

R2-150 MATRIX is a fast curing thermosetting epoxy prepreg resin, with allows short cure cycles in the process temperature range of 120°C to 150°C¹. The anticipated processing is by hot press moulding.

The cured resin is clear and offers good cosmetic results with selected reinforcements, notably carbon fibre fabrics.²

PRODUCT VARIANTS

R2-150HM:	Hotmelt version
R2-150HH:	Hotmelt version, high viscosity, low tack
R2-150:	Solvent version , high viscosity, medium tack

SHELF LIFE



OUT LIFE
28 days @ 21 °C



STORAGE LIFE
12 months @ -18 °C

TYPICAL APPLICATIONS



FEATURES



PRESS MOULDING



**FAST CURING: PRESS MOULDING CYCLE
BETWEEN 3 AND 15 MIN**



TYPICAL CURE TEMPERATURES 120÷150 °C



**GOOD COSMETIC PROPERTIES
WITH AESTHETIC FABRICS**



MAX Tg DEVELOPMENT OF 160 °C



LOW VOLATILE CONTENT

¹ Lower cure temperature are possible; for more details please contact our Technical Department.

² Where the intended end application is for a cosmetic product, customers are advised to consult a Microtex Composites sales representative for specific advice on fibre selection when placing an order for material.

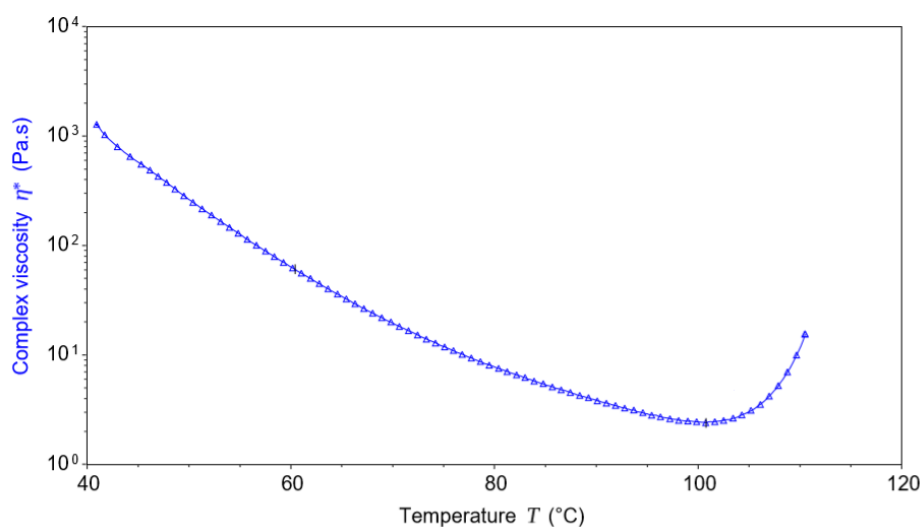
NOTE: All technical information contained in this document are given in good faith and are based on tests believed to be reliable, but their accuracy and completeness are not guaranteed. They do not constitute an offer to any person and shall not be deemed to form the basis of any contract. Accordingly, the user shall determine the suitability of the products for their intended use prior to purchase and shall assume all risk and liability in connection therewith. The information contained herein is under constant review and liable to be modified. All products are sold subject to Microtex Composites Srl terms and conditions of sale. Copyright 2020 - Microtex Composites Srl. All rights reserved worldwide. All trademarks or registered trademarks are the property of their respective owners.

MATRIX PROPERTIES

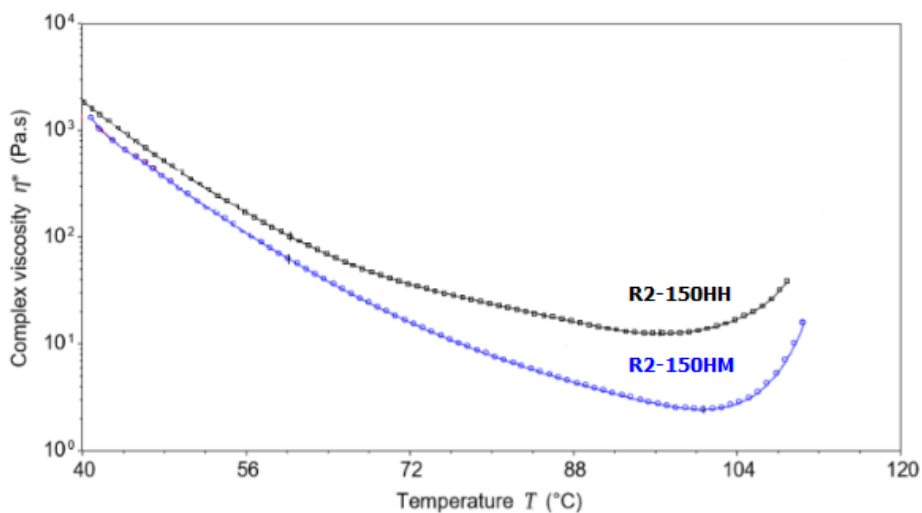
Matrix density @ RT: (average value) 1.20 g/cm³.

