

IDH# 1189144



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

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: XCE-3104XL
Conductive 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.
 EYE IRRITANT.
 HARMFUL IF SWALLOWED.
 SKIN IRRITANT.
 SKIN SENSITIZER.
 Harmful to aquatic organisms.
 Silver Paste Slight 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. May cause argyria.
 INHALATION: Unlikely to be hazardous by inhalation. Irritating and/or toxic vapors may be released at elevated temperatures. May cause argyria.
 INGESTION: Irritant and may cause nausea and vomiting. May cause argyria.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY	Formulated Epoxy Resin		
COMPONENT	CAS NUMBER	CONCENTRATION (% by weight)	
Silver	7440-22-4	>50	
Epichlorohydrin-formaldehyde-phenol copolymer	9003-36-5	5 - 10	
Bisphenol A-epichlorohydrin polymer	25068-38-6	5 - 10	
Epoxy Imidazole Adduct	68002-42-6	1 - 5	
Trade Secret - 10011	TS ref# 10011	1 - 5	

Henkel

PRODUCT NUMBER: EC800106

ISSUE DATE: 15-December-2010

IDH# 1189144

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.
SKIN CONTACT	Wash skin with soap and water. If symptoms develop, obtain medical attention.
INHALATION	Remove to fresh air. Get medical attention if irritation persists.
INGESTION	If individual is conscious, give water to dilute stomach contents. Get prompt medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

5. FIREFIGHTING MEASURES

AUTOIGNITION	Not available
FLASH POINT	> 200 °F
EXTINGUISHING MEDIA	CO2; Dry Chemical; Water Spray; Foam
SPECIAL FIREFIGHTING PROCEDURES	Fire fighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.
FIRE & EXPLOSION HAZARDS	Containers can build up pressure if exposed to heat (fire) and may explode. Prolonged exposure to elevated temperatures may cause uncontrolled exothermic reactions resulting in decomposition and charring of the material.
HAZARDOUS COMBUSTION PRODUCTS	Carbon monoxide, carbon dioxide, unknown hydrocarbons.
LOWER EXPLOSION LIMIT (%)	Not applicable
UPPER EXPLOSION LIMIT (%)	Not applicable

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES	Do not allow to enter drains, sewers or watercourses. Absorb spillages onto sand, earth or any suitable absorbent material. Sweep up and shovel into waste drums. Wash the spillage area with water.
---------------------------	--

For safety and environmental precautions, please review entire Material Safety Data Sheet for necessary information.

7. HANDLING AND STORAGE

STORAGE TEMPERATURE	-40 °C
SHELF LIFE, (Days)	180
HANDLING/STORAGE	Keep containers properly sealed when not in use. Keep in original containers until point of use.
SENSITIVITY TO STATIC ELECTRICITY	No
SPECIAL SENSITIVITY	Keep away from heat.
SENSITIVITY TO MECHANICAL IMPACT	No

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENT	EXPOSURE LIMITS		Mfg Working Standard
	ACGIH	OSHA	
Silver	0.1 mg/m3 TWA (dust and fume).	0.01 mg/m3 TWA	
Epoxy Imidazole Adduct	.		OSHA-PEL: 15 mg/m3 OSHA-PEL Respirable: 5 mg/m3 ACGIH-TWA: 10 mg/m3 ACGIH-TWA Respirable: 3 mg/m3

Henkel

PRODUCT NUMBER: EC800106

ISSUE DATE: 15-December-2010

IDH# 1189144

VENTILATION REQUIREMENTS	Provide local exhaust ventilation system to meet published exposure limits.
EYE PROTECTION REQUIREMENTS	Safety glasses, goggles or face shield to protect against splashing.
GLOVE REQUIREMENTS	Nitrile rubber or Viton™ gloves are recommended. Cotton or other absorbent gloves should not be worn.
CLOTHING REQUIREMENTS	Appropriate protective clothing and equipment is recommended to minimize skin contact with this substance.
CHANGE/REMOVAL OF CLOTHING	Remove contaminated clothing and launder before reuse.
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.

9. PHYSICAL AND CHEMICAL PROPERTIES

PURE SUBSTANCE OR MIXTURE	Mixture
PHYSICAL FORM	Paste
COLOR	Silver
ODOR	Slight
ODOR THRESHOLD	Not available
OXIDIZING PROPERTIES	Not applicable
MELTING/FREEZING POINT	-33 °C
SOLUBILITY IN WATER	Insoluble
PARTITION COEFFICIENT (n-octanol/water)	Not determined.
SPECIFIC GRAVITY (WATER=1)	3.5
EVAPORATION RATE	Not applicable
VAPOR PRESSURE (mmHg)	< 0.1 mm Hg @ 25°C
VAPOR DENSITY (air = 1)	> 1.0
VOLATILES	Negligible
VOLATILE ORGANIC COMPOUNDS	Negligible
AUTOIGNITION	Not available
FLASH POINT	> 200 °F

10. STABILITY AND REACTIVITY

STABILITY	Stable
STABILITY DETAIL	Material is stable under recommended storage temperatures and pressures.
MATERIALS TO AVOID	Amines, Acids, Oxidizers
CONDITIONS TO AVOID	Elevated temperatures
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon monoxide, carbon dioxide, unknown hydrocarbons.

