

## **Medical Grade Resins**

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 Drug Master File available upon request.

Property	Test Standard	Unit	ZEONEX® 690R	ZEONEX® 790R	ZEONOR® 1020R	ZEONEX® 5000
Physical Properties						
Density	ASTM D792	kg/m³	1.018	1.022	1.006	1.003
Melt flow rate (MFR) (280 °C, 21.18 N)	JIS K719 ISO 1133	g/10min	16.9	6.7	19.6	8.4 (230 °C)
Water absorption (23 °C-sat)	ASTM D570	%	0.01	0.01	0.01	0.01
Water vapor transmission (40 °C, 90% rh, @100µm thickness)	ASTM F1249	g/(m²·day)	1.0	1.1	1.1	0.8
Oxygen transmission (23 °C, 0% rh, @100µm thickness)	ASTM D3985	cm <sup>3</sup> / (m <sup>2</sup> ·day·atm)	346.5	463.8	365.5	200.9
Mechanical Properties						
Tensile modulus (1 mm/min)	ISO 527	kpsi	355	386	310	278
Tensile stress at yield (5 mm/min)	ISO 527	psi	9185	10636	7514	6374
Tensile stress at break (5 mm/min)	ISO 527	psi	6937	7581	6454	5875
Tensile stress (5 mm/min)	ISO 527	psi	9185	10636	7514	6374
Tensile strain at break (5 mm/min)	ISO 527	%	61	43	89	140
Flexural modulus	ISO 178	kpsi	331	363	300	260
Flexural strength	ISO 178	psi	14649	16969	11767	9487
Charpy impact strength @ 23 °C	ISO 179/1eU	ft-lbs/in²	61.9	1	138*	114*
Charpy impact strength @ -20 °C	ISO 179/1eU	ft-lbs/in²	61.9	1	162*	138*
Charpy impact strength @ -80 °C	ISO 179/1eU	ft-lbs/in²	47.6	1	90.4	138
Charpy impact strength @ -194 °C	ISO 179/1eU	ft-lbs/in²	29.5	1	57.1	47.6
Thermal Properties						
Glass transition temperature (20 °C/min)	JIS K7121	.€	136.0	161.7	101.7	68.9
DTUL @ 1.82 MPa	ASTM D648	°C	119.7	142.8	88.5	63.0
Optical Properties						
Deg. of light transmission (t = 3mm)	ASTM D1003	%	91.5	91.5	91.5	91.4
Sterilization Compatibility						
Ethylene Oxide			<b>/</b>	<b>/</b>	<b>✓</b>	<b>✓</b>
Gamma irradiation			<b>V</b>	<b>/</b>	<b>/</b>	<b>/</b>
Steam / autoclave			<b>V</b>	<b>/</b>	X	X
Vaporized hydrogen peroxide			<b>/</b>	<b>/</b>	<b>/</b>	<b>/</b>

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

 ${\sf ZEON} \ | \ www.zeonsmi.com \ | \ {\sf customerservice@zeonsmi.com} \ | \ {\sf +1-408-641-7899} \ ({\sf USA}) \ | \ {\sf +49.211.52.67.0} \ ({\sf EU}) \ | \ {\sf +81.3.3216.1769} \ ({\sf Asia}) \ | \ {\sf +81.3216.1769} \ ({\sf Asia}) \ | \ {\sf +81.$ 



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