



Teflon® PTFE 8B

fluoropolymer resin

Granular Compression Molding Resin

Brand

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Description

Teflon® PTFE 8B is a free-flowing white powder composed of relatively large particles. It has high bulk density and excellent powder flow. Compared with *Teflon*® PTFE 8 and *Teflon*® PTFE 8A, its most unique feature is particles designed to provide the highest quality of surface smoothness on finished parts, while maintaining outstanding flow and moldability.

The high bulk density and low compression ratio of *Teflon*® PTFE 8B permit the use of shallow molds for small parts and complex shapes. Good powder flow is necessary for use in equipment that feeds resin automatically, and for filling deep and narrow molds that are pressed isostatically. Surface smoothness of molded parts is enhanced without sacrificing powder flow necessary for both automatic preforming and isostatic molding.

Teflon® PTFE 8B is used for high-speed automatic preforming of small parts that require optimum powder flow, a high level of physical properties, and very smooth surfaces. It is often preferred for isostatic molding.

Properly processed products made from neat *Teflon*® PTFE 8B provide the superior properties typical of the fluoropolymer resins: retention of properties after service at 260°C (500°F), useful properties at -240°C (-400°F), chemical inertness to nearly all industrial chemicals and solvents, and low friction and antistick surfaces. Dielectric properties are outstanding and stable with frequency and temperature. Molded products have moderate stiffness and high ultimate elongation.

In a flame situation, products of *Teflon*® PTFE 8B resist ignition and do not themselves promote flame spread. When ignited by flame from other sources, their contribution of heat is small and with very little smoke.

Statements, or data, regarding behavior in a flame situation are not intended to reflect hazards presented by this or any other material when under actual fire conditions.

Typical End Products

Many end products are molded or fabricated from moldings of *Teflon*® PTFE 8B, including small parts such as ball valve seats, seals, discs, and lab ware. It is often preferred for lining pipes, valves, and valve plugs—and for ducting, expansion bellows, piston rings, and other large complex moldings.

FDA Compliance

Properly processed products (sintered at high temperatures common to the industry) made from *Teflon*® PTFE 8B resin can qualify for use in contact with food in compliance with FDA Regulation 21 CFR 177.1550.

Processing

Teflon[®] PTFE 8B is usually processed in two steps: preforming and sintering.

The powder is first compacted into a preformed shape approximating that of the desired molding.

Teflon[®] PTFE 8B can be preformed by machines that automatically fill-and-press small shapes. Automatic preforming requires resins that flow well, have high bulk density, and break up readily under pressure to provide void-free moldings.

Teflon[®] PTFE 8B is also chosen for isostatic molding, which uses hydrostatic pressure on a diaphragm positioned over or around the complex object to be preformed. The resin must have good moldability and the flow necessary to fill complex or narrow molds.

The preformed shapes are usually sintered in batches using a precise heating and cooling cycle, which consolidates them at temperatures above the crystalline melting point of the neat powder.

The properties of a finished molding are dependent on preform pressure, sintering time and temperature, and cooling rate. Refer to the typical property data in **Table 1**.

Safety Precautions

WARNING!

VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using *Teflon*[®] PTFE 8B, 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.

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 8B, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and that typically pass within about 24 hours. 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.

Table 1
Typical Property Data for *Teflon*® PTFE Fluoropolymer Resin Grade 8B*

Property	ASTM Test Method	Unit	Nominal Value
General			
Average Bulk Density	D4894	g/L	705
Average Mold Shrinkage (at preform pressure of 35 MPa [5,000 psi])	D4894	%	2.8
Powder Flow	Modified D1855	g/min	300
Average Particle Size	D4894	μm	450
Standard Specific Gravity	D4894	—	2.16
Melting, Peak Temperature	D4894		
Initial		°C (°F)	342 ±10 (648 ±18)
Second		°C (°F)	327 ±10 (621 ±18)
Mechanical			
Tensile Strength	D4894	MPa (psi)	28 (4,000)
Elongation at Break	D4894	%	300

* *Teflon*® PTFE 8B is ASTM D4894, Type IV, Grade I.

Note: Typical properties are not suitable for specification purposes.

Storage and Handling

Preforming is easiest when the resin is uniformly between 21–27°C (70–80°F). As temperature declines below this range, the resin will be increasingly difficult to mold without cracks and problems with condensed moisture. Higher temperatures inhibit flow and promote lumping. Storage conditions should be set accordingly.

Cleanliness is a critical requirement for successful use of *Teflon*® PTFE 8B. The white resin and high sintering temperatures cause even very small foreign particles to become visible in finished moldings. Keep resin drums closed and clean. Good housekeeping and careful handling are essential.

Freight Classification

Teflon® PTFE 8B, when shipped by rail or express, is classified “Plastics, Synthetic, O.T.L., NOIBN.” Resin shipped by truck is classified “Plastics, Materials Granules.”

Packaging

Teflon® PTFE 8B is packaged in 100-lb (45-kg) drums. Each drum has a bag liner made of polyethylene resin.

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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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