Nytef Plastics Ltd.

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: UNINAR PVDF Vinylidine Fluoride Polymer (PVDF)

PRODUCT USE: Engineering/Industrial grade thermoplastic stock shapes for subsequent machining and fabrication.

MANUFACTURER: Nytef Plastics, Ltd.
633 Dunksferry Rd.
Bensalem, PA 19020
Website: www.nytefplastics.com

PHONE NUMBERS:

PRODUCT INFORMATION: 215 638-0800 (Monday – Friday, 8:30 am – 5:00 pm)
800 646-9833 (Monday – Friday, 8.30 am – 5:00 pm)

TRANSPORT EMERGENCY: 800 424-9300 (CHEMTREC) (24 hrs)

2. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT NAME /CHEMICAL NAME	CAS NUMBER	WEIGHT %	OSHA
Ethene, 1,1-difluoro-,homopolymer	24937-79-9	98-100	N

The substances marked with a "Y" in the OSHA column are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29CFR 1910.1200)

While this material is not classified as hazardous under Federal OSHA regulations, this MSDS contains valuable information critical to the safe handling and proper use of this product. This MSDS should be retained and available for employees and other users of this product.

The components of this product are all on the TSCA inventory list.

3. HEALTH HAZARDS IDENTIFICATION

Emergency Overview

Odorless, white stock shapes in rod, tube or sheet form. Handle in accordance with good industrial hygiene and safety practices. CAUTION! MELT PROCESSING MAY RELEASE VAPORS WHICH MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

3. HEALTH HAZARDS IDENTIFICATION (continued)

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. As a semi-finished stock shape, it is a synthetic, high molecular weight material. Due to its chemical and physical properties, this material does not require special handling other than the good industrial hygiene and safety practices employed with any industrial material of this type. Machining and fabrication under normal conditions should not release hazardous fumes in significant amounts. However, if the material temperature becomes excessive, hazardous by-products can be released. (See Section 10 for additional information.) If degradation occurs due to high temperature, hazardous decomposition products will be emitted, which include hydrogen fluoride and may include polymer fumes and oxides of carbon.

4. FIRST AID MEASURES

SKIN:	If molten polymer contacts skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical attention for thermal burns.
EYES:	In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a physician if symptoms persist.
INHALATION:	If exposure to fumes from overheating, move to fresh air. If breathing is difficult, give oxygen and get medical attention.

GENERIC FIRST AID: For hydrogen fluoride (HF). If thermal decomposition of this product occurs releasing HF, additional first aid measures are required. HF decomposition by-product is extremely corrosive and can cause severe burns which may not be immediately visible or painful. Exposure to HF may be fatal if absorbed through the skin, inhaled or swallowed. In all cases of major hydrogen fluoride exposure (including skin burns about the size of the palm of the hand) hypocalcemia may be present. Monitor calcium levels frequently and EKG for signs of calcium depletion. Patients with burns of the neck or face, or with signs of respiratory irritation, should be monitored for delayed pulmonary edema, and edema of the upper airway with respiratory obstruction. Respiratory care should be closely supervised and may include further administration of 2.5% calcium gluconate by nebulization. Do not administer local anesthetics after skin contact as the level of pain is an indication of the effectiveness of the calcium gluconate treatment. If pain continues longer than 30 minutes, consider injecting calcium gluconate (5%) into the skin and subcutaneous tissue beneath, around and within the affected area. If ingestion occurs, do not induce vomiting. Administer 4 to 8 ounces of water followed by 2 to 4 ounces of an antacid containing calcium or magnesium.

First Aid Supplies for Hydrogen Fluoride
Use of the following materials has been shown to be useful for HF treatment as explained above:
2.5% calcium gluconate gel
1.0% calcium gluconate in saline ocular solution
2.5% calcium gluconate in saline inhalant
Antacid containing calcium or magnesium

5. FIRE FIGHTING MEASURES

Auto-Ignition Temperature		NE
Flash Point		NE
Flammable Limits-	Upper	NA
	Lower	NA

Extinguishing Media: Use water spray, carbon dioxide, foam or dry chemical.

Fire Fighting Instructions: Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Firefighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards: When burned, the following hazardous products of combustion can occur: Oxides of carbon and Hydrogen Fluoride

6. ACCIDENTAL RELEASE MEASURES

SPILL OR RELEASE: Contain spill. Sweep or scoop up and remove to suitable container. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7. HANDLING AND STORAGE

HANDLING: Avoid breathing processing fumes or vapors. Use only with adequate ventilation. Avoid prolonged contact with eyes, skin and clothing. Keep container tightly closed.

STORAGE: Store in a cool, dry place. This material is not hazardous under normal storage conditions however, material should be stored in closed containers, in a secure area to prevent container damage and subsequent spillage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to minimize exposure. Dilution ventilation is acceptable, but local mechanical exhaust ventilation preferred, if practical, at sources of air contamination such as open process equipment.

EYE/FACE PROTECTION: Use good industrial practice to avoid eye contact. Processing of this product releases vapors or fumes which may cause eye irritation. Where eye contact may be likely, wear chemical goggles and have eye flushing equipment available.

SKIN PROTECTION: Minimize skin contamination by following good industrial hygiene practice. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

RESPIRATORY PROTECTION: Avoid breathing processing fumes or vapors. Where airborne exposure is likely, use NIOSH approved respiratory protective equipment appropriate to the material and/or its components and substances released during processing. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for a given

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (Cont'd.)

application. Observe respirator use limitation specification by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full-face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

OTHER PROTECTIVE EQUIPMENT: NOTE: In the event of thermal decomposition resulting in an HF exposure or release, decontamination of the equipment involves the use of protective equipment. Contact an Industrial Hygienist or safety personnel for type of equipment necessary.

