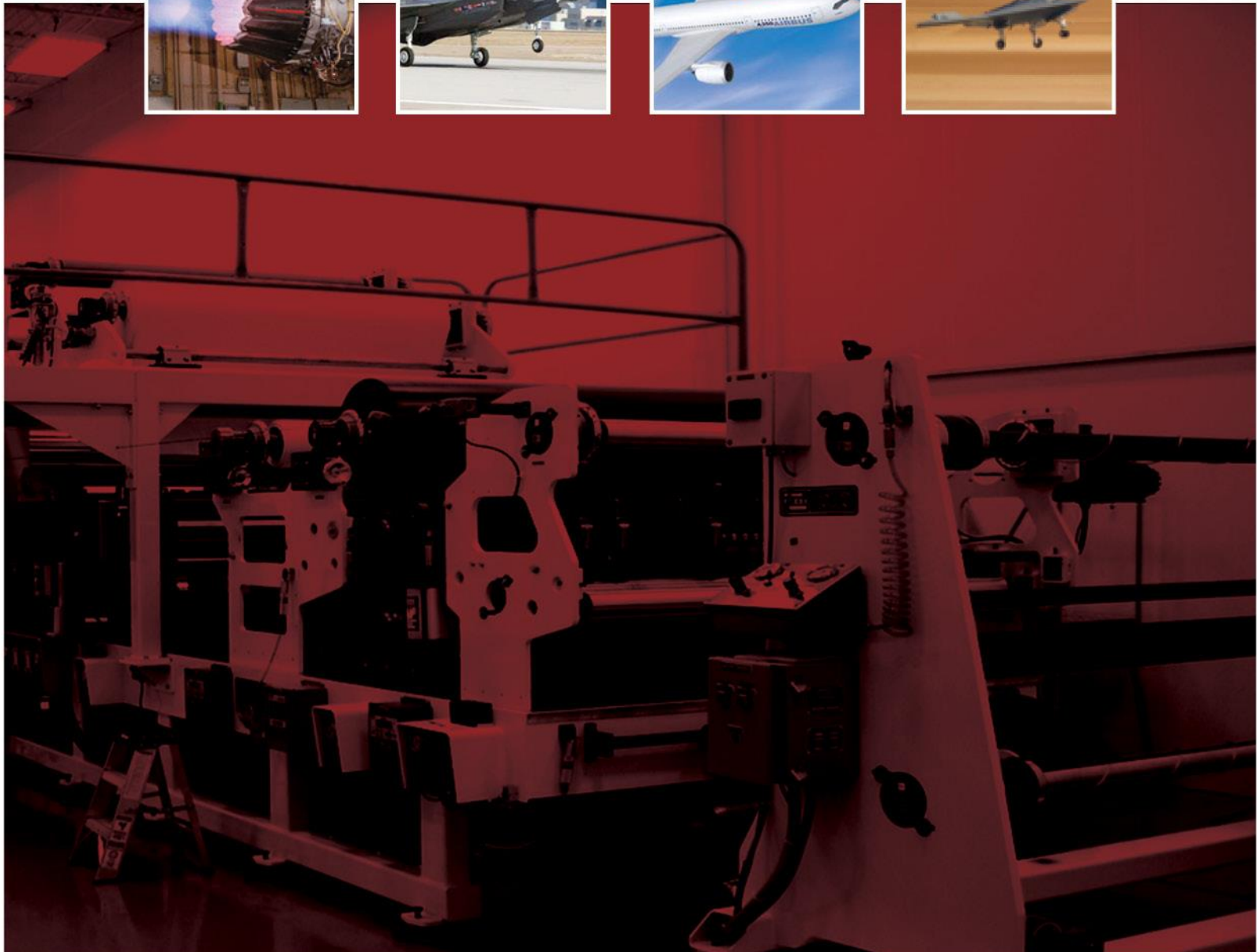
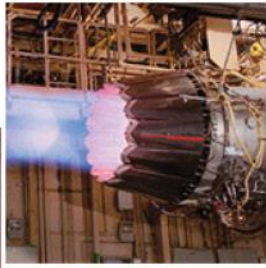


**RM-3004**  
**OUT OF AUTOCLAVE PROCESSABLE**  
**BISMALEIMIDE (BMI) PREPREG**  
FOR HIGH PERFORMANCE AEROSPACE APPLICATIONS





