY TO STATIC ELECTRICITY	No
SPECIAL SENSITIVITY	Heat.
SENSITIVITY TO MECHANICAL IMPACT	No

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### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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COMPONENT	EXPOSURE LIMITS		
	ACGIH	OSHA	Mfg Working Standard
Silver	0.1 mg/m3 TWA (dust and fume).	0.01 mg/m3 TWA	

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#### CALIFORNIA OSHA

COMPONENT	EXPOSURE LIMITS
Silver	0.01 mg/m3 PEL



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VENTILATION REQUIREMENTS	Vent curing oven to outdoors.
EYE PROTECTION REQUIREMENTS	Wear safety glasses with side shields.
GLOVE REQUIREMENTS	Employee must wear appropriate protective gloves to prevent contact with this substance. The use of chemically resistant gloves is recommended.
CLOTHING REQUIREMENTS	Employee must wear appropriate protective clothing and equipment to prevent any possibility of skin contact with this substance.
CHANGE/REMOVAL OF CLOTHING	Remove contaminated clothing and launder before reuse. Discard shoes, belts, wallets, and any other contaminated leather items.
WASH REQUIREMENTS	Wash before eating, drinking, or using toilet facilities.
RESPIRATOR REQUIREMENTS	NIOSH approved respirator if required. Self-contained breathing apparatus in emergency and non-routine situations.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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PURE SUBSTANCE OR MIXTURE	Mixture
PHYSICAL FORM	Paste
COLOR	Silver
ODOR	Mild
ODOR THRESHOLD	Not available
PH AS IS	Not available
OXIDIZING PROPERTIES	Not applicable
BOILING POINT	Not applicable
SOLUBILITY IN WATER	Insoluble
PARTITION COEFFICIENT (n-octanol/water)	Not applicable
SPECIFIC GRAVITY (WATER=1)	3.6
EVAPORATION RATE	Not available
VAPOR PRESSURE (mmHg)	Not applicable
VAPOR DENSITY (air = 1)	Not applicable
VOLATILES	Not available
VOLATILE ORGANIC COMPOUNDS	< 5 g/liter
AUTOIGNITION	Not available
FLASH POINT	Not available

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**10. STABILITY AND REACTIVITY**

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STABILITY	Stable
STABILITY DETAIL	Material is stable under recommended storage temperatures and pressures.
MATERIALS TO AVOID	Amines
CONDITIONS TO AVOID	Elevated temperatures
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon dioxide, carbon monoxide, oxides of nitrogen and unknown organics. Thermal decomposition products are hazardous and/or toxic.
HAZARDOUS POLYMERIZATION CONDITIONS	Hazardous polymerization may occur.

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**11. TOXICOLOGICAL INFORMATION**

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ROUTE OF ENTRY	Skin Contact; Skin Absorption; Inhalation; Eye Contact		
CARCINOGEN	<u>IARC</u>	<u>NTP</u>	<u>OSHA Substance</u>
COMPONENT	<u>(group)</u>		<u>Specific Regulation</u>
There is no evidence that this			

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product poses a carcinogenic risk under normal conditions of handling and use.

**CHRONIC (LONG TERM) EFFECTS OF EXPOSURE**

**EFFECTS OF CHRONIC EXPOSURE**

A component(s) of this product was found to be positive in one or more mutagenetic assays.

Chronic absorption of silver or silver salts may result in Argyria, a pigmentation of the eyes, respiratory tract, skin and nails.

**TARGET ORGANS**

Skin; Eyes; Respiratory system; Gastrointestinal; Kidneys; Liver; Blood/Hematopoietic; Peripheral nervous system

**SKIN SENSITIZATION**

Sensitizer. May cause allergic reaction.

**PRODUCT TOXICOLOGY**

**PRODUCT INFORMATION**

This data sheet is based on a consideration of the properties of the constituents.

