

**NEW** 3M™ Matrix Resins



# Bend the Rules

**3M introduces a new generation  
of resin systems for stronger,  
lighter, more durable composites**



- Helps improve performance of sporting goods, industrial and marine components
- A “drop-in” technology for your current process

**Now available for sampling.  
Call 559-341-2228.**

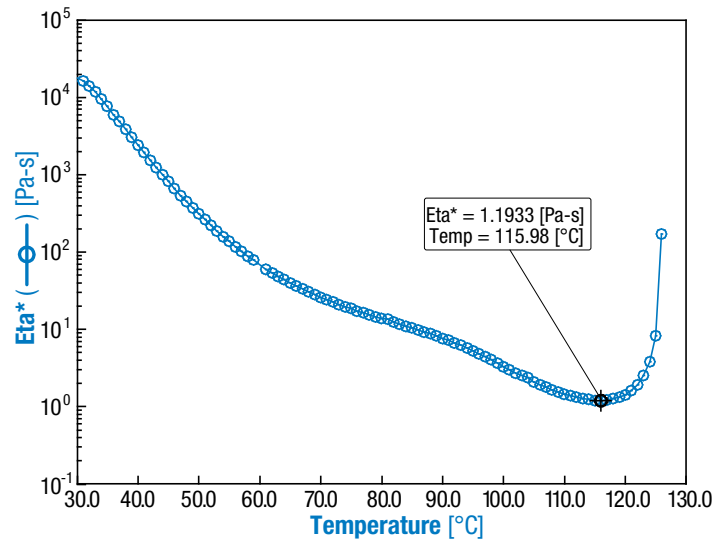
**3M**

## Typical Neat Resin Properties

Property	Unit	Method	Typical Epoxy Resin	3M Matrix Resin 3831
Tensile Modulus, E' @25°C	ksi	ASTM D638	529	893
T <sub>g</sub> , Tan Delta Peak	°C	DMA	183	185
T <sub>g</sub> , G' Inflection Point	°C	DMA	164	170
Fracture Toughness (K <sub>1C</sub> )	MPa·√m	ASTM D5045 (Compact Tension Geometry)	0.67	0.98
Exotherm	J/g	DSC	448.4	267.2
Cured Resin Density	g/cm <sup>3</sup>	ASTM D792	1.25	1.48
Barcol Hardness	H <sub>B</sub>	Barcol 934-1	45	67

**Cure cycle:** Cured at 90°C for 2 hours followed by curing at 150°C for 2 hours

## Viscosity Profile



## Typical Composite Mechanical Properties Using Uni-Directional Prepreg Tape

Property	Unit	Method	3M Matrix Resin 3831 T700 carbon fiber	3M Matrix Resin 3831 T800 carbon fiber	3M Matrix Resin 3831 TR50S carbon fiber
<b>Fiber Volume</b>	%		60-61	59-62	60-64
<b>0° Compression</b>					
Strength	ksi	D695 tabbed	280	278	277
<b>0° Flexure</b>					
Modulus	msi	D790	18.4	20.9	19.0
Strength	ksi		247	244	244
Strain	%		1.3	1.1	1.3
<b>In-plane Shear</b>					
Modulus	msi	D3518	1.05	0.95	0.83
<b>Interlaminar Shear</b>					
Strength	ksi	D2344	14.4	16.5	17.1
<b>90° Tensile</b>					
Modulus	msi	D3039	1.68	1.56	1.61
Strength	ksi		7.8	8.5	8.1
Strain	%		0.47	0.55	0.51
Poisson's Ratio			0.02	0.02	0.02

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