

# DuPont™ Teflon® PTFE TE-3864

Aqueous Fluoropolymers  
made with  
*Echelon™* Dispersion Technology

## Product Information

## Filter Fabric Finish

### 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 products under license from DuPont should either contact (800) 262-2745 in the US or the regional sales office listed at the back of this brochure. Without a license, customers may not identify their product as containing Teflon®, but may refer to the resin as PTFE fluoropolymer dispersion TE-3864.

### Description

DuPont™ Teflon® PTFE TE-3864 that replaces Teflon® PTFE B is an aqueous dispersion containing approximately 61%, by total weight, of active ingredients, which include 0.05 to 0.5 µm polytetrafluoroethylene (PTFE) resin particles. It is a milky white liquid with a pH of 8.5.

Compared with other grades of PTFE dispersions, Teflon® PTFE TE-3864 is a special formulation designed for application to woven glass fabric used to make bags for difficult gaseous filtration or product collection systems. The bags must be self-lubricating and resist clogging for years, while being flexed in high-temperature, corrosive atmospheres.

When properly applied, Teflon® PTFE TE-3864 improves the flex life, heat and chemical resistance, and anti-adhesion behavior of glass fabric, resulting in filter bags with enhanced service life and efficiency. Refer to **Table 1** for typical property data.

### Typical End Products

Large, high-performance filter bags are made of woven glass fabric treated with Teflon® PTFE TE-3864. Principal markets are for pollution control of coal-fired boilers in utility and industrial plants, and for product collection in hostile environments, such as those for producing carbon black.

### Processing

The benefits of Teflon® PTFE TE-3864 are obtained by impregnating glass fabric with the dispersion and heating the treated fabric below the crystalline melting point of the PTFE resin particles. The dispersion wets internal surfaces and promotes penetration of the extremely small particles of PTFE. The unmelted particles are sheared and retained as an impregnant, even when the fabric is exposed in hostile atmospheres.



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Glass filaments are usually sized to protect them from self-abrasion during textile processing. The sizing should be removed before the fabric is finished with Teflon® PTFE TE-3864. A high temperature or chemical treatment is often used.

A conventional textile finishing process is suitable for Teflon® PTFE TE-3864. It should include dip impregnation, squeeze rolling, and baking to dry and alter the ingredients. Recommended nominal loading is 10%, based on the weight of the finished fabric. To achieve this loading, the bath of Teflon® PTFE TE-3864 should be diluted with water to approximately 28% active ingredients.

The dry fabric should be led into and taken from the dip tank with minimal tension to maintain an open structure for impregnation.

Roller nip pressure should be the minimum that is necessary to remove the excess finish. Roll speeds must be synchronized to avoid picking up sheared PTFE on the rolls.

Oven temperature and residence time should be balanced. Five minutes with the oven set at 260°C (500°F) is a suggested starting point.

The finish is properly applied when it resists rewetting with water droplets. The PTFE resin particles must not be melted; this can occur at approximately 337°C (639°F).

## Safety Precautions

### WARNING!

VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using DuPont™ Teflon® PTFE TE-3864, 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 or the "Safe handling of Fluoropolymer dispersions" published by the APME. These documents are 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 TE-3864, 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 TE-3864 fluoropolymer 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

The dispersion particles in Teflon® PTFE TE-3864 will settle on prolonged standing or heating above 66°C (150°F). They usually can be redispersed by mild agitation. Drums may be rolled or the product stirred gently just prior to use.

Both very high and very low temperatures may be detrimental. Dispersions must not be allowed to freeze. The optimum storage temperature range is 7–24°C (45–75°F), with temperatures low in the range preferred. Storage at 7–32°C (45–90°F) is acceptable within nominal shelf life for standard dispersions. If dispersions are to be stored for extended periods beyond their nominal shelf life, low-temperature storage is especially desirable because the particles are harder at lower temperatures and, therefore, are less likely to stick together as they settle.

High-speed stirring, pumping, or any other violent agitation must be avoided to minimize sheared particles or coagulation. Ideally, the dispersion should be conveyed by gravity from storage to processing stations.

Keep dispersion drums closed and clean to avoid both contamination and coagulation by drying at the liquid surfaces. Do not attempt to adjust the pH of Teflon® PTFE TE-3864.

## Freight Classification

Teflon® PTFE TE-3864, when shipped by rail or express, is classified "Plastics, Synthetic, Liquid, NOIBN." Resin shipped by truck is classified "Plastics, Materials, Liquid, NOI."

## Packaging

Teflon® PTFE TE-3864 is packaged in 19- and 114-L (5- and 30-gal) nonreturnable drums.

**Table 1**  
**Typical Property Data for DuPont™ Teflon® PTFE Fluoropolymer Resin Dispersion Grade TE-3864**

<b>Property</b>	<b>ASTM Standard</b>	<b>Unit</b>	<b>Nominal Value</b>
Percent Active Ingredients	DuPont	%	61
Specific Gravity of Dispersion	D4441	—	1.44
Average PTFE Dispersion Particle Size	—	µm	0.22
pH (max.) of Dispersion	E70	—	8.5
Melting, Peak Temperature			
Initial	D1457	°C (°F)	337 (639)
Second	D1457	°C (°F)	327 (621)

**Notes:** Teflon® PTFE TE-3864 is ASTM D4441-04, II 5B.  
Typical properties are not suitable for specification purposes.

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**For more information call (302) 479-7731**

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CAUTION: Do not use in medical applications involving permanent implantation in the human body or contact with internal body fluids or tissues. For other medical applications, see "DuPont Medical Caution Statement," H-50102.

