



Ertalyte® TX Material Data Sheets & Overview

| Property | Method | Unit | Value |
|--|----------------|--------------------------------|-----------------------|
| Mechanical | | | |
| Specific Gravity, 73°F | D792 | | 1.44 |
| Tensile Strength, 73°F | D638 | psi | 11,000 |
| Tensile Modulus of Elasticity, 73°F | D638 | psi | 500,000 |
| Elongation, 73°F | D638 | % | 5.0 |
| Flexural Strength, 73°F | D790 | psi | 14,000 |
| Flexural Modulus, 73°F | D790 | psi | 360,000 |
| Shear Strength, 73°F | D732 | psi | 8,500 |
| Compressive Strength, 10% Def., 73°F | D695 | psi | 15,250 |
| Compressive Modulus of Elasticity, 73°F | D695 | psi | 400,000 |
| Hardness, Rockwell, Scale as noted, 73°F | D785 | | M94 |
| Izod Impact (notched), 73°F | D256 Type A | ft-lb/in | 0.4 |
| Coefficient of Friction (Dry vs Steel) Dynamic | PTM55007 | | 0.19 |
| Limiting PV, 73°F | PTM55007 | psi-fpm | 6,000 |
| k (wear) factor | PTM55010 | | 35 |
| Thermal | | | |
| Coefficient of linear Thermal Expansion | E-831(TMA) | in/in/°F | 4.50x10 ⁻⁵ |
| Deflection Temperature 264 psi | D648 | °F | 180 |
| Melting Point (crystalline) peak | D3418 | °F | 491 |
| Continuous Service Temperature in Air (Max.) | | °F | 210 |
| Thermal Conductivity | | BTU-in/(hr-ft ² °F) | 1.90 |
| Electrical | | | |
| Surface Resistivity | EOS/ESD S11.11 | Ohm/square | >10 ¹³ |
| Chemical | | | |
| Acids, Weak, 73°F/23°C, acetic acid, dilute hydrochloric or sulfuric | | | Acceptable Service |
| Acids, Strong, 73°F/23°C, conc. hydrochloric or sulfuric | | | Limited Service |
| Alkalies, Weak, 73°F/23°C, dilute ammonia or sodium hydroxide | | | Acceptable Service |
| Alkalies, Strong, 73°F/23°C, conc. ammonia or sodium hydroxide | | | Unacceptable |
| Hydrocarbons-Aromatic, 73°F/23°C, benzene, toluene | | | Acceptable Service |
| Hydrocarbons-Aliphatic, 73°F/23°C, gasoline, hexane, grease | | | Acceptable Service |

| | | | |
|---|-----------------|-----|--------------------|
| Ketones, Esters, 73°F/23°C, acetone, methyl ethyl ketone | | | Limited Service |
| Ethers, 73°F/23°C, diethyl ether, tetrahydrofuran | | | Acceptable Service |
| Chlorinated Solvents, 73°F/23°C, methylene chloride, chloroform | | | Unacceptable |
| Alcohols, 73°F/23°C, methanol, ethanol, anti-freeze | | | Acceptable Service |
| Inorganic Salt Solutions, 73°F/23°C, sodium chloride, potassium cyanate | | | Acceptable Service |
| Continuous Sunlight, 73°F/23°C | | | Limited Service |
| Miscellaneous | | | |
| Water Absorption Immersion, 24 hr | D570 | % | 0.06 |
| Water Absorption Immersion, Sat. | D570 | % | 0.47 |
| Ionic Impurities - Na (Sodium) | Total Digestion | ppm | 2.00 |
| Ionic Impurities - K (Potassium) | Total Digestion | ppm | 12.00 |
| Ionic Impurities - Fe (Iron) | Total Digestion | ppm | 8.00 |
| Compliance | | | |
| UL94 | | | HB |
| FDA | | | Yes |
| USDA | | | Yes |
| 3A-Dairy | | | Yes |

Ertalyte® TX Offers Greater Wear Resistance and Dimensional Stability than Acetal or Nylon

