

DuPont™ Teflon® PTFE 7B

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 7B.

Description

DuPont™ *Teflon*® PTFE 7B is a white granulated powder with an ultra fine particle size and high bulk density. The ultra-fine particle size minimizes voids even at relatively low molding pressure. *Teflon*® PTFE 7B is an excellent choice for moldings requiring optimum mechanical and electrical properties.

The ultra-fine particle size of *Teflon*® PTFE 7B promotes good capture and uniform distribution of inorganic fillers when they are added to modify the mechanical properties of moldings. *Teflon*® PTFE 7B exhibits a mold shrinkage that is intermediate of the mold shrinkage of 7A and 7C grades.

Properly processed products made from neat *Teflon*® PTFE 7B 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 7B 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 7B—or made with filled compounds based on *Teflon*® PTFE 7B. The filled compounds provide a wide choice of modified mechanical properties. End products using *Teflon*® PTFE 7B include skived film and sheet, gaskets, bridge or pipeline bearing pads, piston rings, and diaphragms.

FDA Compliance

Properly processed products (sintered at high temperatures common to the industry) made from *Teflon*® PTFE 7B resin can qualify for use in contact with food in compliance with FDA regulation 21 CFR 177.1550.



Processing

Teflon[®] PTFE 7B usually is processed in two steps: preforming and sintering. The powder or filled compound is first compacted into a preformed shape approximating that of the desired molding.

A precise heating (sintering) and cooling cycle is then used to consolidate the molding 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.

Teflon[®] PTFE 7B is used to make objects in molds that can be filled manually. Small particle resins do not flow properly in automatic feeding systems.

Safety Precautions

WARNING!

VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using *Teflon*[®] PTFE 7B, 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 7B, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and 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.

Teflon[®] PTFE 7B fluoropolymer resin contains additives in the aqueous phase that are irritants. In case of skin contact, flush with water immediately. In case of eye contact, flush with water immediately and get medical help.

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 7B. 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 house-keeping and careful handling are essential.

Table 1
Typical Property Data for DuPont™ *Teflon*® PTFE Fluoropolymer Resin Grade 7B^a

Property	Test Method^b	Unit	Nominal Value
General			
Average Bulk Density	D4894	g/L	330
Average Mold Shrinkage (at preform pressure of 35 MPa [5,000 psi])	D4894	%	4.4
Average Particle Size	D4894	μm	24
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)	36.5 (5,300)
Elongation at Break	D4894	%	400

Note: Typical properties are not suitable for specification purposes.

^a *Teflon*® PTFE 7B is ASTM D4894, Type II.

^b ASTM, unless otherwise specified.

Freight Classification

Teflon® PTFE 7B, 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 7B is packaged in 55.1 lb (25-kg) drums. Each drum has a bag liner made of polyethylene resin.

For more information on Fluoroproducts:

(302) 479-7731

DuPont Fluoroproducts
P.O. Box 80713
Wilmington, DE 19880-0713
www.teflon.com

Europe

DuPont de Nemours Int'l SA
DuPont Fluoroproducts
2, chemin du Pavillon
P.O. Box 50
CH-1218 Le Grand-Saconnex
Geneva, Switzerland
(022) 7175111

Japan

DuPont Mitsui
Fluorochemicals Co., Ltd.
Chiyoda Honsha Building
5-18, Sarugaku-cho 1-chome
Chiyoda-ku, Tokyo 101 Japan
81-3-5281-5872

Asia Pacific

DuPont China, Limited
26/F., Tower 6, The Gateway
9 Canton Road, Tsimshatsui
Kowloon, Hong Kong
(852) 27341948
Tim-S.T.Leung@hkg.dupont.com

Canada

DuPont Canada, Inc.
DuPont Fluoroproducts
P.O. Box 2200, Streetsville
7070 Mississauga Road
Mississauga, Ontario,
Canada
L5M 2H3
(905) 821-5194

South America

DuPont do Brasil S/A
Fluoropolymers
Alameda Itapecuru, 506
06454-080 - Alphaville
P.O. Box 263
Barueri, Sao Paulo, Brazil
0800-171715
Produtos.Brazil@bra.dupont.com

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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.