# RM-3004

## Out of Autoclave (OOA) Processable Bismaleimide (BMI) Prepreg

### Product Information

Developed using state-of-the-art formulating technology, RM-3004 prepreg products offer an Out of Autoclave (OOA) option for processing BMI's. This very unique chemistry can be processed into low-void, high quality, thick laminates with only a vacuum bag in the oven. Yet it still delivers excellent hot/wet performance and durability in airframe, missile and propulsion applications at service temperatures up to 400°F (204°C). RM-3004 (OOA) BMI delivers comparable damage tolerance at high temperatures to industry-standard Autoclave Processed BMI's. Although developed for structural applications, RM-3004 also offers some unique advantages for tooling. Renegade precision-quality prepregs exhibit excellent handling characteristics and are available in woven and unidirectional form on various fibers including carbon, quartz and S2 glass. A wide variety of nano-materials can be incorporated into this resin system for tailored laminate properties and multi-functional performance. Renegade has formulated compatible BMI Paste Adhesive products (RM-3006, RM-3007) for use with RM-3004 prepregs. Renegade also offers BMI resin systems for RTM (RM-3000) or VARTM (RM-3010) infusion processing.

RM-3004 Resin Properties	
<b>Glass Transition Temperature</b>	484°F (251°C) (no Post Cure) 530°F (277°C) (w/Post Cure)
<b>Cured Resin Density</b>	1.25 g/cc
<b>Resin Flex Strength</b>	24.7 ksi (170 MPa)
<b>Resin Flex Modulus</b>	701 ksi (4.8 GPa)
<b>Resin Flex Strain to Failure</b>	3.6%

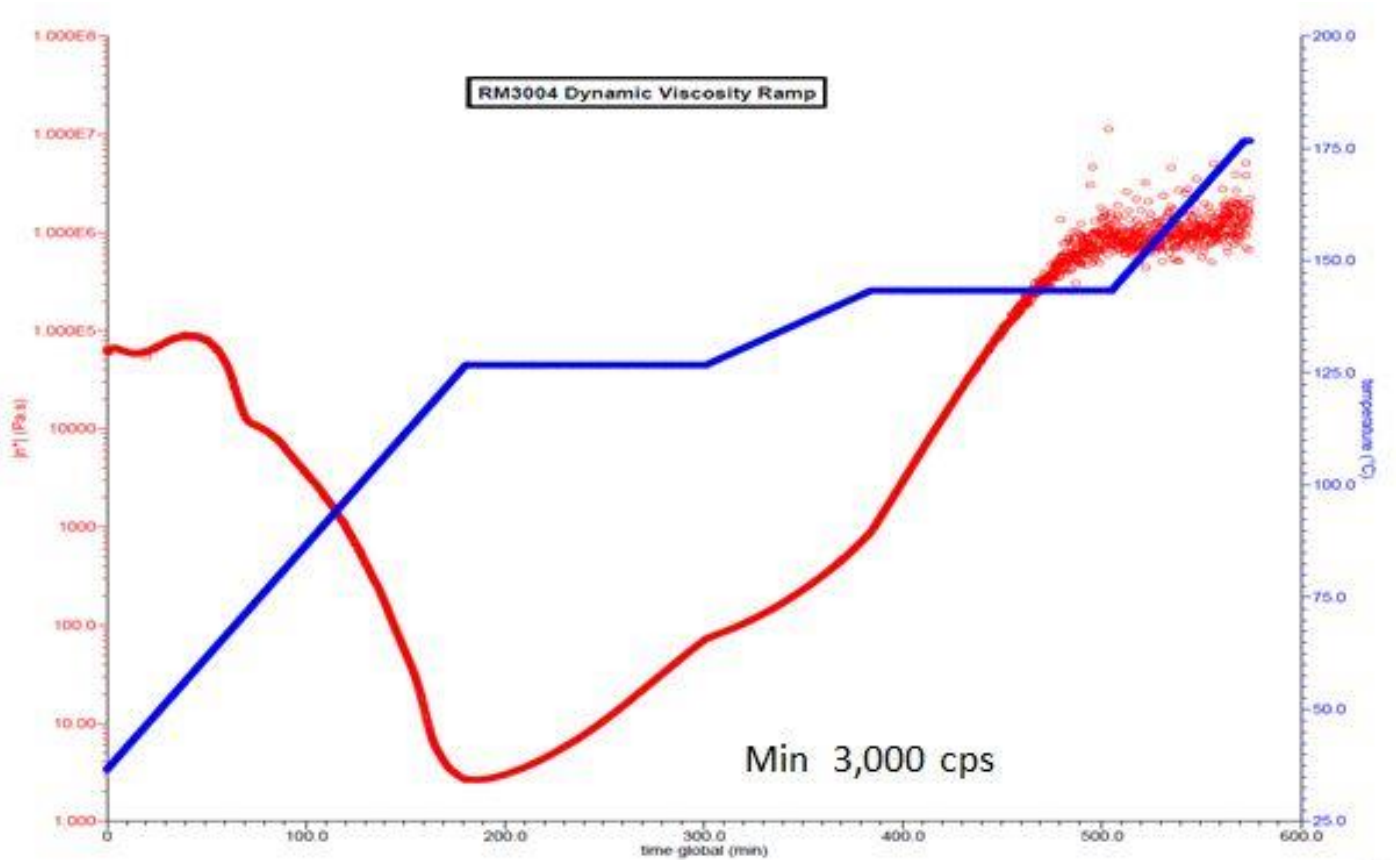
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**RM-3004 Typical Mechanical Properties on Carbon Fabric**  
(3K Carbon 2 X 2 Twill Fabric, Fv 55%, Void Content 0.32%)