COMPONENT	ORAL TOXICITY	NOTES ON ORAL TOXICITY
Silver		Ingestion may cause irritation of the gastrointestinal tract. May cause argyria.
Epoxy resin (Trade Secret - 10030)	Oral LD50: Rat > 2 g/kg	Ingestion may cause irritation of the gastrointestinal tract.
1,4-Butanedioldiglycidyl ether	Oral LD50: Rat 1.4 g/kg	Will cause irritation to mouth, throat, and stomach. May cause nausea and vomiting.
Amine (Trade Secret - 10039)	Oral LD50: Rat 640 mg/kg Oral LD50: Mouse 250 mg/kg	Moderately toxic.
COMPONENT	DERMAL TOXICITY	NOTES ON DERMAL TOXICITY
Silver		May cause slight irritation. May cause argyria. May be absorbed through the skin.
Epoxy resin (Trade Secret - 10030)	> 400 mg/kg	Repeated and/or prolonged contact may cause irritation and skin sensitization.
1,4-Butanedioldiglycidyl ether	Dermal LD50: Rabbit 1.1 g/kg	Irritating to the skin. Repeated and/or prolonged contact may cause skin sensitization.
Amine (Trade Secret - 10039)	Dermal LD50: Rabbit > 4000 mg/kg	Non-toxic.
COMPONENT	INHALATION TOXICITY	NOTES ON INHALATION TOXICITY
Silver		Dust may cause irritation. Acute inhalation exposure may result in metal fume fever, a temporary influenza-like illness. May cause argyria.
Epoxy resin (Trade Secret - 10030)		Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract.
1,4-Butanedioldiglycidyl ether		Unlikely to be hazardous by inhalation because of the low vapor pressure of the material at ambient temperature.



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	Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract.
Amine (Trade Secret - 10039)	Respiratory irritant.
COMPONENT Silver	NOTES ON EYE IRRITATION Particulates may scratch eye surfaces and cause mechanical irritation. May cause argyria.
Epoxy resin (Trade Secret - 10030)	Will cause eye irritation.
1,4-Butanedioldiglycidyl ether	Will cause eye irritation.
Amine (Trade Secret - 10039)	Will cause eye irritation.

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**12. ECOLOGICAL INFORMATION**

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POTENTIAL EFFECT ON ENVIRONMENT	Do not allow to enter drains, sewers or watercourses.
MOBILITY	Insoluble
POTENTIAL TO BIOACCUMULATE	Not readily biodegradable.
ECOTOXICITY	Harmful to aquatic organisms.
AQUATIC TOXICITY	None Established

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**13. DISPOSAL CONSIDERATIONS**

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WASTE DISPOSAL METHODS	Disposal should be in accordance with local, state or national legislation.
EMPTY CONTAINER WARNINGS	Empty containers may contain product residue; follow MSDS and label warnings even after they have been emptied.

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**14. TRANSPORTATION INFORMATION**

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This section provided for general information only. The shipping description below may not represent requirements for all modes of transportation, packaging, shipping methods or locations outside of the United States.

FOR MORE COMPLETE TRANSPORTATION REGULATORY INFORMATION PLEASE REFER TO THE SHIPPING DOCUMENTS ACCOMPANYING THE SHIPMENT OF THIS PRODUCT.

**DOT CLASSIFICATION** Not Regulated  
**SUB. HAZARD CLASS**

The information provided herein may not include the impact of additional regulatory requirements (eg, for materials meeting the definition of a hazardous waste under RCRA, hazardous substances under CERCLA, and/of marine pollutants under CWA or other similar federal, state or local laws) or any associated exceptions or exemptions under regulations applicable to the transport of this material.

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**15. REGULATORY INFORMATION**

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TSCA	This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C. 2601 et. seq.
Canadian Domestic Substance List (DSL)	Not on Inventory
China (IECSC)	On the IECSC Inventory.

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Korea (KECI)  
Philippines (PICCS)

On the KECI Inventory.  
On the PICCS Inventory.

SARA - Section 313 (Superfund Amendments and  
Reauthorization Act of 1986 - 40CFR 372)  
Silver

CAS NUMBER  
7440-22-4

**CALIFORNIA PROPOSITION 65**

WARNING: This product contains the following chemicals that are known to the State of California to cause cancer, birth defects or other reproductive harm.

Unless a concentration is specified in Section 2 of the MSDS, the below chemical/s are present in trace amounts.

COMPONENT  
Toluene

CAS NUMBER  
108-88-3

**16. OTHER INFORMATION**

HMIS® Hazard Ratings

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs by OSHA's 29 CFR 1910.1200, we choose to provide them as a service to our customers using HMIS®. These ratings are to be used only with a fully implemented HMIS® program. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

NPCA recommends that employers must determine appropriate PPE for the actual conditions under which this product is used in their workplace. For information on PPE codes, consult the HMIS® Implementation Manual.

When two ratings are provided for Health, the first represents the material 'as supplied', and the second represents the material 'in use'.

\* = chronic health hazard

HMIS® is a registered trademark of the National Paint and Coatings Association (NPCA).

Health  
\*2

Flammability  
1

Physical Hazard  
1

PREPARED BY:

Regulatory Affairs  
Henkel Electronic Materials

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