Resin viscosity: ramp rate = 2 °C/min, strain 0.1 %, frequency 1.0 Hz.

R2-150HM



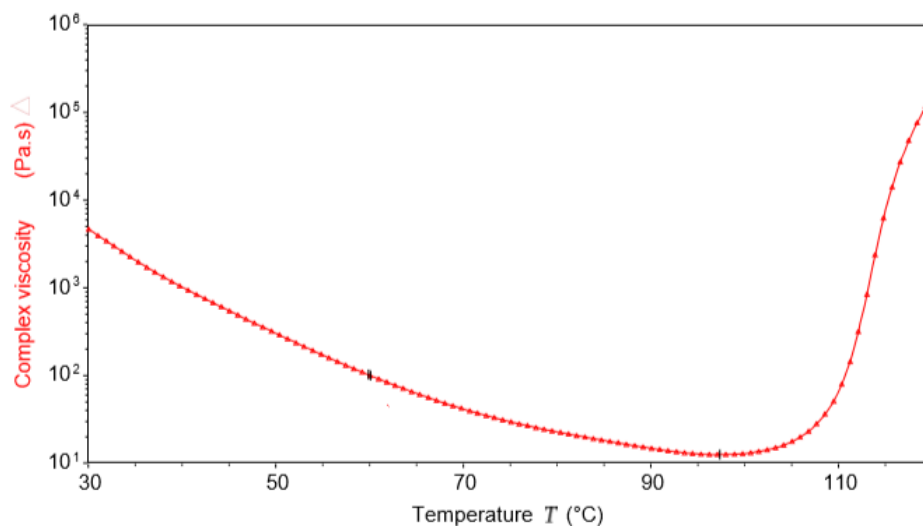
R2-150HH vs. R2-150HM



Property	R2-150HM	R2-150HH
Viscosity @ 60 °C [Pa·s]	62	150
Minimum Viscosity [Pa·s]	2	12

MATRIX PROPERTIES

R2-150 (Solvent version)



Property	R2-150
Viscosity @ 60 °C [Pa·s]	100
Minimum Viscosity [Pa·s]	12

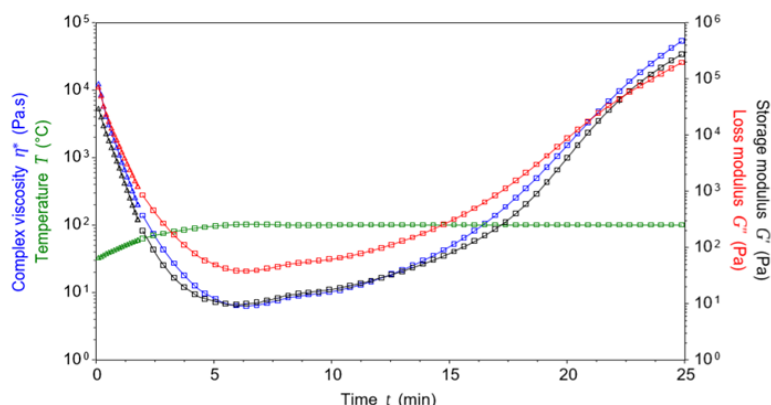
Gel Time: (Hot Plate)

Temperature	Gel time
120 °C	5 min
130 °C	3 min
140 °C	85 sec
150 °C	50 sec

MATRIX PROPERTIES

Gel Time: (Rheometer)

Ramp 40 °C/min 25-100°C; Isothermal at 100 °C; Strain 1.5 %; Frequency 1.0 Hz. Gel time after 22.2 minutes.



