

## Technical Data Sheet

# EtroX<sup>®</sup> I CM natural

PI

### Typical characteristics

- Heat resistant
- High mechanical strength
- Low creep tendency
- High impact resistance
- High stiffness
- Good dimensional stability

### Typical industries

- Electronics
- Semiconductor Industry
- Aerospace
- Vehicle Construction
- Semiconductor Front-End applications
- Semiconductor Wafer Handling
- Semiconductor Back-End applications
- Semiconductor High and low temperature
- Semiconductor Dicing

	Test method	Unit	Guideline value
<b>General properties</b>			
Density	DIN EN ISO 1183-1	g / cm <sup>3</sup>	1,37
Water absorption	DIN EN ISO 62 (23°C / 24h)	%	0,6
Water absorption	DIN EN ISO 62 (23°C / 48h)	%	0,8
Water absorption	DIN EN ISO 62 (23°C / 3 Weeks)	%	2,4
<b>Mechanical properties</b>			
Elongation at break	DIN EN ISO 527	%	8
Tensile modulus of elasticity	DIN EN ISO 527	MPa	3600
Tensile strength	DIN EN ISO 527	MPa	145
Notched impact strength	DIN EN ISO 179	kJ / m <sup>2</sup>	10
Shore hardness	DIN EN ISO 868	scale D	89
Ball indentation hardness	DIN EN ISO 2039-1	MPa	240
Elastic modulus of compression	DIN EN ISO 604	MPa	4200
Tensile creep modulus, 1h	ISO 899-1	MPa	3390
Tensile creep modulus, 1000h	ISO 899-1	MPa	2730

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	Test method	Unit	Guideline value
<b>Thermal properties</b>			
Glass transition temperature	ISO 11357-3	°C	323
Service temperature, short term (max.)	Average	°C	380
Mean coefficient of linear thermal expansion	ISO 11359-2	K <sup>-1</sup>	41
Heat deflection temperature	DIN EN ISO 75	°C	319
Temp. of deflection under load, 1.80 MPa	ISO 75-1/-2	°C	319
Temp. of deflection under load, 0.45 MPa	ISO 75-1/-2	°C	343
<b>Electrical properties</b>			
Volume resistivity	DIN EN 62631-3-1	Ω * cm	> 10 <sup>15</sup>
Dielectric constant @ 100Hz	IEC 60250		4,2
Dielectric constant @ 1kHz	IEC 60250		4,2
Dielectric constant @ 10kHz	IEC 60250		4,1
Dielectric constant @ 100 kHz	IEC 60250		4,1
Dielectric constant @ 10GHz	IEC 61189-2-721		3,4
Dielectric constant @ 40GHz	IEC 61189-2-721		3,3
Dielectric constant @ 100GHz	IEC 61189-2-721		3,2
Specific Volume resistivity	IEC 60093	Ωm	8*10 <sup>13</sup>
Specific Surface resistivity	IEC 60093	Ω	5*10 <sup>15</sup>
Relative permittivity, 100Hz	IEC 62631-2-1	-	3,5
Relative permittivity, 1MHz	IEC 62631-2-1	-	3,4
Dissipation factor, 1 MHz	IEC 62631-2-1	E-4	80
Electric strength	IEC 60243-1	kV / mm	34

The short-term maximum application temperature only applies to very low mechanical stress for a few hours. The long-term maximum application temperature is based on the thermal ageing of plastics by oxidation, resulting in a decrease of the mechanical properties. This applies to an exposure to temperatures for at least 5.000 hours causing a 50% loss of the tensile strength from the original value (measured at room temperature). This value says nothing about the mechanical strength of the material at high application temperatures. In case of thick-walled parts, only the surface layer is affected by oxidation from high temperatures. With the addition of antioxidants, a better protection of the surface layer is achieved. In any case, the center area of the material remains unaffected. The minimum application temperature is basically influenced by possible stress factors like impact and/or shock under application. The values stated refer to a minimum degree of impact stress. The electrical properties as stated result from measurements on natural, dry material. With other colours (in particular black) or saturated material, there may be clear differences in the electrical properties. The data stated above are average values ascertained by statistical tests on a regular basis. They are in accordance with DIN EN 15860. They serve as information about our products and are presented as a guide to choose from our range of materials. This, however, does not include an assurance of specific properties or the suitability for particular application purposes that are legally binding. Since the properties also depend on the dimension of the semi-finished products and the degree of crystallization (e.g. nucleating by pigments), the actual values of the properties of a particular product may differ from the indicated values.

