



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

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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|----------------|---|
| PRODUCT NUMBER | 52-2525 |
| PRODUCT NAME | K4484 |
| Manufacturer | National Starch & Chemical Company P.O. Box 6500, 10 Finderne Avenue Bridgewater, NJ 08807 USA |
| | EMERGENCY PHONES: |
| | MEDICAL: 866-359-5657 (Health & Safety Call Center-24 hours) |
| | TRANSPORT: CHEMTREC: 800-424-9300 (24 hours) |
| | CHEMTREC International: 703-527-3887 (call collect) |
| | Corporate Emergency Phone: 908-685-5100 (24 hours) |
| | MSDS Requests/Customer Service: See phone numbers in Section 16 |

2. COMPOSITION/INFORMATION ON INGREDIENTS

| CHEMICAL FAMILY | Dextrin | CAS NUMBER | CONCENTRATION |
|--|---------|------------|---------------|
| COMPONENT | | | (% by weight) |
| None classified as hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200). | | | |

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Possible physical irritant from dust particles. Potential for dust explosion.
Yellow Powder. Dextrin odor

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| EYE | Particulates may scratch eye surfaces and cause mechanical irritation. |
| SKIN CONTACT | Low order of toxicity. |
| INHALATION | This product can produce a nuisance dust which should be maintained below a time weighted average of 10 mg/m ³ . |
| INGESTION | Low oral toxicity. |

4. FIRST-AID MEASURES

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| EYE | Remove particles by irrigating with eye wash solution or clean water, holding the eyelids apart. If symptoms develop, obtain medical attention. |
| SKIN CONTACT | Wash skin with soap and water. |
| INHALATION | Remove to fresh air. Get medical attention if irritation persists. |
| INGESTION | None required. |

5. FIREFIGHTING MEASURES

| | |
|---------------------------------|---|
| AUTOIGNITION | Not available |
| FLASH POINT | Not applicable |
| EXTINGUISHING MEDIA | Dry Chemical; CO2; Water Fog; Foam |
| SPECIAL FIREFIGHTING PROCEDURES | No special procedures are required. |
| FIRE & EXPLOSION HAZARDS | Minimum ignition temperature of dust cloud- approx. 390 C. Minimum explosive concentration- approx. 70 mg/l. Minimum energy to ignite cloud by electrical spark- approx. 0.06 joules. |
| HAZARDOUS COMBUSTION PRODUCTS | This product does not undergo spontaneous decomposition. Typical combustion products are carbon monoxide, carbon dioxide, nitrogen and water. |
| LOWER EXPLOSION LIMIT (%) | Not applicable |
| UPPER EXPLOSION LIMIT (%) | Not applicable |

6. ACCIDENTAL RELEASE MEASURES

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| SPILL AND LEAK PROCEDURES | Normal precautions for "nuisance dust" should be observed. Avoid prolonged inhalation of dust. Sweep up or vacuum up and place in suitable container for disposal. |
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For safety and environmental precautions, please review entire Material Safety Data Sheet for necessary information.

7. HANDLING AND STORAGE

| | |
|-----------------------------------|--|
| STORAGE TEMPERATURE | Ambient. |
| SENSITIVITY TO STATIC ELECTRICITY | Yes |
| SENSITIVITY TO MECHANICAL IMPACT | No |
| OTHER PRECAUTIONS | Use care to minimize dust generation in normal use conditions. Avoid dispersing the powder in the air. Prevent buildup of powder on surfaces. |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| | <u>ACGIH</u> | <u>OSHA</u> | <u>Mfg Working Standard</u> |
|--------------------------|--------------|-------------|-----------------------------|
| VENTILATION REQUIREMENTS | General. | | |

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|-----------------------------|---|
| EYE PROTECTION REQUIREMENTS | Safety glasses recommended. |
| GLOVE REQUIREMENTS | Gloves are not normally required for foreseeable conditions of use. |
| CLOTHING REQUIREMENTS | Not applicable. |
| CHANGE/REMOVAL OF CLOTHING | Not normally required. |
| WASH REQUIREMENTS | Wash before eating, drinking, or using toilet facilities. |
| RESPIRATOR REQUIREMENTS | NIOSH approved dust mask. |

