

DuPont Delrin® AF Blend, Acetal homopolymer, PTFE-filled, extruded

Material Notes:

Delrin* AF Blend acetal is a unique thermoplastic material for use in moving parts in which low friction and long wear are important. It is a combination of Teflon* fibers uniformly dispersed in Delrin acetal resin. This combination produces a material that has strength, toughness, dimensional stability and good machinability, plus improved wear characteristics over unfilled Delrin. Delrin AF Blend, most commonly supplied as a 2:1 blend of Delrin AF100 and Delrin 150 resins, has excellent sliding/friction properties. Bearings made of Delrin AF Blend sustain high loads when operating at high speeds and show reduced wear. These bearings are also essentially free of slip-stick behavior because the static and dynamic coefficient of friction are closer than with most plastics. Delrin AF Blend retains much of the strength that is inherent in unmodified Delrin acetal. Some properties are changed due to the addition of the softer Teflon fiber. The natural color of Delrin AF Blend is dark brown.

Data provided by Quadrant Engineering Plastic Products from tests on stock shapes and parts produced by Quadrant EPP.

Physical Properties	Metric	English	Comments
Specific Gravity	1.5 g/cc	0.0542 lb/in ³	ASTM D792
Water Absorption	0.2 %	0.2 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	1 %	1 %	Immersion; ASTM D570(2)
Mechanical Properties			
Hardness, Rockwell M	85	85	ASTM D785
Hardness, Rockwell R	115	115	ASTM D785
Hardness, Shore D	83	83	ASTM D2240
Tensile Strength, Ultimate	55.2 MPa	8000 psi	ASTM D638
Elongation at Break	15 %	15 %	ASTM D638
Tensile Modulus	3 GPa	435 ksi	ASTM D638
Flexural Modulus	3.07 GPa	445 ksi	ASTM D790
Flexural Yield Strength	82.7 MPa	12000 psi	ASTM D790
Compressive Strength	110 MPa	16000 psi	10% Def.; ASTM D695
Compressive Modulus	2.41 GPa	350 ksi	ASTM D695
Shear Strength	52.4 MPa	7600 psi	ASTM D732
Coefficient of Friction	0.19	0.19	Dry vs. Steel; QTM55007
K (wear) Factor	121 x 10 ⁻⁸ mm ³ /N-M	60 x 10 ⁻¹⁰ in ³ -min/ft-lb-hr	QTM 55010
Limiting Pressure Velocity	0.291 MPa-m/sec	8300 psi-ft/min	4:1 safety factor; QTM 55007
Izod Impact, Notched	0.374 J/cm	0.7 ft-lb/in	ASTM D256 Type A
Electrical Properties			
Surface Resistivity per Square	Min 1e+013 ohm	Min 1e+013 ohm	EOS/ESD S11.11
Dielectric Constant	3.1	3.1	1MHz; ASTM D150
Dielectric Strength	15.7 kV/mm	400 V/mil	Short Term; ASTM D149
Dissipation Factor	0.01	0.01	1MHz; ASTM D150
Thermal Properties			
CTE, linear 68°F	90 μm/m-°C	50 μin/in-°F	(-40°F to 300°F); ASTM E831
Melting Point	175 °C	347 °F	Crystalline, Peak; ASTM D3418

Maximum Service Temperature, Air	82.2 °C	180 °F	Long Term
Deflection Temperature at 1.8 MPa (264 psi)	118 °C	244 °F	ASTM D648
Flammability, UL94*	HB	HB	1/8 inch (Estimated Rating)

Qualitative Processing Properties

Compliance - FDA	Not Compliant	
Machinability	1	1-10, 1=Easier to Machine
Service in Alcohols	Acceptable	
Service in Aliphatic Hydrocarbons	Acceptable	
Service in Aromatic Hydrocarbons	Acceptable	
Service in Chlorinated Solvents	Limited	
Service in Ethers	Acceptable	
Service in Ketones	Acceptable	
Service in Strong Acids	Unacceptable	
Service in Strong Alkalies	Unacceptable	
Service in Sunlight	Limited	
Service in Weak Acids	Limited	
Service in Weak Alkalies	Acceptable	

All statements, technical information and recommendations contained in this database are presented in good faith, based upon tests believed to be reliable and practical field experience. The reader is cautioned, however, that Quadrant EPP and Automation Creations, Inc. cannot guarantee the accuracy or completeness of this information, and it is the customer's responsibility to determine the suitability of Quadrant EPP's products in any given application.

* This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.