11. TOXICOLOGICAL INFORMATION

ROUTE OF ENTRY Skin Contact; Ingestion; Eye Contact

CARCINOGEN	<u>IARC</u> (group)	<u>NTP</u>	<u>OSHA Substance</u> <u>Specific Regulation</u>
------------	------------------------	------------	---

COMPONENT
There is no evidence that this product poses a carcinogenic risk under normal conditions of handling and use.

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

Henkel

PRODUCT NUMBER: EC800106

ISSUE DATE: 15-December-2010

IDH# 1189144

EFFECTS OF CHRONIC EXPOSURE

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

TARGET ORGANS SKIN SENSITIZATION

Skin; Eyes; Kidneys
Sensitizer. May cause allergic reaction.

PRODUCT TOXICOLOGY PRODUCT INFORMATION

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

COMPONENT Silver

ORAL TOXICITY

NOTES ON ORAL TOXICITY

Ingestion may cause irritation of the gastrointestinal tract.
May cause argyria.

Epichlorohydrin-formaldehyde-phenol copolymer
Bisphenol A-epichlorohydrin polymer
Epoxy Imidazole Adduct

Oral LD50: Rat > 2 g/kg

Ingestion may cause irritation of the gastrointestinal tract.

Oral LD50: Rat 11400 mg/kg
Oral LD50: Mouse 15600 mg/kg

Ingestion may cause irritation of the gastrointestinal tract.

Ingestion may cause irritation of the gastrointestinal tract.
May cause nausea, vomiting and diarrhea.

Trade Secret - 10011

Oral LD50: Rat 1200 mg/kg
Oral LD50: Mouse 200 mg/kg

May cause nausea, vomiting and diarrhea.

COMPONENT Silver

DERMAL TOXICITY

NOTES ON DERMAL TOXICITY

May cause slight irritation. May cause argyria. May be absorbed through the skin.

Epichlorohydrin-formaldehyde-phenol copolymer

> 400 mg/kg

Repeated and/or prolonged contact may cause irritation and skin sensitization.

Bisphenol A-epichlorohydrin polymer

Dermal LD50: Rabbit > 20000 mg/kg

Irritating to the skin. Repeated and/or prolonged contact may cause skin sensitization.

Epoxy Imidazole Adduct

Slight/mild irritant. May cause mechanical irritation.

Trade Secret - 10011

Can be absorbed through skin causing systemic toxic effects. Irritating to the skin.

COMPONENT Silver

INHALATION TOXICITY

NOTES ON INHALATION TOXICITY

Dust may cause irritation. Acute inhalation exposure may result in metal fume fever, a temporary influenza-like illness. May cause argyria.

Epichlorohydrin-formaldehyde-phenol copolymer

Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract.

Bisphenol A-epichlorohydrin polymer

Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract.

Epoxy Imidazole Adduct

This product can produce a nuisance dust which should be maintained below a time weighted average of 10 mg/m³.

Henkel

PRODUCT NUMBER: EC800106

ISSUE DATE: 15-December-2010

IDH# 1189144

		High concentrations of dust are irritating to the respiratory tract.
Trade Secret - 10011	Inhalation LC50 Rat > 1210 mg/m3	Dust is irritant to the respiratory tract.
COMPONENT		NOTES ON EYE IRRITATION
Silver		Particulates may scratch eye surfaces and cause mechanical irritation. May cause argyria.
Epichlorohydrin-formaldehyde-phenol copolymer		Will cause eye irritation.
Bisphenol A-epichlorohydrin polymer		Irritating, but does not injure eye tissue.
Epoxy Imidazole Adduct		Dust may cause irritation. Particulates will scratch eye surfaces and cause mechanical irritation.
Trade Secret - 10011		Will cause eye irritation. May cause permanent damage if eye is not immediately irrigated.

12. ECOLOGICAL INFORMATION

POTENTIAL EFFECT ON ENVIRONMENT	Harmful to aquatic organisms.
PERSISTENCE AND DEGRADABILITY	Not readily biodegradable.
POTENTIAL TO BIOACCUMULATE	The product has high potential for bioaccumulation.
AQUATIC TOXICITY	None Established

13. DISPOSAL CONSIDERATIONS

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.

14. TRANSPORTATION INFORMATION

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

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.

15. REGULATORY INFORMATION

TSCA	All components are on the TSCA inventory.
Canadian Domestic Substance List (DSL)	Not on Inventory

Henkel

PRODUCT NUMBER: EC800106

ISSUE DATE: 15-December-2010

IDH# 1189144

China (IECSC)	On the IECSC Inventory.
Korea (KECI)	On the KECI Inventory.
Philippines (PICCS)	On the PICCS Inventory.
EINECS	All components of this product are listed in EINECS or ELINCS, or are otherwise exempt from EU notification requirements.

SARA - Section 313 (Superfund Amendments and Reauthorization Act of 1986 - 40CFR 372)	CAS NUMBER
Silver	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	CAS NUMBER
Epichlorohydrin	106-89-8

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).

<u>Health</u>	<u>Flammability</u>	<u>Physical Hazard</u>
*2	1	1

PREPARED BY: Regulatory Affairs
Henkel Electronic Materials

The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.