

GUR® 4170

Ultra High Molecular Weight Polyethylene

Celanese Corporation

Message:

GUR 4170 UHMW-PE is a linear specialty polyolefin resin in powder form with a molecular weight of approximately 10.5 MM g/mol calculated using Margolies' equation. The extremely high molecular weight of this resin yields several unique properties including superior abrasion resistance and impact strength. This grade has the best abrasion resistance of all grades. Outstanding properties include a low coefficient of friction that results in self-lubricating, non-stick surfaces after processing. The resin is normally processed by compression molding or ram extrusion.

General Information	
Features	Good Abrasion Resistance
	Good Impact Resistance
	Low Friction
	Ultra High Molecular Weight
RoHS Compliance	Contact Manufacturer
Forms	Powder
Processing Method	Compression Molding
	Extrusion

Physical	Nominal Value	Unit	Test Method
Specific Gravity			
--	0.928	g/cm ³	ASTM D792
--	0.930	g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR)			
190°C/21.6 kg	< 0.10	g/10 min	ASTM D1238
190°C/2.16 kg	< 0.10	g/10 min	ISO 1133
Water Absorption			ISO 62
Saturation, 23°C	< 0.010	%	
Equilibrium, 23°C, 50% RH	< 0.010	%	
Viscosity Number	4300	cm ³ /g	ISO 307
Elongational Stress F - 150/10	0.700	MPa	ISO 1152-2
Intrinsic Viscosity	35	dl/g	ISO 1628-3
Abrasion Loss	70.0		Internal Method
Wear by Sandslurry Method ¹	70.0		Internal Method
Charpy Impact Strength ²	50.0	kJ/m ²	ISO 1152-2
Hardness	Nominal Value	Unit	Test Method
Durometer Hardness			
Shore D	60		ASTM D2240
Shore D, 15 sec	60		ISO 868
Ball Indentation Hardness ³	35.0	MPa	ISO 2039-1

Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus	570	MPa	ISO 527-2/1A/1
Tensile Stress (Yield)	17.0	MPa	ISO 527-2/1A/50
Tensile Strain (Yield)	20	%	ISO 527-2/1A/50
Nominal Tensile Strain at Break	> 50	%	ISO 527-2/1A/50
Tensile Creep Modulus			ISO 899-1
1 hr	370	MPa	
1000 hr	180	MPa	
Thermal	Nominal Value	Unit	Test Method
Heat Deflection Temperature			
0.45 MPa, Unannealed	65.0	°C	ISO 75-2/B
1.8 MPa, Unannealed	42.0	°C	ISO 75-2/A
Vicat Softening Temperature	80.0	°C	ASTM D1525, ISO 306/B50
CLTE - Flow	2.0E-4	cm/cm/°C	ASTM D696, ISO 11359-2
Specific Heat			Internal Method
--	1840	J/kg/°C	
23°C	1840	J/kg/°C	
Thermal Conductivity (23°C)	0.41	W/m/K	Internal Method
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity			
--	> 1.0E+13	ohms	ASTM D257
--	> 1.0E+12	ohms	IEC 60093
Volume Resistivity			
--	> 1.0E+15	ohms·cm	ASTM D257
--	> 1.0E+14	ohms·cm	IEC 60093
Electric Strength	45	kV/mm	IEC 60243-1
Dielectric Constant			
1 MHz	3.00		ASTM D150, IEC 60250
100 Hz	2.10		IEC 60250
Dissipation Factor			IEC 60250
100 Hz	3.9E-4		
1 MHz	1.0E-3		
Comparative Tracking Index	600	V	IEC 60112
Flammability	Nominal Value	Unit	Test Method
Flame Rating (1.60 mm)	HB		UL 94
NOTE			
1.	Based on GUR 4120=100		
2.	14° V-notch both sides		
3.	30 sec		

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