QUADRANT
ENGINEERING PLASTIC PRODUCTS

Quadrant EPP Acetron® AF POM-H, Acetal homopolymer, PTFE-filled, extruded (ASTM Product Data Sheet)

Categories: Polymer; Thermoplastic; Acetal (POM); Acetal Homopolymer, PTFE-Filled

Material Notes: Acetron AF POM-H 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.

- Low moisture absorption
- High strength, stiffness
- Easy to machine
- No centerline porosity in Acetron® GP
- Many formulation options: Copolymer, Homopolymer, PTFE filled, and Internally lubricated/enhanced wear grade

Key Words: POM, Polyoxymethylene; Polyformaldehyde; Polyacetal

Physical Properties	Metric	English	Comments
Specific Gravity	1.50 g/cc	1.50 g/cc	ASTM D792
Water Absorption	0.20 %	0.20 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	1.0 %	1.0 %	Immersion; ASTM D570(2)

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	85	85	ASTM D785
Hardness, Rockwell R	115	115	ASTM D785
Hardness, Shore D	83	83	ASTM D2240
Tensile Strength	55.2 MPa	8000 psi	ASTM D638
Elongation at Break	15 %	15 %	ASTM D638
Tensile Modulus	3.00 GPa	435 ksi	ASTM D638
Flexural Strength	82.7 MPa	12000 psi	ASTM D790
Flexural Modulus	3.07 GPa	445 ksi	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
Izod Impact, Notched	0.374 J/cm	0.700 ft-lb/in	ASTM D256 Type A
Coefficient of Friction, Dynamic	0.19	0.19	Dry vs. Steel; QTM55007
K (wear) Factor	121 x 10^{-8} mm³/N-M	60.0 x 10^{-10} in³-min/ft-lb-hr	QTM 55010
Limiting Pressure Velocity	0.291 MPa-m/sec	8300 psi-ft/min	4:1 safety factor; QTM 55007

Electrical Properties	Metric	English	Comments
Surface Resistivity per Square	>= 1.00e+13 ohm	>= 1.00e+13 ohm	EOS/ESD S11.11
Dielectric Constant	3.1 @Frequency 1e+6 Hz	3.1 @Frequency 1e+6 Hz	ASTM D150
Dielectric Strength	15.7 kV/mm	400 kV/in	Short Term; ASTM D149
Dissipation Factor	0.010 @Frequency 1e+6 Hz	0.010 @Frequency 1e+6 Hz	ASTM D150

Thermal Properties	Metric	English	Comments
CTE, linear	90.0 µm/m-°C @Temperature -40.0 - 149 °C	50.0 µin/in-°F @Temperature -40.0 - 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)

Compliance Properties	Metric	English	Comments
3A-Dairy	No	No	
Canada AG	No	No	
FDA	No	No	
NSF	No	No	
USDA	No	No	
USP Class VI	No	No	

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Chemical Resistance Properties	Metric	English	Comments
Acids, Strong (pH 1-3)	Unacceptable	Unacceptable	
Acids, Weak	Limited	Limited	
Alcohols	Acceptable	Acceptable	
Alkalies, Strong (pH 11-14)	Unacceptable	Unacceptable	
Alkalies, Weak	Acceptable	Acceptable	
Chlorinated Solvents	Limited	Limited	
Conductive / Static Dissipative	No	No	
Continuous Sunlight	Limited	Limited	
Hot Water / Steam	Limited	Limited	
Hydrocarbons - Aliphatic	Acceptable	Acceptable	
Hydrocarbons - Aromatic	Acceptable	Acceptable	
Inorganic Salt Solutions	Acceptable	Acceptable	
Ketones, Esters	Acceptable	Acceptable	

Descriptive Properties			
Machinability		1	1-10, 1=Easier to Machine