

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

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME..... Permabond CE45 Hardener  
CAS NUMBER OF PRODUCT..... Unassigned  
SYNONYM NAME(S)..... None.

National Starch and Chemical Company  
Permabond International Division  
Finderne Avenue, P.O. Box 6500  
Bridgewater, New Jersey 08807  
USA  
Emergency Telephone:  
908-685-5000 (24 hours)

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY..... COMPONENT	Epoxy Hardner, CAS NUMBER	CONCENTRATION RANGES (%)
BISPHENOL A	000080-05-7	>1
1,2-Ethanediamine, N-(2-aminoethyl)-	000111-40-0	>1
1,2-Ethanediamine, N,n'-bis(2-aminoethyl)-	000112-24-3	>1
1,2-Ethanediamine, N,N'-bis(2-aminoethyl) polymer with methyloxirane	026950-63-0	>1

3. HAZARDS IDENTIFICATION

EYE IRRITANT.

EYE..... Irritating, but does not injure eye tissue.  
SKIN CONTACT..... Frequent or prolonged contact may irritate and cause dermatitis.  
INHALATION..... Based on its low volatility, product is not considered to be a respiratory hazard under normal conditions of use. Irritating and/or toxic vapors may be released at elevated temperatures.  
INGESTION..... Low order of toxicity.

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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. 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.....	First aid is not normally required.
INGESTION.....	If individual is conscious, give milk or water to dilute stomach contents, then induce vomiting. DO NOT attempt to give anything by mouth to a drowsy or unconscious person. Keep warm and quiet. Get prompt medical attention.

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5. FIREFIGHTING MEASURES

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AUTOIGNITION.....	N/A
FLASH POINT.....	GREATER THAN 200 F (Setaflash Closed Tester)
EXTINGUISHING MEDIA.....	Water fog; Foam; CO <sub>2</sub> ; Dry chemical
SPECIAL FIREFIGHTING PROCEDURES.....	Fire fighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes; Cool exposed equipment with water spray
FIRE & EXPLOSION HAZARDS.....	Polymerization may take place at elevated temperatures. Negligible fire hazard when exposed to heat or flame.
UPPER EXPLOSION LIMIT (%).....	Not Applicable
LOWER EXPLOSION LIMIT (%).....	Not Applicable
NFPA FLAMMABILITY HAZARD CLASS.....	1 = Slight

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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.

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

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7. HANDLING AND STORAGE

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STORAGE TEMPERATURE..... Below 30°C  
SPECIAL SENSITIVITY..... Avoid excessive heat.  
HANDLING/STORAGE..... Store in cool, dry place.  
VENTILATION REQUIREMENTS.....

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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VENTILATION REQUIREMENTS..... General  
EYE PROTECTION REQUIREMENTS..... Safety glasses  
GLOVE REQUIREMENTS..... The use of chemically resistant gloves is recommended.  
CLOTHING REQUIREMENTS..... Protective clothing is normally not necessary for foreseeable conditions of use.  
WASH REQUIREMENTS..... Wash hands before smoking, eating, drinking or using toilet facilities.  
RESPIRATOR REQUIREMENTS..... None required under normal handling conditions. Use NIOSH approved respirator if vapor or mist levels are irritating.

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9. PHYSICAL AND CHEMICAL PROPERTIES

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PURE SUBSTANCE OR MIXTURE..... Mixture  
PHYSICAL FORM..... Liquid  
PH AS IS..... Not Applicable  
BOILING POINT..... N/A (not applicable)  
MELTING/FREEZING POINT..... N/A  
SOLUBILITY IN WATER..... Insoluble

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9. PHYSICAL AND CHEMICAL PROPERTIES ( Continued )

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EVAPORATION RATE.....	Not Applicable
VAPOR PRESSURE (mmHg).....	NEGLIGIBLE
VAPOR DENSITY (air = 1).....	>1
VOLATILES.....	< 1%
VOLATILE ORGANIC COMPOUNDS.....	NIL
AUTOIGNITION.....	N/A
FLASH POINT.....	GREATER THAN 200 F (Setaflash Closed Tester)
OXIDIZING PROPERTIES.....	Not Applicable

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10. STABILITY AND REACTIVITY

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STABILITY.....	Stable
MATERIALS TO AVOID.....	Avoid strong acids, epoxy resins
NFPA REACTIVITY	HAZARD CLASS..... 2 = Moderate
HAZARDOUS DECOMPOSITION PRODUCTS...	Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified organic compounds.

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11. TOXICOLOGICAL INFORMATION

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CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

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ROUTE OF ENTRY.....	Skin contact; Eye contact
EFFECTS OF CHRONIC EXPOSURE.....	Chronic eye contact may cause conjunctivitis; repeated or prolonged skin contact may cause sensitization dermatitis.
TARGET ORGANS.....	Skin; Eyes
CARCINOGEN.....	No.

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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.

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14. TRANSPORTATION INFORMATION

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DOT INFORMATION

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DOT SHIPPING NAME..... None.

DOT HAZARD CLASS..... Not regulated

DOT REPORTABLE QUANTITY..... None.

UNITED NATIONS INFORMATION

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U.N. NUMBER..... N/A

U.N. CLASS..... N/A

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15. REGULATORY INFORMATION

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TSCA..... All components are on the TSCA inventory.

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.