



Teflon® PTFE 612A

fluoropolymer resin

Fine Powder Lubricated Extrusion Resin

Brand

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Description

Teflon® PTFE 612A (formerly TE-3562) is manufactured in North America. *Teflon*® PTFE 612N and *Teflon*® PTFE 612J are equivalent products manufactured in the Netherlands and Japan, respectively. All product specifications are identical for the different regions.

Teflon® PTFE 612A is a white powder composed of agglomerated particles of polytetrafluoroethylene (PTFE). It can be blended with solvent and ram extruded by a process called paste extrusion. The coherent extrudate obtains its structural integrity from the propensity of fine powder to fibrillate and form a fibrous matrix.

Properly processed products made from neat *Teflon*® PTFE 612A provide the superior properties typical of PTFE resins:

- retention of properties after service at 260°C (500°F)
- useful properties down to -240°C (-400°F)

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- chemical inertness to nearly all chemicals and solvents
- low friction and antistick surfaces
- outstanding dielectric properties

Teflon® PTFE 612A is ASTM D4895, Type I, Grade 4, Class B.

Processing

Teflon® PTFE 612A is prepared for extrusion by mixing with a liquid extrusion aid. The damp powder is compressed into a cylindrical preform slug and placed in the cylinder of a ram-type extruder. Under high pressure, the billet is forced through a finishing die with a large cross section selected for making beading or other special profiles.

Reduction ratio (RR) is the ratio of cross section of preform to that of extrudate; it is an extruder option also affecting the selection of resin grade.

Safety Precautions

WARNING!

VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using *Teflon*® PTFE 612A, read the Material Safety Data Sheet and the detailed information in the "Guide to the Safe Handling of Fluoropolymer Resins, Latest Edition," published by the Fluoropolymers Division of The Society of the Plastics Industry—available from DuPont.

Table 1
Typical Property Data for Teflon® PTFE 612A Fluoropolymer Resin

Property	ASTM Method	Unit	Typical Value
Average Particle Diameter	D4895	µm	490
Standard Specific Gravity	D618	—	2.16
Rheometer Pressure*	D4895	MPa(psi)	19.3(2,800)
Second Melt Point	D1458	°C (°F)	327 (621)
Stretching Void Index	D4895	—	50 max.
Thermal Instability Index	D4895	—	15 max.

Typical properties are not suitable for specification purposes.

*Reduction Ratio 400:1

Open and use containers only in well-ventilated areas using local exhaust ventilation (LEV). Vapors and fumes liberated during hot processing, or from smoking tobacco or cigarettes contaminated with *Teflon*[®] PTFE 612A, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and pass within about 24 hr. Vapors and fumes liberated during hot processing should be exhausted completely from the work area; contamination of tobacco with polymers should be avoided. Mixtures with some finely divided metals, such as magnesium or aluminum, can be flammable or explosive under some conditions.

Flammable solvents mixed with the resin can cause fires in ovens and mixing areas. Obtain manufacturers' recommendations before using.

Storage and Handling

Fine powder can be shear damaged because of its propensity to fibrillate. Shear damaged resin will not process properly and may result in an inferior product. Fine powder can withstand significantly more abuse when it is in the below room temperature transition state. *Teflon*[®] PTFE 612A fluoropolymer resin will remain in this cold transition state until it is warmed above 19°C (66°F). If this resin is allowed to go above 19°C (66°F) at any time, it must be cooled below about 10°C (50°F) to bring it back to the cold state. Consequently, it is preferable to transport and blend in the cold state.

To prevent moisture contamination, the drum must not be opened where the ambient dew point is above the temperature of the resin. Otherwise, immediate condensation on the resin will occur and proper processing may be severely affected.

Storage and handling (blender, etc.) facilities should be kept clean and dry. Fine powder resin will rapidly attract dust and airborne contamination. Particles of *Teflon*[®] left in processing equipment will easily shear damage, resulting in product defects. It is preferred that the resin be poured from one container to another. Scooping can cause severe shear damage.

Packaging

Teflon[®] PTFE 612A is packaged in 25-kg (55.1-lb) containers.

Freight Classification

Teflon[®] PTFE 612A resin, when shipped by rail or express, is classified "Plastics, Synthetic, O.T.L., NOIBN." Resin shipped by truck is classified "Plastics, Materials Granules."

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CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102.



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