

*** MATERIAL SAFETY DATA SHEET ***

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER..... 82-9555
 PRODUCT NAME..... PERHABOND (R) QFS 16
 CAS NUMBER OF PRODUCT..... Unassigned
 SYNONYMS..... None.

National Starch and Chemical Company
 Pernabond International Division
 Funderne Avenue, P.O. Box 6500
 Bridgewater, New Jersey 08807
 USA
 Emergency Telephone:
 908-885-5000 (24 hours)

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY..... Accelerator/Activator

COMPONENT	CAS NUMBER	CONCENTRATION RANGES (%)
Heptane	142-82-5	99

3. HAZARDS IDENTIFICATION

EYE IRRITANT. EXTREMELY FLAMMABLE.

EYE..... Irritating, and may injure eye tissue if not removed promptly.
 SKIN CONTACT..... Frequent or prolonged contact may irritate and cause dermatitis. Repeated or prolonged contact may cause defatting of the skin, which may lead to skin irritation and/or dryness.
 INHALATION..... Overexposure may be irritating to respiratory passages and cause other effects such as eye irritation or

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3. HAZARDS IDENTIFICATION (Continued)

nausea. Care should be taken not to exceed the TLV.
 INGESTION..... Irritating to mouth, throat and stomach. May cause gastric tract disorder and/or damage. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting, may cause bronchopneumonia or pulmonary edema.

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 with large amounts of water; use soap if available. Remove grossly contaminated clothing, including shoes, and launder before re-use. Discard shoes. If irritation persists, get medical attention.
 INHALATION..... Remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, give artificial respiration. Get medical attention.
 INGESTION..... DO NOT induce vomiting. If individual is conscious, give milk or water to dilute stomach contents. Keep warm and quiet. Get prompt medical attention.

5. FIREFIGHTING MEASURES

AUTOIGNITION..... Not available.
 FLASH POINT..... Less than 20 F (Setafash Closed Tester)
 EXTINGUISHING MEDIA..... Dry chemical; CO2; Water fog; Foam
 SPECIAL FIREFIGHTING PROCEDURES..... Fire fighters should be equipped with self-contained breathing apparatus to protect against

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5. FIREFIGHTING MEASURES (Continued)

FIRE & EXPLOSION HAZARDS..... potentially toxic and irritating fumes; Cool exposed equipment with water spray. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Combustion may release noxious or toxic vapors. See Reactivity.
 UPPER EXPLOSION LIMIT (%)..... 7.0
 LOWER EXPLOSION LIMIT (%)..... 1.0
 NFPA FLAMMABILITY HAZARD CLASS..... 4 = Extreme

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES..... Shut off ignition sources. Stop leak if you can do it without risk. For small liquid spills, take up with sand or other absorbent material. For larger spills, dike far ahead of spill for later disposal. No smoking, flames or flares in hazard area! Keep unnecessary people away.

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

7. HANDLING AND STORAGE

STORAGE TEMPERATURE..... room temp.
 HANDLING/STORAGE..... Store in a cool, dry area away from heat, sparks or fire.
 VENTILATION REQUIREMENTS..... Local; explosion-proof exhaust ventilation.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENT	EXPOSURE LIMITS	RECOMMENDED TEST METHODS
Heptane	400 ppm (ACGIH-TWA) 500 ppm (ACGIH-STEL) 400 ppm (OSHA-PEL) 500 ppm (OSHA-STEL)	3M organic vapor monitor.

VENTILATION REQUIREMENTS..... Local; Explosion-proof exhaust ventilation.
 EYE PROTECTION REQUIREMENTS..... Wear chemical goggles.
 GLOVE REQUIREMENTS..... Impervious neoprene or rubber gloves are recommended.
 CLOTHING REQUIREMENTS..... Standard industrial hygiene procedures should be practiced.
 CHANGE/REMOVAL OF CLOTHING..... Change clothing, if contaminated, to prevent skin contact with adhesive. Launder clothing before reuse.
 WASH REQUIREMENTS..... Wash before eating, drinking, smoking, or using toilet facilities.
 RESPIRATOR REQUIREMENTS..... Avoid prolonged or repeated breathing of vapor or mists. If exposure may or does exceed occupational exposure limits, use a NIOSH approved respirator to prevent overexposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

