

Issued: November 2016

## EPIKOTE™ Resin MGS™ RIMR 935 and EPIKURE™ Curing Agent MGS™ RIMH 936/937

### CHARACTERISTICS

<b>Approval</b>	-
<b>Application</b>	Applications that require high heat resistances – boat and shipbuilding, automotive, tooling and moulding
<b>Operational Temperature</b>	-60 °C up to +120 °C (-76 °F up to +248 °F) after suitable heat treatment
<b>Processing</b>	At temperatures between 15 °C and 50 °C (59 °F-122 °F), preferably 25 °C - 35 °C (77 °F - 95 °F), infusion, hand lay-up and others
<b>Features</b>	Very high heat resistance, low mixed viscosity, good mechanical properties, pot life approx. 2-5 h, short curing times at elevated temperatures
<b>Storage</b>	Shelf life of 24 months in originally sealed containers

### APPLICATION

Low viscous infusion resin system for processing of woven and non-crimp multiaxial fabrics of low to high areal weight. Due to its very good mechanical properties, this system is suitable for the production of components featuring high static and dynamic loadability and high heat resistance.

Infusion resin RIMR 935 is based on bisphenol A/F resin. Hardener RIM H 936 and RIM H 937 are a modification of aliphatic and cycloaliphatic amines. Pot life (100 g mixed at 30 °C/86 °F) is approximately 2 hours for RIMH 936 and 3,5 h for RIMH 937. Optimum viscosities for infusion are realized at temperatures in the range of 25 - 35 °C (77 ° - 95 °F). Pot life is then between approx. 1 h (RIMH 936 at 40 °C/104 °F) to 5 h (RIMH 937 at 25 °C/77 °F). Following initial curing at room temperature, the parts are still brittle and require heat treatment at a min. temperature of 50 °C/122 °F before processing or demoulding. Direct curing at elevated temperatures (60 °C-100 °C/140 °F-212 °F) is possible. The curing time can be reduced to a few minutes by this.

Non-tacky, high-gloss surfaces are obtained even with unfavourable curing conditions, such as low temperatures or high relative humidity.

The infusion resin system does not contain any unreactive components. All raw materials and additives feature a very low vapor pressure, therefore permitting processing of the material under vacuum even at elevated temperatures. Compatibility problems are not to be expected in combination with suitable gelcoats, various paints (e.g., PUR-based), etc., however comprehensive tests are indispensable.

These products can be stored for at least 24 months in their carefully sealed original containers. Even though it is unlikely, these products may crystallise at temperatures below +15 °C. The crystallisation is visible as a clouding or solidification of the contents of the container. If crystallisation of either component should be observed, it can be removed by warming up. Slow warming up to approx. 50 °C-60 °C (122 °F-140 °F) in a water bath or oven and stirring or shaking will clarify the contents of the container without any loss of quality. Use only completely transparent products. Before warming up, open containers slightly to permit equalization of pressure. Caution during warm-up! Do not warm up over an open flame! While stirring up, use safety equipment (gloves, eyeglasses, respirator equipment).

The relevant industrial safety regulations for the handling of epoxy resins and hardeners and our instructions for safe processing are to be observed.

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### SPECIFICATIONS

EPIKOTE Resin MGS RIMR 935 and EPIKURE Curing Agent MGS RIMH 936 - 937

		Resin RIMR 935
Density	[g/cm <sup>3</sup> ]	1,14 - 1,20
Viscosity	[mPas]	400 - 800
Epoxy equivalent	[g/equivalent]	155 - 165
Epoxy value	[equivalent/100g]	0,61 - 0,64
Refractory index		1,5350 - 1,5450

		Hardener RIMH 936	Hardener RIMH 937
Density	[g/cm <sup>3</sup> ]	0,92 - 0,97	0,92 - 0,96
Viscosity	[mPas]	10 - 50	30 - 100
Amine Value	[mg KOH/g]	550 - 650	450 - 500
Refractory index		1,4850 - 1,4920	1,4920 - 1,5020

Measuring conditions: measured at 25 °C / 77 °F

**PROCESSING DETAILS**

	Resin RIMR 935	Hardener RIMH 936	Hardener RIMH 937
Average EP - Value	0,63	-	-
Average amine equivalent	-	45	59

