

## ZEONOR® 1020R

### Medical Grade

Cyclo-Olefin Polymer resin that has a low Tg and high elongation at break. Suitable for applications requiring cold temperature storage down to -194 °C due to increased flexibility. Compatible with EtO, Gamma irradiation and vaporized hydrogen peroxide sterilization.

Property	Value	Unit	Test Standard
<b>Physical Properties</b>			
Density	1.006	kg/m <sup>3</sup>	ASTM D792
Melt flow rate (MFR) (280 °C, 21.18 N)	19.6	g/10min	JIS K719, ISO 1133
Water absorption (23 °C-sat)	0.01	%	ASTM D570
Water vapor transmission (40 °C, 90% rh, @100µm thickness)	1.1	g/(m <sup>2</sup> ·day)	ASTM F1249
Oxygen transmission (23 °C, 0% rh, @100µm thickness)	365.5	cm <sup>3</sup> / (m <sup>2</sup> ·day·atm)	ASTM D3985
<b>Mechanical Properties</b>			
Tensile modulus (1 mm/min)	310	kpsi	ISO 527
Tensile stress at yield (5 mm/min)	7514	psi	ISO 527
Tensile stress at break (5 mm/min)	6454	psi	ISO 527
Tensile stress (5 mm/min)	7514	psi	ISO 527
Tensile strain at break (5 mm/min)	89	%	ISO 527
Flexural modulus	300	kpsi	ISO 178
Flexural strength	11767	psi	ISO 178
Charpy impact strength @ 23 °C	138*	ft-lbs/in <sup>2</sup>	ISO 179 / 1eU
Charpy impact strength @ -20 °C	162*	ft-lbs/in <sup>2</sup>	ISO 179 / 1eU
Charpy impact strength @ -80 °C	90.4	ft-lbs/in <sup>2</sup>	ISO 179 / 1eU
Charpy impact strength @ -194 °C	57.1	ft-lbs/in <sup>2</sup>	ISO 179 / 1eU
<b>Thermal Properties</b>			
Glass transition temperature (20 °C/min)	101.7	°C	JIS K7121
DTUL @ 1.82 MPa	88.5	°C	ASTM D648
Flammability @ 1.5 mm nom. thickn.	HB	UL94	HB
<b>Electrical Properties</b>			
Dielectric constant at 1 GHz	2.3	-	IEC 62810
Volume resistivity	2.6E+16	Ω·m	IEC 62631-3-1
<b>Optical Properties</b>			
Deg. of light transmission (t = 3mm)	91.5	%	ASTM D1003

Typical properties. Not to be used for purposes of establishing specification(s).

\* No break observed during testing, indicating the impact strength is greater than the value shown in the table.

COP medical grades (ZEONEX®5000, ZEONEX®690R, ZEONEX®790R, ZEONOR®1020R) have been assessed for compliance with USP Class VI <87>, <88> and <661.1>, ISO10993, EU 3.1.3 and 3.1.5, and JP 7.02. FDA DMF and more information available upon request.

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