

*** MATERIAL SAFETY DATA SHEET ***

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME..... ABLETHERM[®] 8600 Adhesive
 SYNONYM NAME(S)..... Modified Di-ester 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> |
|----------------------|-------------------|--------------------------------|
| Di-ester resin | Proprietary | 1-5 |
| Functionalized ester | Proprietary | 5-10 |
| Polymeric compound | Proprietary | 1-5 |
| Silver | 7440-22-4 | 60-100 |

3. HAZARDS IDENTIFICATION

Emergency Overview

Silver paste.

Warning! May cause eye and skin irritation.

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..... No specific data are available.

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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. |
|--------------------------------|---|

7. HANDLING AND STORAGE

| | |
|-------------------------------|---|
| STORAGE TEMPERATURE..... | - 40 ⁰ 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. |

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| <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..... | 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)..... | 3.2 |
| 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

| | |
|-------------------------------------|--|
| 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. |

11. TOXICOLOGICAL INFORMATION

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

| | |
|----------------------------------|---|
| ROUTE OF ENTRY..... | Skin, Inhalation |
| EFFECTS OF CHRONIC EXPOSURE..... | Repeated exposure may cause skin sensitization. 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

DOT INFORMATION

| | |
|------------------------|---------------|
| DOT SHIPPING NAME..... | Not regulated |
| UN/ID Number..... | NA |

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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 chemical known to the State of California to cause cancer:

Benzene is present in trace amounts.

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

N-Methyl-2-pyrrolidinone, Toluene and Benzene 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..... June 8, '04
 CHANGES SINCE PREVIOUS ISSUE..... -

FOR REGULATORY INFORMATION, CONTACT:

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 National Starch & Chemical Company
 20021 Susana Road
 Rancho Dominguez, CA 90221
 USA

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