

*** MATERIAL SAFETY DATA SHEET ***

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME..... ABLEBOND[®] 3230 Adhesive
 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)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>COMPONENT</u>	<u>CAS NUMBER</u>	<u>CONCENTRATION RANGE (%)</u>
Silver	7440-22-4	60-100
Epoxy compounds	Proprietary	10-30
Anhydrides	Proprietary	5-10
Polymeric material	Proprietary	1-5

3. HAZARDS IDENTIFICATION

Emergency Overview

Gray paste

Danger! Corrosive. May cause eye and skin burns.
 May cause skin and respiratory 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.

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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. If irritation persists, get medical attention.
SKIN CONTACT.....	Flush exposed areas thoroughly with 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.....	Get medical attention.

5. FIREFIGHTING MEASURES

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

6. ACCIDENTAL RELEASE MEASURES

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

STORAGE TEMPERATURE.....	- 40° 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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<u>COMPONENT</u>	<u>EXPOSURE LIMITS</u>
Silver	OSHA: PEL-TWA; 0.01 mg/m ³ ACGIH: TLV-TWA; 0.1 mg/m ³
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.....	Gray
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).....	3.6
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

10. STABILITY AND REACTIVITY

STABILITY.....	Stable
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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.

11. TOXICOLOGICAL INFORMATION

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

ROUTE OF ENTRY..... Skin, Inhalation
EFFECTS OF CHRONIC EXPOSURE..... Repeated exposure may cause skin and respiratory 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

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

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

15. REGULATORY INFORMATION

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

STATE LAWS..... WARNING: This product contains the following chemicals known to the State of California to cause cancer:

4-Vinylcyclohexane and 1,3 - Butadiene are present in trace amounts.

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

Toluene and 1,3 - Butadiene 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

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..... September 27, '05
CHANGES SINCE PREVIOUS ISSUE..... October 26, '05: section 15

FOR REGULATORY INFORMATION, CONTACT:

Health & Safety Coordinator
Ablestik Laboratories
National Starch & Chemical Company
20021 Susana Road
Rancho Dominguez, CA 90221

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USA

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