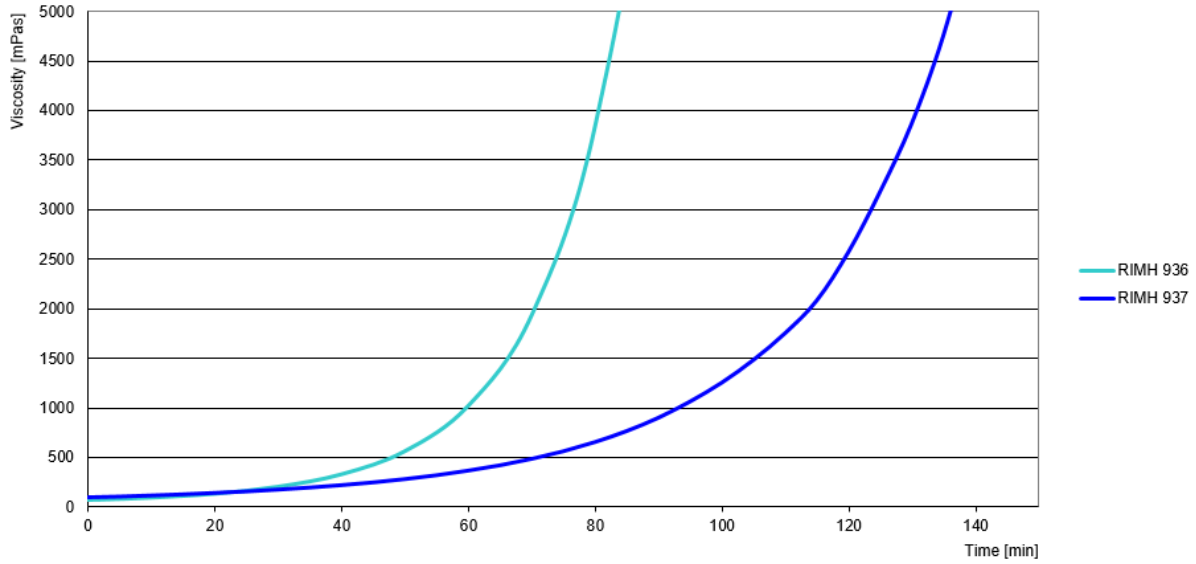
**MIXING RATIOS**

	RIMR 935 : RIMH 936	RIMR 935 : RIMH 937
Parts by weight	100 : 29 ± 2	100 : 38 ± 2
Parts by volume	100 : 35 ± 2	100 : 45 ± 2

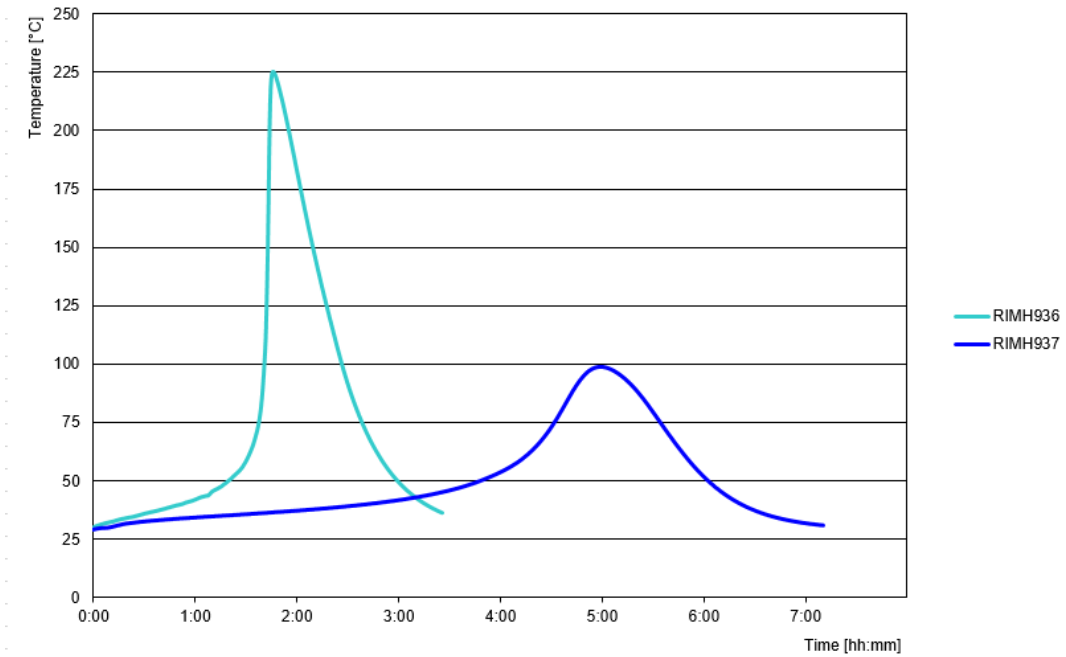
The specified mixing ratios must be observed as exactly as possible. Adding more or less hardener will not result in a faster or slower reaction, but in incomplete curing, which cannot be corrected in any way. Resin and hardener must be mixed very thoroughly. Mix until no clouding is visible in the mixing container. Pay special attention to the walls and the bottom of the mixing container.

