

Ultra High Molecular Weight Polyethylene (UHMWPE) UTEC6541

Description:

UTEC6541 is an Ultra High Molecular Weight Polyethylene with a molecular weight about 10 times higher than High Density Polyethylene (HDPE) resins. This extremely high molecular weight yields several unique properties to this polymer such as high abrasion resistance and impact strength and low coefficient of friction, what makes it a self-lubricating material.

Applications:

Applications which require highest wear resistance and the use of pigments and/or additives – technical parts RAM extruded and compression molded sheets, rods and profiles.

Physical Properties:

	Method	Units	Values
Intrinsic Viscosity	ASTM D 4020	dL/g	28
Average Molecular Weight	Internal	g/mol	8.0x106
Density	ASTM D 792	g/cm3	0.925
Bulk Density	ASTM D 1895	g/cm3	0.45
Average Particle Size Dp50	ASTM D 1921	µm	150

Mechanical Properties:

	Method	Units	Values
Tensile Strength at Yield	ASTM D 638 ISO 527	MPa	≥ 17
Tensile Strength at Break	ASTM D 638 ISO 527	MPa	> 30
Ultimate Elongation	ASTM D 638 ISO 527	%	> 300 > 350
Notched Izod Impact Strength	ASTM D 256	J/m	No break
Charpy Impact Strength*	ISO 11542-2	KJ/m2	> 100
Abrasion Index (reference ISO 15527 = 100)	Sand slurry – Internal	-	76
Abrasion Index (reference Stainless Steel SAE1020 = 100)	Sand slurry - Internal	-	20
Static Friction Coefficient	ASTM D 1894	-	0.10
Kinetic Friction Coefficient	ASTM D 1894	-	0.09
Shore D Hardness	ASTM D 2240 ISO 868	-	64
Shore D Hardness (15 sec)	ASTM D 2240 ISO 868	-	59

* Determined with double-notched specimens (14° v-notch on both sides) in accordance with ISO 11542-2.





Data Sheet

Thermal Properties:

	Method	Units	Values
Melt Temperature	ASTM D 3418	°C	133
Vicat Softening Temperature at 1Kg	ASTM D 1525 ISO 306	°C	128
Heat Deflection Temperature	ASTM D 648	-	-
-- @ 0.45 N/mm ²	-	°C	79
-- @ 1.81 N/mm ²	-	°C	48
Thermal Conductivity @ 23°C	ASTM D 177	W/m.K	0.4
Coefficient of Linear Expansion (between – 30°C and 100°C)	ASTM D 696	10 -4 /°C	1.5
Specific Heat @ 23°C	ASTM E 1269	cal/g°C	0.48
Specific Melt Enthalpy	ASTM D 3418	cal/g	34

Electrical Properties:

	Method	Units	Typical Values
Volume Resistivity	ASTM D 257	ohm.cm	> 1014
Surface Resistivity	ASTM D 257	ohm	> 1012
Dielectric Strength	ASTM D 149	kV/cm	900
Dielectric Constant @ 1KHz	ASTM D 150	-	2.3

Other Properties:

	Method	Units	Typical Values
Water Absorption	ASTM D 570	%	0.01