OTHER EXPOSURE LIMITS-INGREDIENTS: *OSHA and ACGIH have not established specific exposure limits for this material. However, OSHA and ACGIH have established limits for nuisance dusts or Particles Not Othwise Specified (PNOS) which are the least stringent exposure limits applicable to dusts. The OSHA PEL/TWA for nuisance dusts is 15 mg/m‡ total dust (TD), and 5 mg/m‡ respirable dust (RD). The ACGIH TLV/TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified (PNOS) is 10 mg/m‡ inhalable particulate and 3 mg/m‡ respirable particulate.

AIRBORNE EXPOSURE GUIDELINES FOR INGREDIENTS: The components of this product have no established Airborne Exposure Guidelines.

-Only those components with exposure limits are printed in this section.
-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.
-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.
-WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

OTHER EXPOSURE LIMIT INFORMATION: (PRODUCT-BASED)

Exposure Limit Memo: ACGIH ceiling limit for Hydrogen fluoride (HF) has a TLV of 3 ppm.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor:	Odorless white stock shapes, rod, tube or sheet
pH	
Specific Gravity:	1.76-1.80
Vapor Pressure:	NE
Vapor Density:	NE
Melting Point:	155-165 deg C
Freezing Point:	
Boiling Point:	NE
Solubility In Water:	Negligible
Evaporation Rate:	NE
Percent Volatile:	NE

10. STABILITY AND REACTIVITY

Stability: This material is chemically stable under normal and anticipated storage, handling and processing conditions.Thermal decomposition of polymer will generate hydrogen fluoride (HF). Thermal decomposition of the polymer begins to generate HF at 600 degrees F (315 degrees C) and the evolution of HF becomes rapid at 700 degrees F (370 degrees C). Normal melt processing conditions rarely exceed a melt temperature of 535 degrees F (280 degrees C). The tip and mandrel are often set at higher temperatures. Laboratory testing has shown high polymer stability (TGA in nitrogen) at temperatures up to and including 600 degrees F (315 degrees C). Above this melt temperature, processors should exercise extreme caution because degradation may occur. We recommend that the product manufacturer's technical personnel are consulted if elevated melt temperature processing is required. Note: When HF is first detected or the decomposition of the polymer is noted, continue to run the equipment with the heat source turned off and turn off the polymer feed. Run the equipment dry, ventilate the area, and remove non-essential personnel. Purging this product from the equipment can be accomplished using a high viscosity polyethylene. In case of a major decomposition event, evacuate all personnel immediately and call the emergency number listed on the first page of this MSDS.

Hazardous Polymerization: Does not occur.

Incompatibility: Contact with strong bases, esters and ketones may cause a low energy release. Silica (glass fibers) and titanium dioxide will accelerate thermal decomposition.

Hazardous Decomposition Products: Hydrogen fluoride (HF), possible oxides of carbon.
In case of decomposition, see Handling section (7) for additional information.

11. TOXICOLOGICAL INFORMATION

Toxicological Information: Data on this material and/or its components are summarized below. Ethene, 1,1-difluoro-, homopolymer The toxicity data available on this material indicates that it is practically non-toxic if swallowed (rat LD50 6,000 mg/kg) and causes minimal or no biological response upon repeated contact or prolonged implantation in tissues. Various solvent extracts of this material also caused no adverse reactions in animals.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: No data are available.

Chemical Fate Information: No data are available.

13. DISPOSAL CONSIDERATION

Waste Disposal: Recover, reclaim or recycle when practical. Dispose of in an approved landfill if allowed locally. Incinerate only if the incinerator is fitted to scrub out hydrogen fluoride and other acidic combustion gases. Comply with federal, state and local regulations. Dispose of in a permitted waste management facility if incineration or landfill is not practical. Pigmented, filled and/or solvent laden product may require special disposal practices in accordance with federal, state and local requirements. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

DOT HAZARD CLASS: Not regulated.
DOT PACKING GROUP: PG
SHIPPING NAME: Not regulated.

15. REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

Immediate (Acute) Health	N	Fire	N
Delayed (Chronic) Health	N	Reactive	N
		Sudden Release of Pressure	N

The components of this product are all on the TSCA Inventory list.

Ingredient Related Regulatory Information:

SARA Reportable Quantities	CERCLA RQ	SARA TPQ
Ethene, 1,1-difluoro-, homopolymer	NE	

RoHS EU Directive 2002/95/EC:
This product complies with RoHS; it does not intentionally contain banned chemicals.

16. OTHER INFORMATION

PREPARED BY: Technical Team
Nytef Plastics, LTD.
633 Dunksferry Rd.
Bensalem, PA 19020

REVISION DATE: April 28, 2011 Rev. 2
SUPERCEDES REVISION DATED: December 4, 2008
REVISION SUMMARY: Nytef Plastics, Ltd. has moved its manufacturing facility to the address shown above.

Key: NE= Not Established NA= Not Applicable ® = Registered Trademark

The information set forth herein has been gathered from standard reference materials and/or supplier published data and is, to the best knowledge and belief of NYTEF PLASTICS, Ltd., accurate and reliable. Such information is offered solely for your consideration, investigation and verification, and it is not suggested or guaranteed that the hazard precautions or procedures mentioned are the only ones that exist. NYTEF PLASTICS, Ltd. makes no warranties expressed or implied, with respect to the use of such information or the use of the specific material identified herein in combination with any other material or process, and assumes no responsibility therefore. Further, since the conditions and methods of use are beyond the control of NYTEF PLASTICS, Ltd., NYTEF PLASTICS, Ltd. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

END OF MSDS