



# TEFLON

## Also Known As (common industry trade names):

PTFE . TFE . Chemflour . Surf Chemical . Teflon

## Material Description:

Teflon was originally developed for use in aerospace applications but soon found a home in countless industrial applications. Teflon's unique characteristics include: chemical inertness (very few chemicals can attack it), extremely low coefficient of friction (nothing can stick to the material with any strength), high heat resistance (capable of service temperatures of 500° F) and extremely useful in cold temperature environments. The fluoroplastics industry began in 1938. DuPont Company discovered the fluorocarbon poly-tetra-fluoro-ethylene (PTFE). DuPont called it Teflon. Over the past 60 years, the industry has commercialized seven additional fluoroplastics: FEP, PVDF, PFA, ETFE, PCTFE, ECTFE and PVF.

### Applications:

Gaskets  
Washers  
Backup Rings  
Various Packing Material  
Rollers  
Containers  
Sleeves  
Liners  
Conveyor Components  
Bearings  
Insulators

### Characteristics:

Dielectric Properties, High Surface and Volume Resistivity, Corrosion Resistant, Nonflammable, High Heat Resistance, Chemically Inert, Weather Resistant, Low Friction

### Additives:

Graphite . Molybdenum-Disulfide  
Glass-Fiber . Bronze . Carbon . Ceramic  
Eckonol . Calcium-Fluoride . Nickel . Graphite

## Standard Shapes and Sizes (please call for custom sizes not listed):

Sheet:: 48" x 48" sheets, 48" or 60" wide in skived sheets or rolls  
Rod: 1/8" thru 6" (extruded), Larger OD's are available in a molded material  
Tube: Many sizes available, wide range of OD's - Please call for more details  
Film: Readily available, many sizes and types - Please call for more details  
Other: Skived sheets are available up to 60" wide in 100 lb or 200 lb rolls

**(continued - next page)**

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## **TEFLON** (continued - page 2)

PVF (polyvinyl fluoride) has outstanding resistance to weathering and good resistance to abrasion and staining. It is used as a surfacing film for industrial, architectural and decorative building materials.

PTFE (molded) is not able to be melt processed. The resin must be compressed, then sintered (a controlled heat treatment) to produce useful plastic.

FEP (fluorinated ethylene propylene) processes by conventional means. It is extruded and injection molded. It has the chemical resistance, mechanical and electrical properties of PTFE but a more narrow temperature range – maximum temperature is 400F. Commonly used to make chemical resistant tanks and vessels for the corrosive chemical industry.

PVDF (poly-vinylidene fluoride) is not a processable fluoropolymer capable of being injection and compression molded and screw extruded. It is stiffer and resists cold flow better than PTFE, FEP, and PFA. It has a lower useful temperature range (-80 to + 300F). Glass backed sheets of PVDF make liners for vessels as does FEP. Pipe and fittings of PVDF are one of the most economical and chemical resistant, high temperature solid pipe systems available.

PFA (polyfluoroalkoxy) is also melt processable. Its properties are those of PTFE and include resistance to practically all chemicals, the useful temperature range of PTFE, resistance to weathering, low friction coefficient and excellent electrical insulation characteristics. It is however, more expensive than PTFE and FEP resins.

ETFE (ethylene tetra fluoro ethylene) is a copolymer of ethylene and tetrafluoroethylene and is readily processed by conventional methods. It has maximum service temperature of 300F but greater strength and stiffness than PTFE, FEP and PFA. ETFE also has excellent impact strength.

PCTFE (polychlorotrifluoroethylene) is melt processible. Within its service temperature range, it has greater tensile and compressive strength than PCTFE, FEP, or PFA. At high temperatures it is subject to stress cracking. It does not have the solvent resistance of PTFE, FEP, PFA or ETFE. However, its radiation resistance is better than any of these others.

ECTFE (ethylene-chlorotrifluoroethylene) is a copolymer of ethylene and PCTFE. It is melt processible. It has excellent electrical insulating properties. At ambient temperatures its mechanical properties compare to those of nylon 6. It has excellent impact resistance at ambient and sub ambient temperatures. Its service range is -80 to + 300F.

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## PTFE Products

### Texolon® PTFE Rods, Cylinders and Sheet

#### Skived Sheet and Film

Available .001" - .375" thick with widths up to 60". We create continuous rolls or cut to your desired length. Slit rolls, strips or stock sizes available.

#### Molded Sheet

Available .125" - 8" thick, up to 48" x 48" square sheet. Special cut sizes available customized to your specification.

#### Cylinders and Rods

Molded rod and tube 1" to 55" diameter with virtually unlimited tooling combinations to produce the nearest net size to meet any finished size requirement.

#### Customized

Customized PTFE solutions including machining is available for the individualized needs of each customer.

#### High Purity PTFE

Available in all sizes and shapes for critically clean applications.

#### Material Selection

All of our products are available in a variety of PTFE formulations including customized fillers and reinforcements to suit individual applications.

Some of our standard formulations include:

- Style 8764 - Premium Virgin PTFE
- Style 8765 - Virgin PTFE
- Style 9405 - Premium 25% Glass Filled
- Style 9406 - General Purpose 25% Glass Filled
- Style 8595 - Mechanical Grade PTFE
- Style 8790 - Modified PTFE

#### Surface Modification

All of our PTFE sheets, rods, tubes, gaskets or machined parts can be etched on one or multiple surfaces for adhesive bonding.



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## High Purity PTFE Products

### Texolon High Purity Typical Material Properties

#### Typical 8764 THP™ Properties: Premium Virgin PTFE

| Property  | Units                         | ASTM Method  | Typical values <sup>1</sup> |
|---|-------------------------------|--------------|-----------------------------|
| Specific Gravity  |                               | D-792        | 2.14-2.20                   |
| Hardness  | Shore D                       | D-2240       | 52-65                       |
| Tensile Strength  | psi                           | D638, D-1708 | 4000 min                    |
| Elongation  | %                             | D-38, D-1709 | 300 min                     |
| Deformation under load (73 F, 2000 psi, 24 Hrs)         | %                             | D-621        | 15-16                       |
| Coefficient of Linear Thermal Expansion (78° F, -400°F) | In./in./°F                    | D-696        | 4.9 x 10 <sup>-5</sup>      |
| Thermal Conductivity                                    | BTU/hr.ft. <sup>2</sup> /F.in | C-177        | 1.7                         |
| Volume Resistivity                                      | Ohm-cm                        | D-257        | >10 <sup>15</sup>           |
| Dielectric Strength                                     | Volts/mil                     | D-149a       | 600 min                     |

#### Typical Texolon 8790 THP™ Properties: Modified PTFE

| Property            | Units             | ASTM Method | Typical values <sup>1</sup> |
|---------------------|-------------------|-------------|-----------------------------|
| Specific Gravity    | G-Cm <sup>3</sup> | D-792       | 2.14-2.20                   |
| Hardness            | Shore D           | D-2240      | 55-60                       |
| Tensile Strength    | psi               | D-1708      | 4000 min                    |
| Elongation          | %                 | D-1708      | 450 min                     |
| Dielectric Strength | Volts/mil         | D-149a      | 2000 min                    |



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1. The measured values expressed in ranges reflect measurements made both with and across the molding direction of the product. Warning: Properties shown on this document are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. For specific application recommendations, consult Plastomer Technologies. While the utmost care has been used in compiling this document, we assume no responsibility for errors. This edition cancels all previous issues. Subject to change without notice.



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