

# Zeus Inc. Summary Of Properties

## Extruded Fluoropolymers

The table below lists the generally accepted summary of electrical, mechanical and thermal properties of non-pigmented polymer resins from which ZEUS fabricates its line of tubing, beading, shapes and other unique extrusions.

	PROPERTY	ASTM	UNITS	PTFE	FEP	PFA	ETFE	PVDF	PEEK	LDPE	HDPE
	Tensile Strength	D1708	PSI	2,500-4,000	3,500	4,000	7,500	D638 5,000	D638 13,300	D638 2,100	D638 4,500
	Specific Gravity	D792		2.13-2.24	2.15	2.15	1.70	1.8	1.32	.92-.94	.95-.97
M	Coefficient of Friction	Dynamic (<10 ft/min)		0.1	0.2	0.2	0.23	0.3	0.35-0.5	0.18	
E	Compressive Strength	D695	PSI	3,500	2,200		7,100	11,600	17,100	2,700-3,600	
C	Impact Strength 73°F	D256	Ft-Lb/in	3.5	No Break	No Break	No Break	3-6	655	1.0	10
H	Flexural Modulus 73°F	D790	PSI	27,000	95,000	95,000	200,000		530,800		100,000
A	Tensile Modulus	D638	PSI	80,000	60,000	40,000	120,000	348,000	522,100	38-75	155-155
N	Hardness-Durometer	D2240		D-50-65	D-55	D-60	D-75	D-76-80		D50	D64
I	Elongation	D1708	%	200-400	300	300	100-300	D638 150	D638 50	D638 425	D638 7,800
C	Flexural Strength	D790	PSI	No Break	No Break	No Break	37.9 5,500	10,750	24,700		
A	Water Absorption	D570	%	<0.01	<0.01	0.03	<0.03	<0.04	<0.05	<0.01	<0.01
L	Deformation Under Load (73°F, 1000 PSI, 24 HR)	D621		3.5	1.8	2.0	0.6				
	Linear Coefficient of Expansion (70-212°F) (212-300°F) (300-408°F)	D696	in/in/°F	7.5x10 <sup>-5</sup> 8.5x10 <sup>-5</sup> 10.5x10 <sup>-5</sup>	4.5-5.8x10 <sup>-5</sup>	6.7x10 <sup>-5</sup> 9.4x10 <sup>-5</sup> 11.1x10 <sup>-5</sup>	5.0x10 <sup>-4</sup> 7.0x10 <sup>-4</sup>	7.1x10 <sup>-5</sup>	2.6x10 <sup>-5</sup>	In/In/°c 2x10 <sup>-4</sup>	In/In/°c 1.1x10 <sup>-5</sup>
	Flex Life (MIT)			>1,000,000	15,000	15,000	12,000				
	Creep Resistance	D674	LB/Sq In			40,000					
ELECTRICAL	Dielectric Strength (ShortTerm) 10Mil Film	D149	V/Mil	>1,400	>2,000	>2,000	>2,000	>1080	>500	450-1000	450-500
	Volume Resistivity	D257	ohm-cm	>10 <sup>18</sup>	>10 <sup>18</sup>	10 <sup>18</sup>	>10 <sup>16</sup>	>10 <sup>13</sup>	>4.9x10 <sup>16</sup>		
	Surface Resistivity	D257	ohm/Sq	>10 <sup>18</sup>	>10 <sup>14</sup>	10 <sup>17</sup>	>10 <sup>14</sup>				
	Continuous Service Temperature		°F(°C)	500(260)	400(204.4)	500(260)	302(150)	235(112.8)	500(260)	190(87.78)	248(120)
T	Melting Point	DTA	°F(°C)	635-650(335-343.3)	500-530(260-276.7)	575-590(30.7-30)	490-535(254.4-279.4)	352(77.8)	633(333.9)	350(176.7)	370(187.8)
H	Thermal Conductivity	C-177	BTU/hr/ft <sup>2</sup> /°F.in	1.7	1.4	1.32	1.65	1.31	1.2		
	Heat of Fusion		BTU/lb	29-37	11	13	20				
E	Specific Heat	C-177	Cal/g/°C								
R	25°C			0.23	0.26	0.256	0.46-0.47	.30-.34			
	100°C			0.25		0.283					
	200°C			0.27		0.334					
M	275°C			0.29		0.391					
A	Low Temperature Embrittlement		°F(°C)				-150°(-101.1)				
L	Deflection Temperature 66 PSI 264 PSI		°F(°C)	252(122.2) 131(55)	138(58.89) 134(56.67)	166(74.44) 118(47.78)	220(104.4) 160(71.11)	235(112.8)	285(140.6)	220(104.4)	340(171.1)
	Heat of Combustion		BTU/lb	2.200		2,200	8,100				
O	Flammability Rating	UL 94		VO	VO	VO	VO	VO	VO	VO	VO
T	Refractive Index	D542		1.35	1.338	1.35	1.40				
H	Limiting Oxygen Index			>95	>95	>95	30-31				