

GUR® 4113

Ultra High Molecular Weight Polyethylene

Celanese Corporation

Message:

GUR 4113 UHMW-PE is a linear polyolefin in powder form with a molecular weight of approximately 3.9 MM g/mol calculated using Margolies' equation. This resin has good abrasion resistance, low frictional properties and a high notched impact strength of > 170 kJ/m². The resin is normally used for compression molding of thin sheets.

General Information			
Features	Good Abrasion Resistance		
	High Impact Resistance		
	Low Friction		
Uses	Sheet		
RoHS Compliance	Contact Manufacturer		
Forms	Powder		
Processing Method	Compression Molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity			
--	0.928	g/cm ³	ASTM D792
--	0.940	g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR)			
190°C/21.6 kg	< 0.10	g/10 min	ASTM D1238
190°C/21.6 kg	< 1.0	g/10 min	ISO 1133
Water Absorption			ISO 62
Saturation, 23°C	< 0.010	%	
Equilibrium, 23°C, 50% RH	< 0.010	%	
Viscosity Number	2000	cm ³ /g	ISO 307
Elongational Stress F - 150/10	0.130	MPa	ISO 1152-2
Intrinsic Viscosity	18	dl/g	ISO 1628-3
Abrasion Loss	110		Internal Method
Wear by Sandslurry Method ¹	110		Internal Method
Charpy Impact Strength ²	170	kJ/m ²	ISO 1152-2
Hardness	Nominal Value	Unit	Test Method
Durometer Hardness			
Shore D	64		ASTM D2240
Shore D, 15 sec	62		ISO 868
Ball Indentation Hardness ³	38.0	MPa	ISO 2039-1
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus	750	MPa	ISO 527-2/1A/1
Tensile Strength			

Yield, 23°C	21.4	MPa	ASTM D638
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	450	MPa	
1000 hr	250	MPa	
Coefficient of Friction (vs. Steel - Dynamic)	0.10		Internal Method
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			
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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Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China



WECHAT