Test	Units	Test Method	Condition	Value (Standard Deviation)
Tensile Strength	ksi (MPa)	ASTM D 3039	RT Dry	96.7 (SD-3.4) (667)
Tensile Modulus	Msi (GPa)	ASTM D 3039	RT Dry	9.2 (SD-0.40) (63.6)
Compression Strength	ksi (MPa)	ASTM D 6641	RT Dry	105 (SD-4.8) (724)
Compression Strength	ksi (MPa)	ASTM D 6641	350°F (177°C) Dry	83.5 (SD-4.9) (576)
Short Beam Shear Strength	ksi (MPa)	ASTM D 2344	RT Dry	12.4 (SD-0.35) (84.5)
Short Beam Shear Strength	ksi (MPa)	ASTM D 2344	350°F (177°C) Dry	10.4 (SD-0.35) (71.7)
In-Plane Shear Strength (Ultimate)	ksi (MPa)	ASTM D 3518	RT Dry	16.1 (SD-0.17) (111)
In-Plane Shear Modulus	Msi (GPa)	ASTM D 3518	RT Dry	0.95 (SD-0.006) (6.55)
Flexural Strength	ksi (MPa)	ASTM D 790	RT Dry	130 (SD-6.8) (896)
Flexural Strength	ksi (MPa)	ASTM D 790	350°F (177°C) Dry	127 (SD-4.4) (876)
Flexural Modulus	Msi (GPa)	ASTM D 790	RT Dry	9.4 (SD-0.53) (64.7)
Flexural Modulus	Msi (GPa)	ASTM D 790	350°F (177°C) Dry	8.9 (SD-0.11) (61.4)

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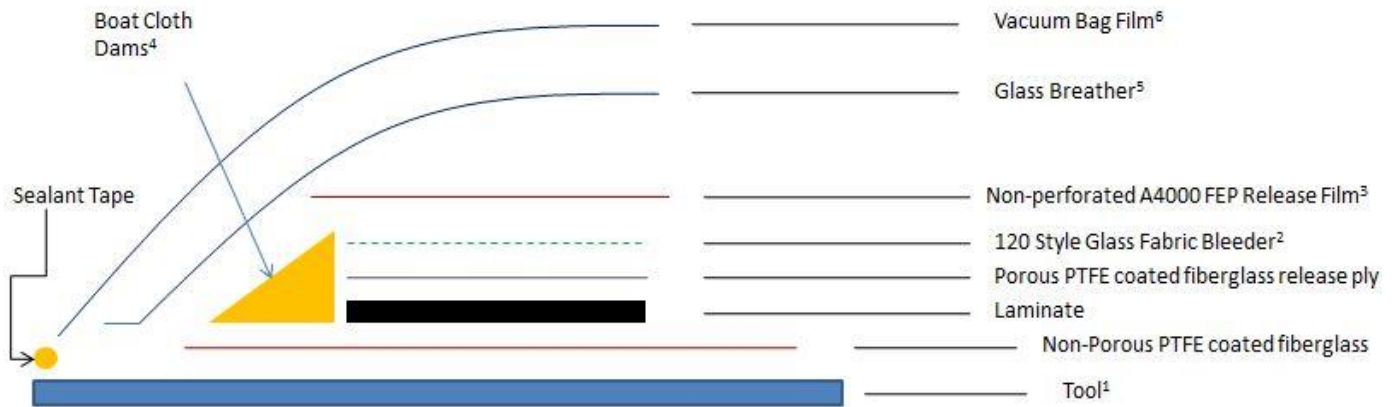
## RM-3004 Typical Viscosity Profile



**Please contact Renegade for additional viscosity data that may be more optimum for your application.**

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## Renegade Recommended Bagging Scheme for RM-3004



\*Equivalent Materials can be used in place of any of the bagging materials shown above.

