



MATERIAL SAFETY DATA SHEET

PNF™

FILE NO.:121717R4
MSDS DATE: 01/28/10

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: PNF™
SYNONYMS: Poly(fluoroalkoxy)phosphazene, Fluoroalkoxypolyphosphazene, Eypel-F®
PRODUCT CODES: N/A

MANUFACTURER: Materials Science Technology, Inc.
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Conroe, TX 77304 USA

EMERGENCY PHONE: +1-936-441-2445
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FAX PHONE: +1-936-521-2480

CHEMICAL NAME: Poly(fluoroalkoxyphosphazene)
CHEMICAL FAMILY: Phosphonitrilic Polymer
CHEMICAL FORMULA: $\{(\text{CF}_3\text{CH}_2)_a[\text{CXF}_2(\text{CF}_2)_b\text{CH}_2\text{O}]_c\text{PN}\}_n$
a + c = 2
b = 1,3,5,7,9...
X = H, F

PRODUCT USE: Proprietary
PREPARED BY: Materials Science Technology, Inc.

SECTION 1 NOTES: PNF™ is a proprietary polymer consisting of a phosphazene backbone with fluorinated hydrocarbon groups

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS:
Proprietary. See section 1 notes.

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Not applicable

ROUTES OF ENTRY: Not applicable

POTENTIAL HEALTH EFFECTS

EYES: Not applicable

SKIN: Wash affected area(s) with soap and water

INGESTION: Not applicable

INHALATION: If signs or symptoms occur, remove to fresh air

ACUTE HEALTH HAZARDS: None

CHRONIC HEALTH HAZARDS: None

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known

CARCINOGENICITY: None known

SECTION 3 NOTES:

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SECTION 4: FIRST AID MEASURES

EYES: Not applicable

SKIN: Not applicable

INGESTION: Not applicable

INHALATION: Not applicable

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Not applicable

SECTION 4 NOTES:

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR: Not applicable

FLASH POINT: Not applicable

AUTOIGNITION TEMPERATURE: Not applicable

NFPA HAZARD CLASSIFICATION: Not applicable

HMIS HAZARD CLASSIFICATION: Not applicable

EXTINGUISHING MEDIA: CO₂ or dry powder

SPECIAL FIRE FIGHTING PROCEDURES: Avoid breathing smoke or fumes

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS/THERMAL DECOMPOSITION PRODUCTS: When exposed to direct flame, products do not easily burn; but tend to emit low levels of smoke and char. This process is a result of flame-retardant properties inherent to the polymeric backbone structure of phosphorous and nitrogen. However, a continuous ignition source can initiate and sustain combustion, releasing common combustion products of carbon dioxide, carbon monoxide and water; and can release hydrogen cyanide and hydrogen fluoride. As with any fire, care should be taken to avoid combustion products of heat, carbon monoxide, carbon soot and steam.

SECTION 5 NOTES:

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Not applicable

SECTION 6 NOTES:

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Avoid extreme heat, +49°C / +120°F

OTHER PRECAUTIONS: Keep away from open flame

SECTION 7 NOTES:

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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ENGINEERING CONTROLS: None

VENTILATION: Not required

RESPIRATORY PROTECTION: Not required

EYE PROTECTION: Not required

SKIN PROTECTION: Not required

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Not required

WORK HYGIENIC PRACTICES: None

EXPOSURE GUIDELINES: None

SECTION 8 NOTES:

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Yellowish tan, amorphous gum

ODOR: Slightly acrid

PHYSICAL STATE: Solid

pH AS SUPPLIED:

pH (Other):

BOILING POINT: Not applicable

MELTING POINT: Not applicable

FREEZING POINT: Not applicable

VAPOR PRESSURE (mmHg): Not applicable

VAPOR DENSITY (AIR = 1): Not applicable

SPECIFIC GRAVITY (H₂O = 1): 1.75 g/ml

EVAPORATION RATE: Not applicable

SOLUBILITY IN WATER: Insoluble

PERCENT SOLIDS BY WEIGHT: Not applicable

PERCENT VOLATILE: Not applicable

VOLATILE ORGANIC COMPOUNDS (VOC): None

MOLECULAR WEIGHT:

SECTION 9 NOTES:

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SECTION 10: STABILITY AND REACTIVITY

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STABILITY: Stable

CONDITIONS TO AVOID (STABILITY): Open flame and temperature above 200° C/392° F

INCOMPATIBILITY (MATERIAL TO AVOID): None

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Not known to spontaneously decompose

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID (POLYMERIZATION): Not applicable

SECTION 10 NOTES:

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: Non toxic

SECTION 11 NOTES:

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: Non hazardous decomposition

SECTION 12 NOTES:

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of as an industrial waste in a manner acceptable to good waste practice and in compliance with any applicable local, state and federal regulation.

RCRA HAZARD CLASS: Not applicable

SECTION 13 NOTES:

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: Not regulated

HAZARD CLASS:

ID NUMBER:

PACKING GROUP:

LABEL STATEMENT:

WATER TRANSPORTATION

PROPER SHIPPING NAME: Not regulated

HAZARD CLASS:

ID NUMBER:

PACKING GROUP:

LABEL STATEMENTS:

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AIR TRANSPORTATION

PROPER SHIPPING NAME: Not regulated
HAZARD CLASS:
ID NUMBER:
PACKING GROUP:
LABEL STATEMENTS:

OTHER AGENCIES: Not applicable

SECTION 14 NOTES:

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): Not regulated
CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): Not regulated
SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): Not regulated
311/312 HAZARD CATEGORIES: Not regulated
313 REPORTABLE INGREDIENTS: None

STATE REGULATIONS: Not applicable

INTERNATIONAL REGULATIONS: None known

SECTION 15 NOTES:

SECTION 16: OTHER INFORMATION

OTHER/PREPARATION INFORMATION:

DISCLAIMER: This Material Safety Data Sheet contains at least the information required by Federal OSHA Hazard Communication rule, 29 CFR 1910.1200 (g) (2). No warranties are expressed or implied.