

DuPont™ Teflon® PTFE 669N X Fluoropolymer Resin

PTFE FINE POWDER

Product Information

Description

DuPont™ Teflon® PTFE 669N X is a polytetrafluoroethylene fine powder resin used primarily for paste extrusion. Teflon® PTFE 669N X offers the excellent combination of properties typical of the Teflon® fluoropolymer 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 669N X is designed for processing at very low to medium reduction ratios (10:1 to 500:1). It is particularly suitable for production of pipe liners and general tubing.

Teflon® PTFE 669N X meets the requirements of ASTM D4895-91a, Type I, Grade 2, Class A.

Typical Applications

Teflon® PTFE 669N X is mainly used for the production of pipe liners used in the chemical industry. It is also used for making tubing and unsintered tape for mechanical, chemical and electrical applications.

Processing

Teflon® PTFE 669N 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 MPa – 220 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 669N 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 DuPont representative.

Safety Precautions

Before processing any fluoropolymers, read the Material Safety Data Sheet, available upon request from our Customer Care Group at (800) 207-0756 in the US or (302) 996-7906 (outside of the US). 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) or by PlasticsEurope (www.plasticseurope.org).

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.

DuPont 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 to 4.76 mm opening sieve (4 to 10 mesh). Lumps which are retained on the sieve that can be broken up by shaking at temperatures below 19 °C 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 669N 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.



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Typical Property Data for DuPont™ Teflon® PTFE 669N X Fluoropolymer Resin[†]

Property Test	Test Method		Unit	Typical Value
Average Particle Size	ASTM D4895	ISO 12086	µm	450
Bulk Density	ASTM D4895	ISO 12086	g/L	520
Standard Specific Gravity	ASTM D4895	ISO 12086	–	2.172
Extrusion Pressure at RR = 100:1	ASTM D4895	ISO 12086	MPa (psi)	7.5 (1090)
Melting Peak Temperature				
Initial	ASTM D4895	ISO 12086	°C (°F)	344 (651)
Second	ASTM D4895	ISO 12086	°C (°F)	326 (620)

Note: Teflon® 669N X meets the requirements of ASTM D4895-91a, Type I, Grade 2, Class A.

[†] Typical properties are not suitable for specification purposes.

This product is manufactured with technology that meets the goals of the U.S. Environmental Protection Agency (EPA) 2010/15 PFOA stewardship program. See www.fluoropolymers.dupont.com for more details.

For more information, visit
www.teflon.com/industrial

For sales and technical support contacts, visit
www.teflon.com/industrialglobalsupport

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For medical emergencies, spills, or other critical situations, call (800) 441-7515 within the United States. For those outside of the United States, call (302) 774-1000.

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