1-Any steel material capable of withstanding the cure conditions may be used; 1/8" minimum thickness.

2&3-The number of bleeder plies to be used depends upon the target resin content. Bleeder plies can be placed on both sides of the laminate or just on top. If placing bleeders on the bottom, add a piece of porous PTFE coated fiberglass release ply against the laminate.

4&5-Fold up layers of boat cloth to the thickness of the panel to create a dam around the part. This will create a path for gasses to escape and provide sufficient edge breather.

6-Use any glass breather that will withstand the cure conditions and use enough material to allow a breather path from the vacuum ports, monitors and parts.

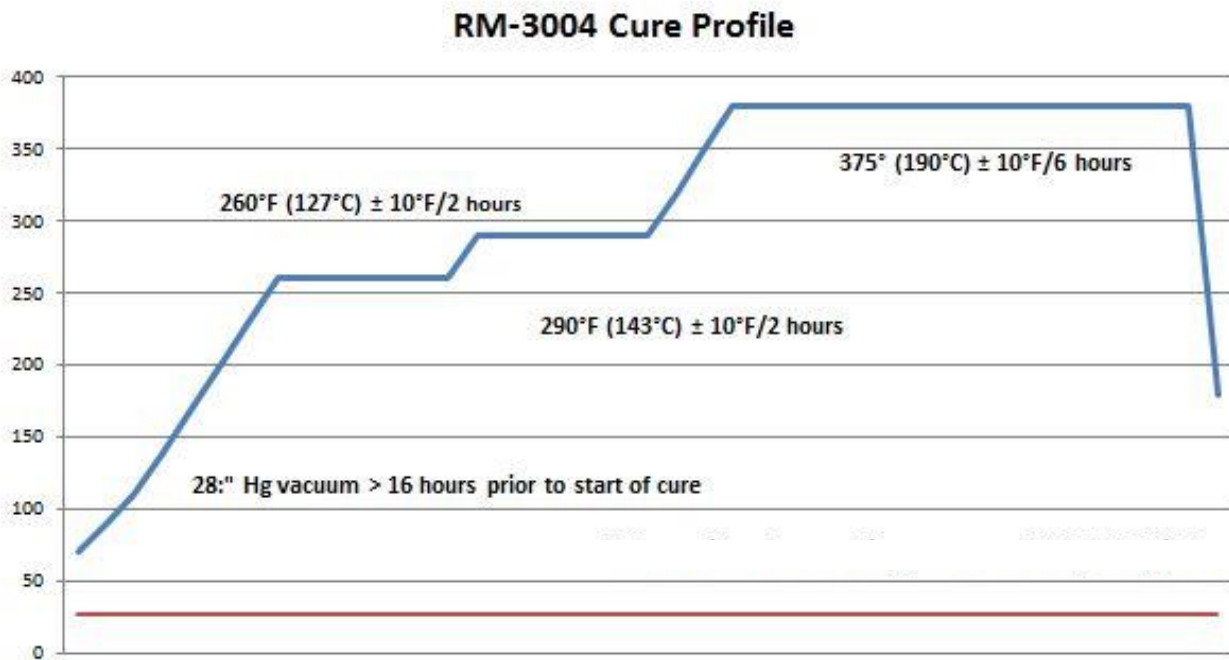
7-Use any vacuum bagging film that will withstand the cure conditions.

**Please note that the above bagging procedure is one of a number of options that will work for RM-3004. Please contact us to discuss your specific application and determine the optimum bagging approach for your situation.**

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## Renegade Recommended Cure Cycle for RM-3004

