

DuPont™ Teflon® PTFE 860

fluoropolymer resin

Granular Compression Molding Resin

Brand

Teflon® is a registered trademark of DuPont for its brand of fluoropolymer resins, which can only be licensed by DuPont for use in approved applications. Customers who wish to use the *Teflon*® trademark in connection with DuPont PTFE products under license from DuPont should contact (800) 262-2745. Without a license, customers may not identify their product as containing *Teflon*®, but may refer to the resin as PTFE 860.

Description

DuPont™ *Teflon*® PTFE 860 is a free-flowing pelletized PTFE granular resin that extends the *Teflon*® PTFE 8 resin family by providing superior processing characteristics. Compared with other resins in this family, *Teflon*® PTFE 860 offers superior powder flow, low mold shrinkage, and high bulk density.

The uniform particles and high flow performance of *Teflon*® PTFE 860 meet requirements for many high-quality automatic molding processes. Because it provides uniform shrinkage, *Teflon*® PTFE 860 helps meet tight dimensional tolerances.

Teflon® PTFE 860 can also be used for isostatic molding. Compared with other resins in the *Teflon*® PTFE 8 family, it can be molded at moderate pressures, and its relatively soft particles yield smooth-surfaced parts.

Typical End Products

Small parts such as ball valve seats, seals, and discs can be made efficiently with *Teflon*® PTFE 860. It can also be used for lined pipes, valves and fittings, and for stock shapes to be machined for a wide range of applications.

FDA Compliance

Properly processed products (sintered at high temperatures common to the industry) made from *Teflon*® PTFE 860 resin can qualify for use in contact with food in compliance with FDA Regulation 21 CFR 177.1550.

Processing

Teflon® PTFE 860 is usually processed in two steps: preforming and sintering.

Teflon® PTFE 860 can be preformed by machines that automatically fill and then press to make small shapes. The resin has the required characteristics for automatic preforming, including good flow, high bulk density, and particles that break up under pressure to permit void-free moldings. Preformed shapes are batch sintered with a precise heating/cooling cycle that consolidates them at a temperature above the crystalline melting point of the neat resin.

Finished product properties depend 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 860, 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 860, 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.

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 860. 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 860, 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 860 is packaged in 100-lb (45-kg) drums. Each drum has a bag liner made of polyethylene resin.

Table 1
Typical Property Data for DuPont™ Teflon® PTFE Fluoropolymer Resin Grade 860

Property	ASTM Test Method	Unit	Nominal Value
General			
Average Bulk Density	D4894	g/L	850
Average Mold Shrinkage (at preform pressure of 35 MPa [5,000 psi])	D4894	%	2.7
Powder Flow	Modified D1855	g/min	500
Average Particle Size	D4894	µm	510
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)	30 (4,400)
Elongation at Break	D4894	%	290

Note: Typical properties are not suitable for specification purposes.

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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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