



DuPont Polymers

TEF035

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# PFA FLUOROPOLYMER RESIN ALL ON SYNONYM LIST OF TEF035

## CHEMICAL PRODUCT/COMPANY IDENTIFICATION

### Material Identification

Corporate MSDS Number DU006990

### # Tradenames and Synonyms

340, 340J, 345, 345J, 350, 350J, 350JK, 3000, TE7236, TE7238,

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### Company Identification

MANUFACTURER/DISTRIBUTOR  
DUPONT FLUOROPRODUCTS  
1007 MARKET STREET  
WILMINGTON, DE 19898

### PHONE NUMBERS

Product Information 1-(800)441-7515  
Transport Emergency 1-(800)424-9300  
Medical Emergency 1-(800)441-3637

## COMPOSITION/INFORMATION ON INGREDIENTS

### Components

Material	CAS Number	%
TETRAFLUOROETHYLENE - PERFLUORO (PROPYL VINYL ETHER) COPOLYMER (TFE - PPVE COPOLYMER)	26655-00-5	100

Heated above 400 deg C (750 deg F) can

evolve as degradation products:

Hydrogen Fluoride	7664-39-3	<1
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**COMPOSITION/INFORMATION ON INGREDIENTS**(Continued)

Carbonyl Fluoride

353-50-4 &lt;1

**Components (Remarks)**

Material is not known to contain Toxic Chemicals under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

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**HAZARDS IDENTIFICATION**

Potential Health Effects

**ADDITIONAL HEALTH EFFECTS**

Before using read the Fluoropolymers Safe Handling Guide published by The Society of the Plastics Industry.

The primary hazard associated with these polymers is the inhalation of fumes from overheating or burning, which may cause "polymer fume fever" (see HUMAN HEALTH EFFECTS below).

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## TFE-PPVE COPOLYMER

Inhalation of PFA dust may cause generalized irritation of the nose, throat and lungs with cough, difficulty breathing or shortness of breath.

Heating PFA above 300 degrees C may liberate a fine particulate fume. Inhalation may produce polymer fume fever, a temporary flu-like condition with fever, chills, nausea, shortness of breath, chest tightness, muscle or joint ache, and sometimes cough and elevated white blood cell count. The symptoms are often delayed 4 to 24 hours after exposure. These signs are generally temporary, lasting 24-48 hours and resolve without further complications. However, some individuals with repeated episodes of polymer fume fever have reported persistent pulmonary effects. Protection against polymer fume fever should also provide protection against any potential chronic effects.

Exposure to decomposition products from PFA heated above 400 degrees C may cause pulmonary inflammation, hemorrhage or edema. These more serious consequences of exposure may occur from extreme thermal decomposition of PFA which can liberate fume particles, and toxic gases (carbonyl fluoride, hydrogen fluoride, and other fluorinated gases) especially under conditions of poor ventilation and/or confined spaces. These decomposition products may initially produce chest tightness or pain, chills, fever, nausea, with shortness of breath, cough, wheezing and progression into pulmonary edema. Edema may be delayed in onset and requires medical treatment. In severe cases, if medical intervention is delayed, pulmonary edema may become life threatening. Recovery is generally complete within a few days; in some rare cases, persistent lung function abnormalities have been reported.

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**HAZARDS IDENTIFICATION**(Continued)

Compared to nonsmokers, polymer fume fever symptoms appear to be more prevalent and serious in smokers. Smokers must avoid contamination of tobacco with residual polymer from their hands or from fumes, and should wash their hands before smoking.

No skin irritation is expected during routine or occasional handling of PFA. Prolonged skin contact may cause mild skin irritation. Significant skin permeation after contact appears unlikely. There are no reports of human sensitization.

If particles of PFA contact the eye mechanical irritation with tearing, pain or blurred vision may result.

Individuals with pre-existing diseases of the lungs or cardiovascular system may have increased susceptibility to the reduction in blood oxygen that may develop after excessive exposures to thermal decomposition products.

**Carcinogenicity Information**

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

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**FIRST AID MEASURES****First Aid****INHALATION**

No specific intervention is indicated as the compound is not likely to be hazardous by inhalation. Consult a physician if necessary. If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.

**SKIN CONTACT**

The compound is not likely to be hazardous by skin contact, but cleansing the skin after use is advisable. If molten polymer gets on skin, cool rapidly with cold water. Do not attempt to peel polymer from skin. Obtain medical treatment for thermal burn.

**EYE CONTACT**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

**INGESTION**

No specific intervention is indicated as compound is not likely to be hazardous by ingestion.

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## **FIRE FIGHTING MEASURES**

### **Flammable Properties**

Flash Ignition Temperature : 530-550C (986-1022F)  
Method : ASTM D1929  
Self Ignition Temperature : 520-560C (968-1040F)  
Method : ASTM D1929  
UL-94 Flammability Rating : V-0  
Limiting Oxygen Index : >95  
Method : ASTM D2863

Difficult to ignite, and flame goes out when initiating source is removed (UL-94). Limited flame spread and low smoke generation (NFPA 262-1990, UL-910). Complies with NFPA definition of "limited combustible" material. High self-ignition and auto-ignition temperatures (ASTM D1929).

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Hazardous gases/vapors produced in fire are hydrogen fluoride (HF), carbon monoxide, potentially toxic fluorinated compounds.

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### **Extinguishing Media**

Water, Foam, Dry Chemical, CO2.

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### **Fire Fighting Instructions**

Wear self-contained breathing apparatus. Wear full protective equipment. Hydrogen fluoride fumes emitted during a fire can react with water to form hydrofluoric acid. Wear neoprene gloves when handling refuse from fire.