Ertalyte® TX has wear-resistance and dimensional stability surpassing other common wear grade plastics, and excellent resistance to many harsh chemicals, including aggressive food products, cleaning solutions and petroleum products. It outlasts unfilled nylons (PA) by a minimum factor of 8 and lasts a minimum of 50 times longer than unfilled acetals (POM) - Fig. 1 Even industry-standard wear materials like PTFE filled acetal and oil filled nylon are no match for the performance of Ertalyte TX. Because of the material's unique composition, its wear resistance increases as bearing velocities increase. Adding to the product's strengths are its ability to maintain tight dimensions and close tolerances in wet environments unsuitable for nylon materials.

Ertalyte® TX Outperforms Acetal and Nylon

(Bar charts comparing)

Wear Resistance (lower is better, relative at 436 psi/121 fpm)

| | |
|----------------|----|
| Ertalyte TX | 1 |
| Acetal (POM-C) | 50 |
| Nylon | 8 |

CLTE (in/in/F)

| | |
|----------------|------------------------|
| Ertalyte TX | 4.5 x 10 ⁻⁵ |
| Acetal (POM-C) | 5.4 x 10 ⁻⁵ |
| Nylon | 5.5 x 10 ⁻⁵ |

Water absorption

(% by wt.)

| | |
|--------------------------|------|
| Ertalyte TX (24 hours) | 0.06 |
| Ertalyte TX (saturation) | 0.47 |

Acetal (24 hours) 0.20
Acetal (saturation) 0.90

Nylon (24 hours) 0.30
Nylon (saturation) 7.00

Useful pH Range

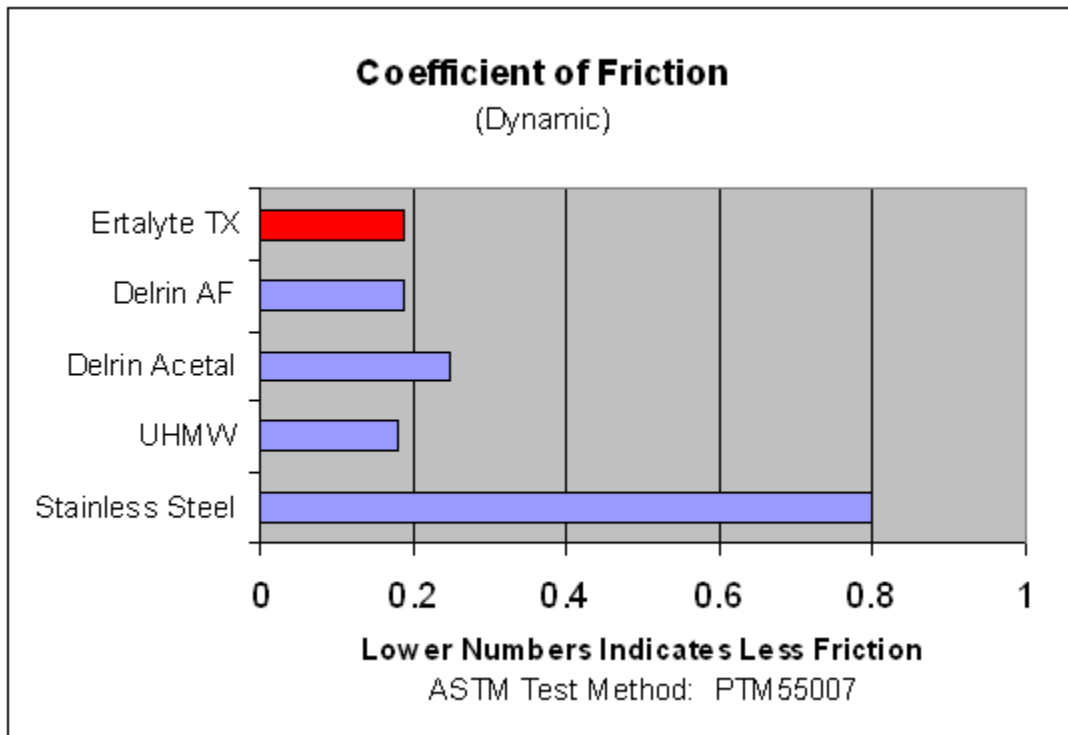
Ertalyte TX 2 to 9
Acetal (POM-C) 5 to 9.5

