



Teflon®

Fluoropolymer

Teflon® 669-N PTFE fine powder

Typical applications

Pipe liners for use in the chemical industry, tubing and unsintered tape.

Description

Teflon® 669-N is one of DuPont's PTFE fine powder resins for paste extrusion. It offers the excellent combination of properties characteristic of the Teflon® fluoropolymer resins: non-ageing characteristics, chemical inertness, exceptional dielectric properties, heat resistance, toughness and flexibility, low coefficient of friction, non-stick characteristics, negligible moisture absorption and excellent weather resistance.

Teflon® 669-N is designed for processing at very low to medium reduction ratios (10:1 to 500:1). It is in particular suitable for the production of pipe liners for use in the chemical industry, tubing and unsintered tape for mechanical, chemical and electrical applications.

Teflon® 669-N meets the requirements of ASTM D 4895-91a, type I, grade 2, class A.

Processing

Teflon® 669-N is extruded using liquid organic extrusion aids, such as naphtha. In this process, a paste-like composition is first prepared by mixing the resin with the extrusion aid. A pre-form is made under light pressure (1,5 MPa) and placed in the cylinder of a ram-type extruder. The composition is then forced through a finishing die and the extrusion aid is volatilized at 100 to 300°C. In the case of tubing, the end-product is obtained by sintering at 370 to 400°C and cooling.

Safety precautions

Industrial experience has proven that adequate ventilation, in properly maintained processing and handling areas, will eliminate known hazards to personnel.

Resin containers should be opened and used in well-ventilated areas.

Equipment used to process at melt temperatures should be provided with local exhaust ventilation to completely remove all fumes and vapours from the processing area.

In addition, care should be exercised to avoid the contamination of cigarettes and other forms of smoking tobacco when using fluoropolymer resins.

Before using fluoropolymer resins, read the Material Safety Data Sheet (MSDS) and the detailed information in "Guide for the safe handling of Fluoropolymer Resins" published by APME. Copies can be obtained through your local DuPont representative.

Storage and handling

Certain handling procedures are necessary for best use of Teflon® 669-N extrusion powder. It is preferable to blend the resin in its relatively free-flowing state.

Powder compacted during shipping and storage may best be restored to its optimum condition by cooling it for 1 or 2 days below 19°C, followed by screening through a 4 mm opening sieve (5 mesh), also below 19°C. Cooling reduces the danger of damaging and orienting the resin particles during handling. Lumps which are retained on the sieve can easily be broken up by shaking in a small, clean container at temperatures below 19°C.

Packaging

Teflon® 669-N is packaged in 25 kg plastic drums. All drums contain a desiccant bag to reduce moisture condensation during shipping, storage and handling. For convenient shipment, orders of 300 kg pallets (12 drums) are recommended.

Typical Property Data for Teflon® 669-N

Property	Test method ¹⁾		Unit	Typical value
General				
Particle size, average diameter	ISO 12086	D 4895	µm	470 ± 120
Standard specific gravity	ISO 12086	D 4895		2,16-2,19
Bulk density	ISO 12086	D 4895	g/l	500 ± 50
Mechanical				
Tensile strength	ISO 12086	D 638	MPa	20,7-27,4
Elongation	ISO 12086	D 638	%	225-450
Electrical				
Relative permittivity (100 Hz to 60 MHz)	IEC 250	D 150		2,2
Power factor (sin σ) (100 Hz to 60 MHz)	IEC 250	D 150		<0,0002
Dielectric strength (0,38 mm)	IEC 243	D 149	kV/mm	23,6
Volume resistivity	IEC 93	D 257	Ω · m	>10 ¹⁶
Thermal				
Melting point initial	ISO 12086	D 4591/D 3418	°C	>332
second			°C	327 ± 5
Rate of burning ²⁾	ISO 1210	D 635	ATB (s) AEB (mm)	<5 5
Flammability classification ²⁾		UL 94		94 V-0
Other				
Water absorption		D 570	%	<0,01
Weather and chemical resistance				Excellent

Note: Teflon® 669-N meets the requirements of ASTM D 4895-91a, type I, grade 2, class A.
Typical properties are not suitable for specification purposes.

1) ASTM unless otherwise specified.

2) These results are based on laboratory tests, under controlled conditions, and do not reflect performance under actual fire conditions.

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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-51459.



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