Isothermal Cure properties by DSC on Matrix [ramp RT to isothermal temperature: 100°C/min]

Temperature	Cure time (to 95% conversion)
120 °C	≤ 10 min
130 °C	≤ 8.5 min
140 °C	≤ 6.5 min

Total scan time 15 minutes 120-140°C

CURING CONDITIONS

Recommended Press Moulding Cure Times

For press moulding, it is assumed the R2-150 series prepreg preform will be added to a hot press mould tool. The following are the minimum recommended cure times at typical press moulding temperatures:

Temperature	Cure time
130 °C	10 to 15 min
140 °C	7 to 10 min
150 °C	3 to 5 min

When press moulding, the resin gel times at these temperatures can be used for guidance as to when full pressure needs to be applied to achieve adequate resin flow and full laminate consolidation.

CURING CYCLES AND Tg's DEVELOPMENT

With the development of Tg close to the moulding temperature, this allows the part to be demoulded hot without cooling the press tool.

R2-150 HM ³			
Cure cycle	Tg (DMA) ⁴ Onset (°C)	Tg (DMA) ⁴ tanδ (°C)	Tg (DSC) ⁵ (°C)
20 min @ 120 °C	142	158	-
10 min @ 130 °C	138	156	-
12 min @ 130°C	139	158	136
15 min @ 130 °C	140	158	-
7 min @ 140 °C	140	159	-
3 min @ 150 °C	140	154	-

R2-150 (Solvent version) ³			
Cure cycle	Tg (DMA) ⁴ Onset (°C)	Tg (DMA) ⁴ tanδ (°C)	Tg (DSC) ⁵ (°C)
7 min @ 138 °C	110	131	139

MECHANICAL PROPERTIES

R2-150 HM - 90 min @ 130 °C, 6 bar		GG245T-40 ⁶
Property	Test Method	Value*
0° Tensile strength [MPa]	ASTM D3039	640
90° Tensile strength [MPa]		608
0° Compressive strength [MPa]	SACMA SRM 1R-94	725
90° Compressive strength [MPa]		704
0° Interlaminar shear strength (ILSS) [MPa]	ASTM D2344	69
Mode I strain energy release rate G _{Ic} [J/m ²]	ASTM D5528 (MBT METHOD)	420

* Test conditions: room temperature, dry . Normalized values at 55% VF.

³ 2 mm thick carbon fabric laminate with GG245 twill 2/2 3K, RC 40%.

⁴ 5 °C/min ramp.

⁵ 10 °C/min ramp.

⁶ carbon fabric 245gsm twill 2/2 3K TC, RC 40%.

AGING TEST

PV1200 (20 cycles)	SAE J2527 ⁸		Long term heat exposure ⁸	
Pass ⁷	240 h	GC 4/5 dE 1.49	7 days @ 90 °C	GC 4-5/5 dE 0.8±0.2
	480 h	GC 3/5 dE 2.20	7 days @ 100 °C	GC 4-5/5 dE 0.8±0

EXOTHERM RISK

This matrix system can undergo severe exothermic heat up during the curing process if incorrect procedures are followed. Great care must be taken to ensure that safe heating rates, dwell temperatures and lay-up/bagging procedures are properly executed, especially when molding solid laminates with high thickness.

The risk of exotherm increases with lay-up thickness and increasing of temperature cure. It is strongly recommended that the user identifies a safe cure cycle through trials that are representative of all the relevant processing parameters. It is also important to recognize that the model or tool material and its thermal mass, combined with the insulating effect of breather/bagging materials can affect the risk of an exotherm. Please contact our technical department for further information on the exotherm behavior of these systems.

AVAILABILITY

R2-150 prepregs are available in a wide range of reinforcing fabrics and UD, including carbon, aramid, glass and special fabrics.

STORAGE CONDITIONS

This prepreg should be stored as received in a cool dry place or in a refrigerator.

After removal from refrigerated storage, prepreg should be allowed to reach room temperature before opening the polyethylene bag, thus preventing condensation (a full roll in its packaging can take more than 1 day).

PRECAUTIONS FOR USE

The usual precautions when handling uncured resins and fibrous materials should be observed, and a Safety Data Sheet is available for this product.

SDS Reference Codes: R2-150: SDS-434

⁷ Carbon laminate, Cure cycle 10 min @ 140 °C (no painted).

⁸ Carbon laminate, Cure cycle 9 min @ 145 °C (no painted).