Nylon 4 to 11

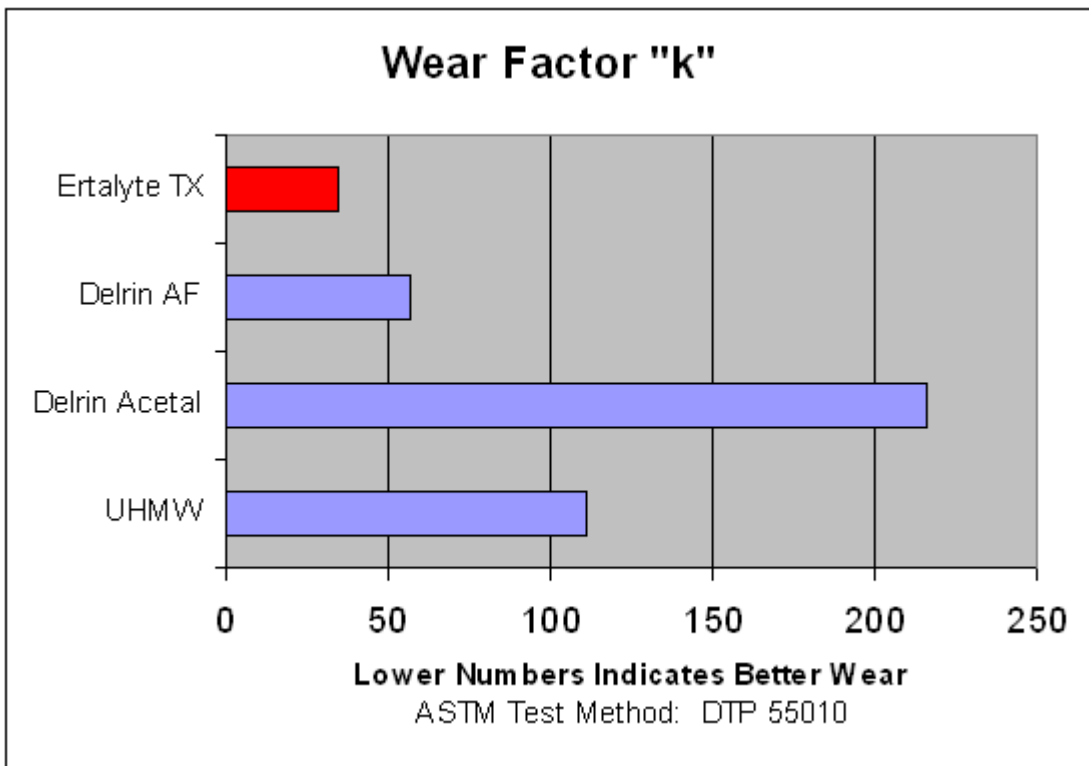
Ertalyte TX is one of Quadrant's expanding range of Extreme Materials, an enhanced-performance product line based on the company's proprietary technology and formulations. Offered in rod and sheet, Ertalyte TX is used for machined mechanical components, involving both high-pressure and high-velocity conditions. The enhanced wear material is also well-suited for applications involving soft metal and plastic mating surfaces, including gears and bearings which require no startup or running lubrication. Further, since Ertalyte TX has FDA and USDA compliance, it can be used for machined components for food packaging and processing equipment.

Ertalyte TX, developed and manufactured by Quadrant Engineering Plastic Products, is an unreinforced, semi-crystalline thermoplastic polyester (PET-P) with an integral solid lubricant for improved wear and slip-stick resistance. It is available from stock in many rod and sheet sizes. Custom sized rod and sheet as well as tubular shapes are possible.

