

## Cyclo-Olefin Polymer Diagnostic Grades

Property	Test Standard	Unit	ZEONOR® 1020R*	ZEONOR® 1060R	ZEONOR® 1420R	ZEONOR® 1430R
<b>Physical Properties</b>						
Specific gravity	ASTM D792	-	1.01	1.01	1.02	1.02
Melt flow rate (MFR) (280 °C, 21.18 N)	ISO 1133 JIS K719	g/10min	20	60	17	30
Water absorption (23 °C/24 hrs)	ASTM D570	%	<0.01	<0.01	<0.01	<0.01
Water vapor transmission (40 °C, 90% rh, @100µm)	ASTM F1249	g/m <sup>2</sup> ·day	1.1	/	1.0	/
Oxygen transmission (23 °C, 0% rh, @100µm)	ASTM D3985	cm <sup>3</sup> / (m <sup>2</sup> ·day·atm)	366	/	347	/
<b>Optical Properties</b>						
Light transmittance (3mm thickness)	ASTM D1003	%	>90	>90	>90	>90
<b>Mechanical Properties</b>						
Tensile strength	ISO 527	psi	7500	7500	9100	9300
Tensile modulus	ISO 527	kpsi	320	320	360	360
Flexural strength	ISO 178	psi	12000	12000	15000	15000
Flexural modulus	ISO 178	kpsi	300	300	330	330
Elongation at break	ISO 527	%	104	13	61	61
Izod impact strength (23 °C, 3.2 mm with notch )	ASTM D256	J/m	40	34	25	24
<b>Thermal Properties</b>						
Glass transition temperature (20 °C/min)	JIS K7121	°C	100	97	136	134
Heat deflection temperature (0.45 MPa)	ASTM E831	°C	88	88	120	119
Coefficient of linear thermal expansion (1.82MPa)	ASTM D648	cm/cm °C	6E-05	6E-05	6E-05	6E-05
<b>Solvent Compatibility</b>						
Alcohols			Good	Good	Good	Good
Acids/Bases			Good	Good	Good	Good

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

\*ZEONOR® 1020R has 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 Drug Master File and more information available upon request.

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