

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

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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PRODUCT NAME..... Ablebond 84-1LMISR4  
SYNONYM NAME(S)..... Modified Epoxy Resin

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

Emergency telephone numbers:  
For U.S., Canada and the U.S. Virgin Islands: 1 - 800 - 424 - 9300  
(24hours, CHEMTREC)  
For calls originating elsewhere: 703-527-3887 (Collect calls are accepted)

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2. COMPOSITION/INFORMATION ON INGREDIENTS

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<u>COMPONENT</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION RANGE (%)</u>
Silver	7440-22-4	60-100
Epoxy resin	Proprietary	10-30
Curing agent & hardener	Proprietary	1-5

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3. HAZARDS IDENTIFICATION

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Emergency Overview

Silver paste

Danger! Corrosive. May cause eye and skin burns.  
May cause skin sensitization. Risk of sensitization depends on duration and level of exposure.

EYE..... Irritating, and will injure eye tissue if not removed promptly.  
SKIN CONTACT..... Irritating to the skin. May be absorbed through the skin. May cause skin sensitization, a partial or whole-body dermatitic rash experienced after exposure, however minimal.  
INHALATION..... Irritating and/or toxic vapors may be released at elevated temperatures. Vapors may be irritating to respiratory system and nasal passages.  
INGESTION..... Corrosive to mouth, esophagus, and stomach. Irritant and may cause nausea and vomiting.

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

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4. FIRST-AID MEASURES

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EYE.....	Immediately flush eyes with large amounts of water for at least 15 minutes, lifting upper and lower lids. If irritation persists, get medical attention.
SKIN CONTACT.....	Flush exposed areas thoroughly with water until all chemical is removed. Remove contaminated clothing and laundry before reuse. If irritation persists, get medical attention.
INHALATION.....	Remove to fresh air. Get medical attention if irritation persists.
INGESTION.....	Get medical attention.

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5. FIREFIGHTING MEASURES

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AUTOIGNITION.....	Not available
FLASH POINT.....	Not available
EXTINGUISHING MEDIA.....	Foam; CO2; 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 Available
LOWER EXPLOSION LIMIT (%).....	Not Available

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6. ACCIDENTAL RELEASE MEASURES

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

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STORAGE TEMPERATURE.....	- 40 <sup>0</sup> C
SPECIAL SENSITIVITY.....	Heat
HANDLING/STORAGE.....	Empty containers may contain product residue; follow MSDS and label warnings even after they have been emptied.
VENTILATION REQUIREMENTS.....	Vent curing oven to outdoors.

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

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>COMPONENT</u>	<u>EXPOSURE LIMITS</u>
Silver	OSHA: PEL-TWA; 0.01 mg/m <sup>3</sup> ACGIH: TLV-TWA; 0.1 mg/m <sup>3</sup>
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.....	If product is spilled on clothes, remove immediately and launder before reuse.
WASH REQUIREMENTS.....	If contact has occurred, wash with soap and water before eating.
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
APPEARANCE/ODOR.....	Silver
ODOR THRESHOLD.....	Not available
PH AS IS.....	Not available
BOILING POINT.....	Not available
MELTING/FREEZING POINT.....	Not available
SOLUBILITY IN WATER.....	Insoluble
PARTITION COEFFICIENT (n-octanol/water).....	Not available
SPECIFIC GRAVITY (WATER=1).....	3.5
BULK DENSITY.....	Not available
EVAPORATION RATE.....	Not available
VAPOR PRESSURE (mmHg).....	Not available
VAPOR DENSITY (air = 1).....	Not available
VISCOSITY.....	Not available
VOLATILES.....	Not available
VOLATILE ORGANIC COMPOUNDS.....	Not available
AUTOIGNITION.....	Not available
FLASH POINT.....	Not available
OXIDIZING PROPERTIES.....	Not available

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10. STABILITY AND REACTIVITY

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STABILITY..... Stable  
MATERIALS TO AVOID..... Oxidizing agents, acids, and  
alkaline materials.  
HAZARDOUS DECOMPOSITION PRODUCTS... Carbon dioxide, carbon monoxide,  
oxides of nitrogen and unknown  
organics. Thermal decomposition  
products are hazardous and/or toxic.

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11. TOXICOLOGICAL INFORMATION

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CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

ROUTE OF ENTRY..... Skin, Inhalation  
EFFECTS OF CHRONIC EXPOSURE..... Repeated exposure may cause skin  
sensitization.  
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.  
The toxicological properties of this  
product have not been fully evaluated.  
Use of good industrial hygiene  
practices is required. Avoid direct  
contact with skin or eyes. Do not  
ingest or inhale.  
TARGET ORGANS..... Skin  
CARCINOGEN..... No  
SENSITIZER..... Yes

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12. ECOLOGICAL INFORMATION

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Not available.

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13. DISPOSAL CONSIDERATIONS

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

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

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14. TRANSPORTATION INFORMATION

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DOT INFORMATION

DOT SHIPPING NAME..... Not regulated  
UN/ID Number..... NA  
Class ..... NA  
Packaging Group ..... NA  
Subsidiary risk ..... NA  
Label ..... NA

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15. REGULATORY INFORMATION

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TSCA..... All components are in compliance with TSCA requirements.

STATE LAWS..... WARNING: This product does not contain any chemical known to the State of California to cause cancer.

WARNING: This product contains the following chemical known to the State of California to cause birth defects or other reproductive harm: Toluene is 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

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.

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16. OTHER INFORMATION

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MSDS DATE..... November 27,'02  
CHANGES SINCE PREVIOUS ISSUE..... -

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FOR REGULATORY INFORMATION, CONTACT:

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Ablestik Laboratories  
National Starch & Chemical Company  
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Rancho Dominguez, CA 90221  
USA  
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FAX: 310-763-2725