



# Teflon™ PTFE

## Fine Powder Fluoropolymer

## Product Information

### Description

Teflon™ PTFE 650XT X is a polytetrafluoroethylene fine powder resin used primarily for paste extrusion. Teflon™ PTFE 650XT X offers the excellent combination of properties typical of Teflon™ fluoroplastic resins:

- Non-aging characteristics
- Chemical inertness to nearly all industrial chemicals and solvents
- Exceptional dielectric properties, stable with frequency and temperature
- Toughness and flexibility
- Low coefficient of friction
- Non-stick characteristics
- Negligible moisture absorption
- Excellent weather resistance
- Service temperature up to 260 °C (500 °F)
- Useful properties at -240 °C (-400 °F)
- Moderate stiffness and high ultimate elongation

Teflon™ PTFE 650XT X is designed for processing at low to medium reduction ratios of 10:1 to 400:1. It is particularly suitable for unsintered mono-axial and multidirectional stretched products and sintered products with high mechanical properties.

Teflon™ PTFE 650XT X meets the requirements of ASTM D4895-15, Type I, Grade 1, Class A.

### Typical Applications

Teflon™ PTFE 650XT X is mainly used for unsintered high demanding articles, such as filter membranes with uniform porosity and gaskets with excellent mechanical properties. It is also used for making sintered products.

### Processing

Teflon™ PTFE 650XT X is extruded using a liquid processing aid such as naphtha. In the paste extrusion process, the powder is mixed with a lubricant aid and then compressed into a cylindrical preform slug under light pressure (1.5–2.0 MPa [220–290 psi]). The preform slug is placed in the cylinder of a paste extruder, where the composition is forced under high pressure through a finishing die to produce beading, tubing, or wire coatings.

After extrusion, the product is a low-density, but coherent, fibrous structure. After removal of the lubricant by heating within the range of 100–300 °C (212–572 °F), the extrudate can be either sintered above its melting point of around 345 °C (653 °F) to produce a void-free PTFE article, or calendered and stretched to produce unsintered or semi-sintered articles.

### Food Contact Compliance

Properly processed products (sintered at high temperatures common to the industry) made from Teflon™ PTFE 650XT X resin can qualify for use in contact with food in compliance with FDA 21 CFR 177.1550 and European Regulation (EU) No. 10/2011. For details and information, please contact your Chemours representative.

### Safety Precautions

Before processing any fluoroplastics, read the Material Safety Data Sheet, available upon request from our Customer Service Group at (844) 773-CHEM/2436 in the U.S. or (302) 773-1000 outside of the U.S. Also read the detailed information in the latest edition of the "Guide to the Safe Handling of Fluoropolymer Resins," published by the Fluoropolymers Division of The Society of the Plastics Industry ([www.fluoropolymers.org](http://www.fluoropolymers.org)) or by PlasticsEurope ([www.plasticseurope.org](http://www.plasticseurope.org)).



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## Storage and Handling

Teflon™ PTFE fine powder resins must be handled carefully to avoid shearing the powder prior to extrusion. Fibrillation by shearing is not reversible, and damaged particles can appear as defects in the finished product. As temperature is reduced below the transition point of 19 °C (66 °F), the powder becomes progressively less sensitive to mechanical damage or compaction in its containers.

Chemours recommends that powder compacted during shipping and storage be restored to its optimum condition by cooling it for one or two days below 19 °C (66 °F), followed by screening through a 2–4.76 mm opening sieve (4–10 mesh). Lumps that are retained on the sieve that can be broken up by shaking at temperatures below 19 °C (66 °F) may be used; however, harder lumps that can not be broken up should be discarded.

All processing steps prior to preforming should be done at reduced temperature, but ambient dew point must be controlled to prevent condensation on the resin. Storage and handling facilities should be clean to avoid any cross-contamination. The high sintering temperature causes even very small foreign particles to become visible or to cause defects in finished products. Keep resin drums closed and clean.

## Packaging

Teflon™ PTFE 650XT X resin is packaged in 25-kg (55.1-lb) plastic containers. For convenient shipment, orders of 300-kg (661.4-lb) pallets (12 drums) are recommended.

## Typical Property Data for Teflon™ PTFE 650XT X Fluoroplastic Resin\*

Property Test	Test Method		Unit	Typical Value
Average Particle Size	ASTM D4895	ISO 12086	µm	500
Bulk Density	ASTM D4895	ISO 12086	g/L	550
Standard Specific Gravity	ASTM D4895	ISO 12086	—	2.163
Extrusion Pressure at RR = 100:1	ASTM D4895	ISO 12086	MPa (psi)	8.8 (1276)
Extrusion Pressure at RR = 400:1	ASTM D4895	ISO 12086	MPa (psi)	39.0 (5655)
Thermal Instability Index	ASTM D4895	ISO 12086	—	<20
Melt Peak Temperature				
Initial	ASTM D4895	ISO 12086	°C (°F)	344 (651)
Second	ASTM D4895	ISO 12086	°C (°F)	326 (620)

Teflon™ PTFE 650XT X meets the requirements of ASTM D4895-15, Type I, Grade 1, Class A.  
\*Typical properties are not suitable for specification purposes.