### Vacuum Bag Only Oven Cure



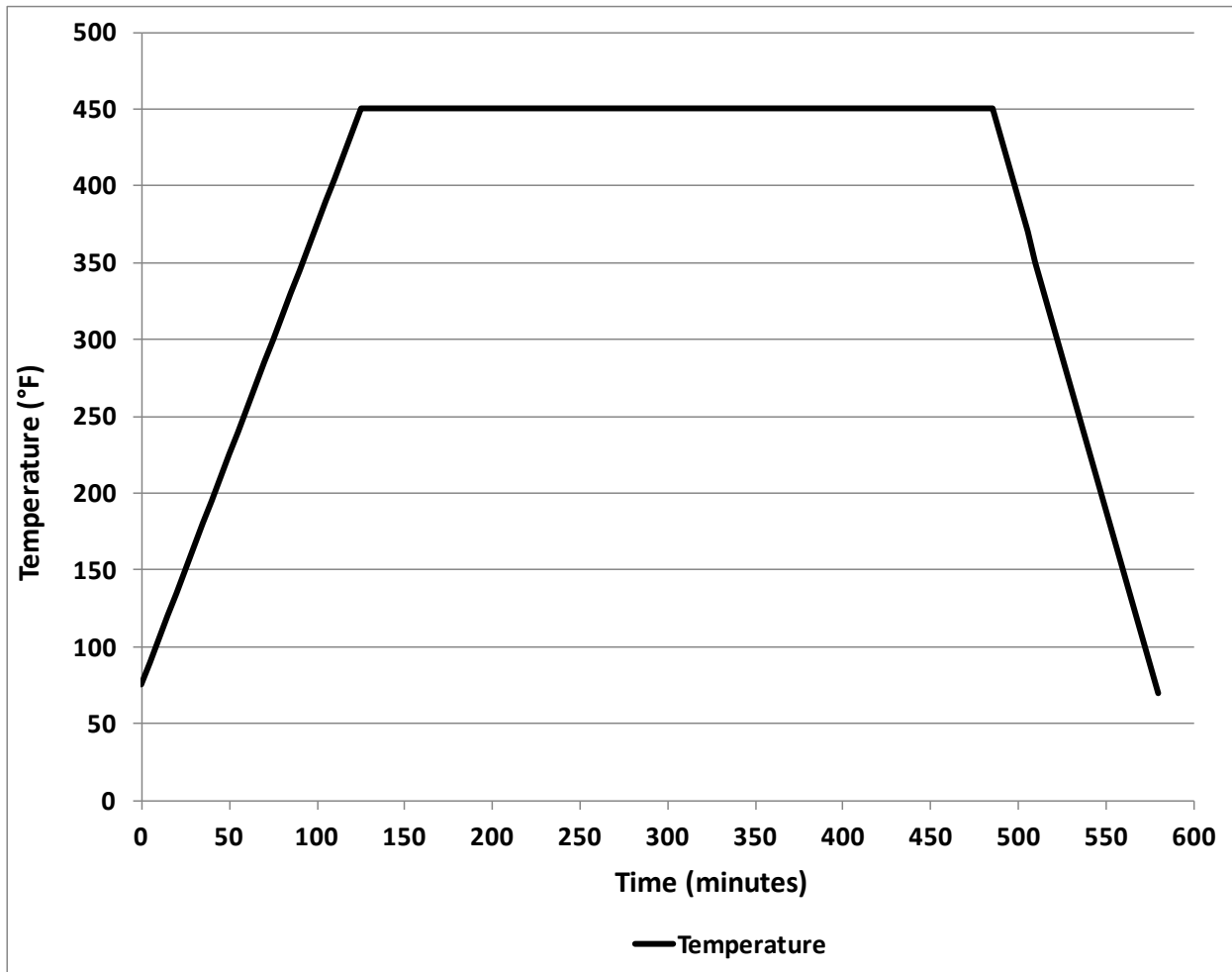
**Please note that the cure/post cure cycles define here is one of a number of options that will work for RM-3004. Please contact us to discuss your specific application and determine the optimum cure cycle for your situation.**

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## Renegade Recommended Post Cure Cycle for RM-3004

In an Air Circulating Oven

- Step 1: Heat to 475°F±10°F (246°C±5.56°C) at 3°F(1.67°C)/min  
*Note: Lower temperature post cures may be more appropriate for your application depending on your Tg requirements.*
- Step 2: Hold 6 hours
- Step 3: Cool to 70°F (21°C) at 4°F(2.22°C)/min



**Please contact Renegade for alternate post cure cycle options that may be more optimum for your applications.**

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**Renegade Materials Corporation is a global leader in manufacturing composite materials for aerospace applications. We deliver light-weight, highly-engineered prepregs, adhesives and hybrid composite systems to enable maximum fuel efficiency in commercial and military aircraft structures.**

**For pricing or additional information on Renegade products, please call us at 937-350-5274 or visit our website at [www.renegadematerials.com](http://www.renegadematerials.com)**



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