PURE SUBSTANCE OR MIXTURE..... Mixture
 PHYSICAL FORM..... Liquid
 APPEARANCE/ODOR..... Clear liquid; typical solvent odor
 ODOR THRESHOLD..... Not available.
 MOLECULAR WEIGHT..... N/A (not applicable)
 PH AS IS..... N/A
 PH IN (1%) SOLUTION..... N/A
 BOILING POINT..... 201 F (94 C)
 MELTING/FREEZING POINT..... N/A
 SOLUBILITY IN WATER..... Insoluble
 PARTITION COEFFICIENT (n-octanol/water)..... Not applicable

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9. PHYSICAL AND CHEMICAL PROPERTIES (Continued)

SPECIFIC GRAVITY.....	0.732
BULK DENSITY.....	6.7 lbs/gal
EVAPORATION RATE.....	5.8 (Butyl acetate)
VAPOR PRESSURE (mmHg).....	50 (25 C)
VAPOR DENSITY (air = 1).....	3.4
VOLATILES.....	99.1% by wt.
VOLATILE ORGANIC COMPOUNDS.....	6.6 lbs/gal (796 g/l)
AUTOIGNITION.....	Not available.
FLASH POINT.....	less than 20 F (Setaflash Closed Tester)
OXIDIZING PROPERTIES.....	Not Applicable

10. STABILITY AND REACTIVITY

STABILITY.....	Stable
MATERIALS TO AVOID.....	Strong oxidizers, acids or bases
NFPA REACTIVITY HAZARD CLASS.....	0 = Insignificant
HAZARDOUS DECOMPOSITION PRODUCTS.....	Thermal decomposition could produce carbon monoxide, carbon dioxide, and unidentified organic compounds.

11. TOXICOLOGICAL INFORMATION

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

ROUTE OF ENTRY.....	Inhalation; Ingestion; Skin contact; Eye contact
EFFECTS OF CHRONIC EXPOSURE.....	See toxicology section.
TARGET ORGANS.....	Central nervous system; Respiratory system; Peripheral nervous system
SPECIAL HEALTH EFFECTS.....	None known.

TOXICOLOGY INFORMATION

RAW MATERIAL NAME.....	Heptane
NOTES ON ORAL TOXICITY.....	Low order of toxicity. Small amounts of liquid aspirated into the respiratory system during ingestion

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11. TOXICOLOGICAL INFORMATION (Continued)

NOTES ON DERMAL TOXICITY.....	or from vomiting, may cause bronchopneumonia or pulmonary edema. Frequent or prolonged contact may irritate and cause dermatitis. Repeated or prolonged contact may cause defatting of the skin, which may lead to skin irritation and/or dryness. May be absorbed through the skin.
NOTES ON INHALATION TOXICITY.....	Avoid breathing vapors or mists. Overexposure may be irritating to respiratory passages and cause other effects such as eye irritation or nausea. Care should be taken not to exceed the TLV. Prolonged exposure to high levels can cause headache, dizziness, drowsiness and other nervous system effects.
NOTES ON EYE IRRITATION.....	Irritating, but does not injure eye tissue.

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.

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14. TRANSPORTATION INFORMATION

DOT INFORMATION

DOT SHIPPING NAME.....	HEPTANE MIXTURE
DOT HAZARD CLASS.....	3 PKG GRP II
DOT REPORTABLE QUANTITY.....	Not noted

UNITED NATIONS INFORMATION

U.N. NUMBER.....	1206
U.N. CLASS.....	3

15. REGULATORY INFORMATION

TSCA.....	All components are on the TSCA inventory.
SARA/TITLE III.....	This product contains no substances at or above the reporting threshold under Section 313, based on data available.

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 13, 1994

FOR REGULATORY INFORMATION, CONTACT:
Philip A. Toscano
Assistant Regulatory Coordinator
PermaBond International Division
National Starch & Chemical Company
Finderne Avenue, P.O. Box 6500

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16. OTHER INFORMATION (Continued)

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