9. PHYSICAL AND CHEMICAL PROPERTIES

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|---|-------------------|
| PURE SUBSTANCE OR MIXTURE | Pure |
| PHYSICAL FORM | Powder. |
| COLOR | Yellow |
| ODOR | Dextrin |
| ODOR THRESHOLD | Not available |
| MOLECULAR WEIGHT | > 10000 |
| PH AS IS | Not applicable |
| pH IN (1%) SOLUTION | Approximately 2.5 |
| OXIDIZING PROPERTIES | Not applicable |
| BOILING POINT | Not applicable |
| MELTING/FREEZING POINT | Not applicable |
| SOLUBILITY IN WATER | Soluble |
| PARTITION COEFFICIENT (n-octanol/water) | Not applicable |
| VISCOSITY | Not applicable |
| SPECIFIC GRAVITY (WATER=1) | 1.5 |
| BULK DENSITY | Not available |
| EVAPORATION RATE | Not applicable |
| VAPOR PRESSURE (mmHg) | Not applicable |
| VAPOR DENSITY (air = 1) | Not applicable |
| VOLATILES | None |
| VOLATILE ORGANIC COMPOUNDS | Not applicable |
| AUTOIGNITION | Not available |
| FLASH POINT | Not applicable |

10. STABILITY AND REACTIVITY

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|----------------------------------|---|
| STABILITY | Stable |
| HAZARDOUS DECOMPOSITION PRODUCTS | This product does not undergo spontaneous decomposition. Typical combustion products are carbon monoxide, carbon dioxide, nitrogen and water. |

11. TOXICOLOGICAL INFORMATION

| | | | |
|-------------------|--|------------|----------------------------|
| ROUTE OF ENTRY | Eye Contact; Skin Contact; Inhalation; Ingestion | | |
| CARCINOGEN | <u>IARC</u> | <u>NTP</u> | <u>OSHA Substance</u> |
| COMPONENT | <u>(group)</u> | | <u>Specific Regulation</u> |

There is no evidence that this product poses a carcinogenic risk under normal conditions of handling and use.

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE

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|-----------------------------|---|
| EFFECTS OF CHRONIC EXPOSURE | This product is considered as being non-toxic. Use of good industrial hygiene practices is recommended. |
| TARGET ORGANS | Not applicable. |

12. ECOLOGICAL INFORMATION

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|----------------------------|------------------|
| POTENTIAL TO BIOACCUMULATE | Unknown. |
| AQUATIC TOXICITY | None Established |

13. DISPOSAL CONSIDERATIONS

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|--------------------------|---|
| WASTE DISPOSAL METHODS | Disposal should be in accordance with local, state or national legislation. |
| EMPTY CONTAINER WARNINGS | Empty containers may contain product residue; follow MSDS and label warnings even after they have been emptied. |

14. TRANSPORTATION INFORMATION

This section provided for general information only.
 FOR NON-BULK SHIPMENTS.
 FOR MORE COMPLETE TRANSPORTATION REGULATORY INFORMATION PLEASE REFER TO THE SHIPPING DOCUMENTS ACCOMPANYING THE SHIPMENT OF THIS PRODUCT.

DOT CLASSIFICATION Not applicable.

The information provided herein may not include the impact of additional regulatory requirements (eg, for materials meeting the definition of a hazardous waste under RCRA, hazardous substances under CERCLA, and/of marine pollutants under CWA or other similar federal, state or local laws) or any associated exceptions or exemptions under regulations applicable to the transport of this material.

15. REGULATORY INFORMATION

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| USA | This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C. 2601 et. seq. |
| TSCA | |

FDA

21CFR184.1277

SARA/TITLE III

CAS NUMBER

CONCENTRATION

(% by weight)

Contains no substances at or above the reporting threshold under Section 313.

16. OTHER INFORMATION

HMIS® Hazard Ratings

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs by OSHA's 29 CFR 1910.1200, we choose to provide them as a service to our customers using HMIS®. These ratings are to be used only with a fully implemented HMIS® program. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

NPCA recommends that employers must determine appropriate PPE for the actual conditions under which this product is used in their workplace. For information on PPE codes, consult the HMIS® Implementation Manual.

HMIS® is a registered trademark of the National Paint and Coatings Association (NPCA).

| <u>Health</u> | <u>Flammability</u> | <u>Reactivity</u> |
|---------------|---------------------|-------------------|
| 1 | 1 | 0 |

MSDS DATE

12-January-2005

FOR INFORMATION CONTACT:

For product information, contact:

National Starch & Chemical Company

National Starch Food Innovation

Customer Service: 1-800-859-8569

Technical Service Support: 1-800-743-6343

Section 9

CHANGES SINCE PREVIOUS ISSUE

ADDITIONAL INFORMATION: 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.