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## **ACCIDENTAL RELEASE MEASURES**

### **Safeguards (Personnel)**

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

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Spilled material is a slipping hazard.

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### **Spill Clean Up**

Recover undamaged and minimally contaminated material for reuse and reclamation. Shovel or sweep up.

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## **HANDLING AND STORAGE**

### **Handling (Personnel)**

Avoid contamination of cigarettes or tobacco with dust from this material.

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### **Handling (Physical Aspects)**

Do not use a torch to clean this material from equipment without local exhaust ventilation and respirator.

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### **Storage**

Keep container closed to prevent contamination.

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## EXPOSURE CONTROLS/PERSONAL PROTECTION

### Engineering Controls

VENTILATION Use local exhaust to completely remove vapors and fumes liberated during hot processing from the work area.

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### Personal Protective Equipment

EYE/FACE PROTECTION Wear safety glasses. Wear coverall chemical splash goggles and face shield when possibility exists for eye and face contact due to splashing or spraying of molten material.

RESPIRATORS A respirator is not required if local exhaust ventilation is adequate. At processing temperatures less than 400 deg C (750 deg F) a NIOSH/MSHA approved air purifying respirator with dust/mist cartridge or canister may provide protection from airborne particulates which cause polymer fume fever. At higher processing temperatures if ventilation is inadequate to maintain hydrogen fluoride and carbonyl fluoride concentrations below exposure limits, use a positive pressure air supplied respirator. Air purifying respirators may not provide adequate protection.

PROTECTIVE CLOTHING If there is potential contact with hot/molten material, wear heat resistant clothing and footwear.

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### Exposure Guidelines

#### Exposure Limits

PFA FLUOROPOLYMER RESIN ALL ON SYNONYM LIST OF TEF035  
PEL (OSHA) Particulates (Not Otherwise Regulated)  
15 mg/m<sup>3</sup>, 8 Hr. TWA, total dust  
5 mg/m<sup>3</sup>, 8 Hr. TWA, respirable dust

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#### Other Applicable Exposure Limits

TETRAFLUOROETHYLENE-PERFLUORO(PROPYL  
PEL (OSHA) None Established  
TLV (ACGIH) None Established  
AEL \* (DuPont) 10 mg/m<sup>3</sup>, 8 & 12 Hr. TWA, total dust  
5 mg/m<sup>3</sup>, 8 & 12 Hr. TWA, respirable dust

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#### Hydrogen Fluoride

PEL (OSHA) 3 ppm, 8 Hr. TWA, as F  
TLV (ACGIH) 0.5 ppm, 8 Hr. TWA, as F  
Ceiling 2 ppm, as F  
AEL \* (DuPont) 3 ppm, 15 minute TWA

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#### Carbonyl Fluoride

PEL (OSHA) None Established  
TLV (ACGIH) 2 ppm, 5.4 mg/m<sup>3</sup>, 8 Hr. TWA  
STEL 5 ppm, 13 mg/m<sup>3</sup>  
AEL \* (DuPont) None Established

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\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

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## PHYSICAL AND CHEMICAL PROPERTIES

### Physical Data

Melting Point	302-310 C (576-590 F)
Solubility in Water	Insoluble
Odor	None
Form	Pellets
Color	Translucent
Specific Gravity	2.1-2.2

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## STABILITY AND REACTIVITY

### Chemical Stability

Stable at normal temperatures and storage conditions.

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### Incompatibility with Other Materials

Incompatible or can react with finely divided metal powders (e.g., aluminum and magnesium) and potent oxidizers like fluorine (F<sub>2</sub>) and related compounds (e.g., chlorine trifluoride, ClF<sub>3</sub>). Contact with incompatibles can cause fire, an explosion.

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### Decomposition

Heating above 300 deg C (572 deg F), may cause evolution of particulate matter, which can cause polymer fume fever (see HUMAN HEALTH EFFECTS). Trace amounts of hydrogen fluoride and carbonyl fluoride may be evolved at about 400 deg C (750 deg F), with larger amounts at higher temperatures.

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## TOXICOLOGICAL INFORMATION

### Animal Data

PFA

Oral LD50: > 11,000 mg/kg in rats

There was no skin irritation after dermal injection of extracts from PFA into rabbits.

The effects in animals from a single inhalation exposure to thermal decomposition products of PFA include congestion, edema, and hemorrhage of the lungs.

Administration of oral doses of PFA equivalent to the LD50 produced body weight losses, congestion and other nonspecific effects. Repeated administration with 25% and 10% PFA in an oral feeding study did not produce any effects in rats.

No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

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**ECOLOGICAL INFORMATION****Ecotoxicological Information****AQUATIC TOXICITY:**

No information is available. Toxicity is expected to be low based on insolubility in water.

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**DISPOSAL CONSIDERATIONS****Waste Disposal**

Preferred options for disposal are (1) recycling and (2) landfill. Incinerate only if incinerator is capable of scrubbing out hydrogen fluoride and other acidic combustion products. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/ provincial, and local regulations.

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**TRANSPORTATION INFORMATION****Shipping Information**

DOT

Proper Shipping Name                      Not regulated

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**REGULATORY INFORMATION****U.S. Federal Regulations**

TSCA Inventory Status                      In compliance with TSCA Inventory requirements for commercial purposes.

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**State Regulations (U.S.)**

STATE RIGHT-TO-KNOW

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1 % OR MORE (0.01% FOR SPECIAL HAZARDOUS SUBSTANCES)- None known.

WARNING - SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM- Tetrafluoroethylene.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS)- None known.

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**OTHER INFORMATION****NFPA, NPCA-HMIS**

NFPA Rating	
Health	2
Flammability	1
Reactivity	0

**Additional Information**

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS	L. W. BUXTON
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# Indicates updated section.

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End of MSDS