

*** MATERIAL SAFETY DATA SHEET ***

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER..... 83-4540
 PRODUCT NAME..... ABLEBOND 8390A
 SYNONYM NAME(S)..... Modified Epoxy Resin - Silver Filled

Ablestik Laboratories
 Subsidiary of National Starch and Chemical Company
 20021 Susana Road
 Rancho Dominguez, CA 90221
 USA

Emergency Telephone:
 1-800-424-9300 (24 hours, CHEMTREC)

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY..... Conductive Adhesive

<u>COMPONENT</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION RANGES (%)</u>
Epoxy resin	Proprietary	10 - 30
Curing & hardening Agent	Proprietary	1 - 5
Silver	7440-22-4	50 - 80

3. HAZARDS IDENTIFICATION

EYE IRRITANT. HARMFUL IF SWALLOWED. Sensitizer.

EYE..... Irritating, and may injure eye tissue if not removed promptly.

SKIN CONTACT..... May be absorbed through the skin. May cause skin sensitization, a partial or whole-body dermatitic rash experienced after exposure, however minimal.

INHALATION..... Vapors and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract. Avoid breathing vapors or mists. If cured material is sanded resulting powder would be considered hazardous.

INGESTION..... Ingestion effects have not been evaluated but are assumed to cause nausea and vomiting.

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4. FIRST-AID MEASURES

EYE..... Immediately flush eyes with large amounts of water for at least 15 minutes, lifting upper and lower lids. Get prompt medical attention.

SKIN CONTACT..... Flush exposed areas thoroughly with soap and water until all chemical is removed. Remove contaminated clothing and launder before reuse. If irritation persists, get medical attention.

INHALATION..... Remove to fresh air. Get medical attention if irritation persists.

INGESTION..... Treat symptomatically and supportively. Get medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

5. FIREFIGHTING MEASURES

AUTOIGNITION..... Not available.

FLASH POINT..... > 200 F (Cleveland Open Cup)

EXTINGUISHING MEDIA..... CO2; Foam; Dry chemical

SPECIAL FIREFIGHTING PROCEDURES.... Fire fighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes

FIRE & EXPLOSION HAZARDS..... Emits toxic fumes under fire conditions.

UPPER EXPLOSION LIMIT (%)..... Not Applicable

LOWER EXPLOSION LIMIT (%)..... Not Applicable

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES..... Scrape up and place in suitably labeled container for disposal.

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

7. HANDLING AND STORAGE

STORAGE TEMPERATURE..... - 40 DEGREE F

SPECIAL SENSITIVITY..... Keep away from heat.

HANDLING/STORAGE..... While this product is supplied in wet form, processes involving sanding or grinding after curing could release airborne toxic dust. Product can ONLY be used for thin

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bond line applications or rapid exothermic curing reaction may result.

VENTILATION REQUIREMENTS..... Vent curing oven to outdoors.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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.
 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.
 WASH REQUIREMENTS..... Wash before eating, drinking, or using toilet facilities.
 RESPIRATOR REQUIREMENTS..... If operating conditions create a high vapor/mist concentration or if the product is sanded or ground, use of a NIOSH approved TC-23C organic vapor/ hepa filter combination cartridge is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

PURE SUBSTANCE OR MIXTURE..... Mixture
 PHYSICAL FORM..... Paste
 APPEARANCE/ODOR..... Silver; Slight odor
 ODOR THRESHOLD..... Not available
 PH AS IS..... Not Applicable
 BOILING POINT..... Not Applicable
 MELTING/FREEZING POINT..... Not Applicable
 SOLUBILITY IN WATER..... Insoluble
 PARTITION COEFFICIENT
 (n-octanol/water)..... Not Applicable
 SPECIFIC GRAVITY (WATER=1)..... 3.3
 EVAPORATION RATE..... Not Applicable
 VAPOR PRESSURE (mmHg)..... Not Applicable
 VAPOR DENSITY (air = 1)..... Not Applicable
 VOLATILES..... Nil
 AUTOIGNITION..... Not Available
 FLASH POINT..... Not Available
 OXIDIZING PROPERTIES..... Not Applicable

10. STABILITY AND REACTIVITY

STABILITY..... Stable
 MATERIALS TO AVOID..... Strong oxidizing agents, acids, and alkaline materials.

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HAZARDOUS DECOMPOSITION PRODUCTS... Carbon dioxide, carbon monoxide, oxides of nitrogen and unknown organics. Thermal decomposition products are hazardous and/or toxic.

11. TOXICOLOGICAL INFORMATION

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

ROUTE OF ENTRY..... Skin absorption; Skin contact
EFFECTS OF CHRONIC EXPOSURE..... This product has not been tested for mutagenicity. Epoxy resins similar to those used in this formulation have been tested and have produced equivocal mutagenic activity. The relevance of those findings to toxicological impact on humans is unknown.
TARGET ORGANS..... Skin
CARCINOGEN..... No.
SENSITIZER..... Yes.

TOXICOLOGY INFORMATION

RAW MATERIAL NAME..... Diglycidylether of bisphenol-F
ORAL LD50, SPECIES TESTED..... >3.0 g/kg Rat
NOTES ON ORAL TOXICITY..... Low order of toxicity. Irritating to mouth, throat and stomach. May cause gastric tract disorder and/or damage.
NOTES ON DERMAL TOXICITY..... Mild skin irritant. May cause skin sensitization, a partial or whole-body dermatitic rash experienced after exposure, however minimal.
NOTES ON INHALATION TOXICITY..... Irritating to eyes and respiratory tract. May cause breathing disorders and/or lung damage. Avoid breathing vapors or mists.
NOTES ON EYE IRRITATION..... Irritating, and will injure eye tissue if not removed promptly.
OTHER NOTES ON TOXICITY..... Sensitizer.

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHODS..... Waste disposal should be in accordance with existing federal, state and local environmental regulations.
EMPTY CONTAINER WARNINGS..... Empty containers may contain product

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residue; follow MSDS and label warnings even after they have been emptied.

14. TRANSPORTATION INFORMATION

DOT INFORMATION

DOT SHIPPING NAME..... Not Regulated
DOT HAZARD CLASS..... Not Regulated
DOT REPORTABLE QUANTITY..... None.

UNITED NATIONS INFORMATION

U.N. NUMBER..... Not regulated
U.N. CLASS..... Not regulated

15. REGULATORY INFORMATION

TSCA..... All components are on the TSCA inventory.
STATE LAWS..... Product contains ingredients which are subject to the reporting requirements of the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): Glycidol, Benzene and Toluene are present in trace amounts.

SARA/TITLE III, THIS PRODUCT CONTAINS (OR IS) A TOXIC CHEMICAL FOR ROUTINE ANNUAL CHEMICAL RELEASE REPORTING UNDER SECTION 313:

Silver 7440-22-4

The information given and the recommendations made herein apply to our product(s) alone and are not combined with other product(s). Such are based on our research and on data from other reliable sources and are believed to be accurate. No guaranty of accuracy is made. It is the purchaser's responsibility before using any product to verify this data under their own operating conditions and to determine whether the product is suitable for their purposes.

16. OTHER INFORMATION

MSDS DATE..... May 7, 1999
CHANGES SINCE PREVIOUS ISSUE..... Section 11

FOR REGULATORY INFORMATION, CONTACT:

Health & Safety Coordinator
Ablestik Laboratories
National Starch & Chemical Company
20021 Susana Road
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