**VISCOSITY DEVELOPMENT**

EPIKOTE Resin MGS RIMR 935 and EPIKURE Curing Agent MGS RIMH 936 - 937



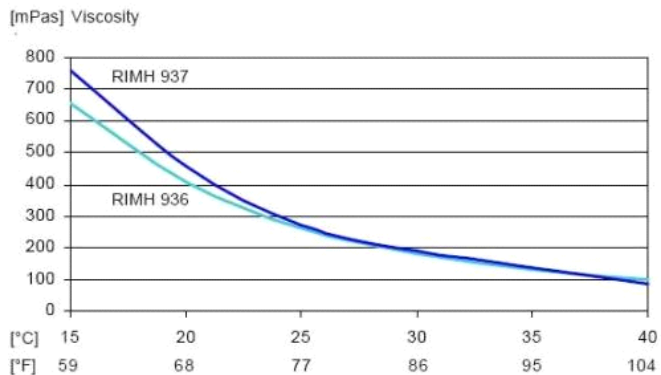
TEMPERATURE DEVELOPMENT



The optimal processing temperature is in the range between 20 and 25°C (68 - 77°F). Higher processing temperatures are possible, but will shorten pot life. A rise in temperature of 10 °C (18°F) will halve the pot life. Water (for example very high humidity or contained in fillers) causes an acceleration of the resin/hardener reaction. Different temperatures and humidities during processing have no significant effect on the strength of the cured product.

VISCOSITY OF MIXTURE

**Viscosity of the mixture at different temperatures**

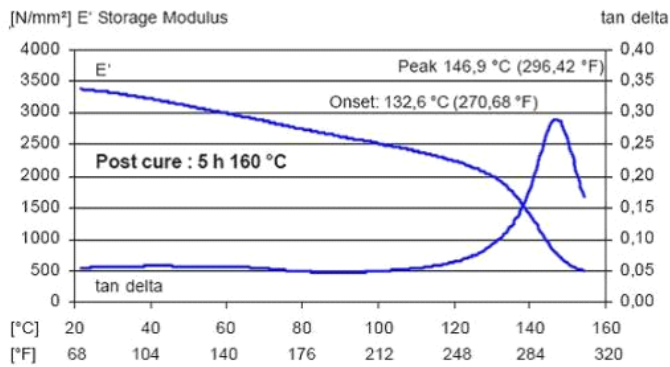
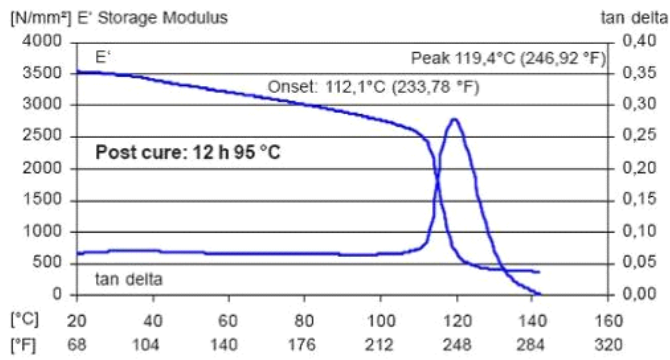


**GLASS TRANSITION TEMPERATURE (TG) UNCONDITIONED**

Max. TG at 80 °C (176 °F) post cure	90 - 100 °C (194 - 212 °F)
Max. TG at 100 °C (212 °F) post cure	105 - 120 °C (221- 248 °F)
Max. TG at 140 °C (284 °F) post cure	135 - 150 °C (275 - 302 °F)

**DMA**

**DMA-Measuring after heat treatment**  
**DMA-T<sub>g</sub>(peak) tan delta: Infusion resin RIM 935 with hardener RIMH 937**



**Measuring conditions:**  
 Frequency: 1Hz  
 Coupon thickness: 2mm  
 Heating rate: 2K/min

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