Ertalyte TX is an internally lubricated thermoplastic polyester that provides enhanced wear and inertness over general-purpose nylon and acetyl products. Ertalyte TX contains a uniformly dispersed solid lubricant, providing a lower wear rate and coefficient of friction than unmodified polyesters like PET or PBT and even internally lubricated materials like Delrin AF.

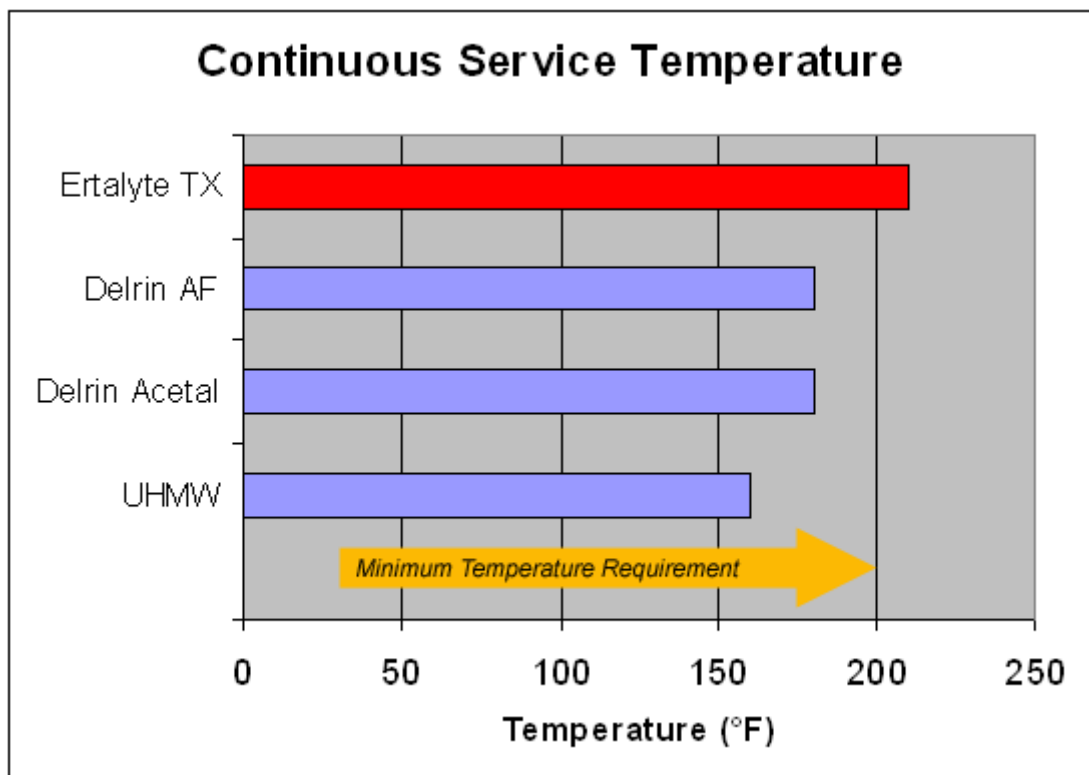


Ertalyte TX is 421% more lubricious than stainless steel AND dampens vibration.



$$k = \text{in.}^3\text{-min/ft. lbs. hr.} \times 10^{-10}$$

Though thermoplastics have their benefits, using just any thermoplastic would not be ideal. Durability is also an issue that must be considered. As shown in the table above, some materials wear more quickly than others do. If lesser materials are used, premature wear can result. Whereas UHMW had the lowest coefficient of friction, it also has inferior wear characteristics. What good is a pivot that wears out too quickly? **Ertalyte TX is 315% more durable than UHMW.**



At 200°F. some thermoplastics can start losing their advertised chemical and physical properties. Extended exposure to higher service temperatures cause some thermoplastic parts to become brittle, and eventually fail. **None of the above listed thermoplastics meet the requirement of 200°F, except for Ertalyte TX.**

**Call Professional Plastics at (800) 966-7767 or
E-Mail sales@proplas.com
Order Online at www.professionalplastics.com**