

E4-123 is a 125°C thermosetting epoxy prepreg designed for structural applications¹.

The high viscosity of the system offer flexible processing and a range of handling characteristics.

E4-123 matrix exhibit high mechanical properties and, properly postcured, can be used at continuous operating temperatures up to 100°C. Higher not continuous operating temperatures can be supported.

PRODUCT VARIANTS

E4-123HM: Hotmelt version, light black pigmented

SHELF LIFE



OUT LIFE
30 days @ 21 °C



STORAGE LIFE
12 months @ -18 °C

TYPICAL APPLICATIONS



AUTOMOTIVE



MOTORSPORT

FEATURES



HIGH MECHANICAL PERFORMANCES



HIGH TOUGHNESS

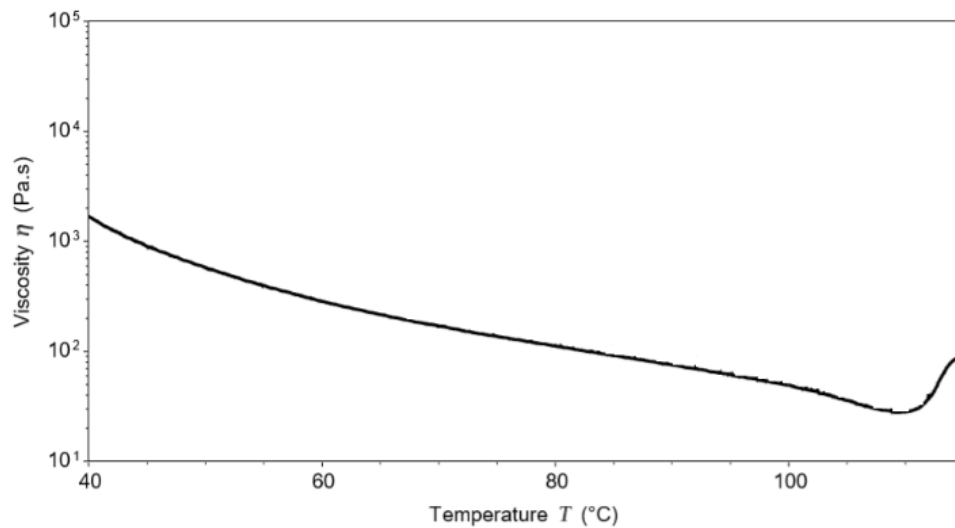
¹ The system is not designed for cosmetic application, if this application is needed please contact our Technical Department .

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.

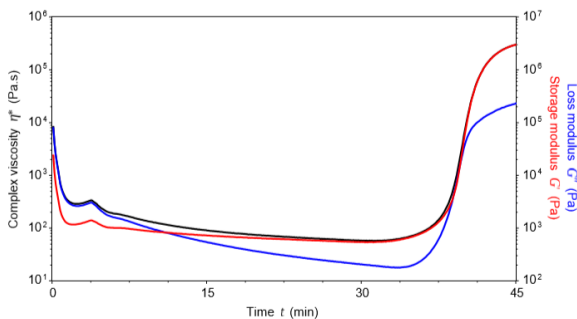
MATRIX PROPERTIES

Cured resin density @ RT²: (average value) 1.20 g/cm³.

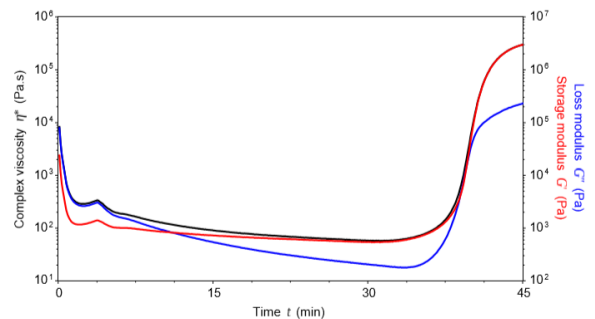
Resin viscosity: ramp rate = 2 °C/min, shear rate 2.5 Hz .



Gel Time: (Hot Plate)



ramp rate = 2 °C/min - 40-130 °C
gel time @ 128 °C



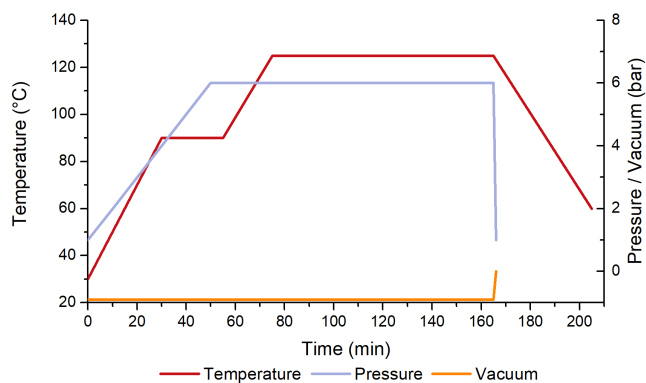
ramp rate = 2 °C/min - 40-85 °C
isotherm @ 85 °C
gel time @ 221 min starting cycle

² Cure cycle: 1 h @ 120 °C

CURING CONDITIONS

Recommended Autoclave Cure ^{4,5}

Time (min)	Temp. (°C)	Time (min)	Pressure (bar) ⁶
0	30	0	1
30	90	10	2
55	90	30	4
75	125	50	6
165	125	165	6
181	60	166	1



ALTERNATIVE CURING CYCLES AND Tg's

E4-123		
Cure cycle	Tg (DMA) Onset (°C)	Tg (DMA) tanδ (°C)
8 h @ 85°C	100	118
60 min @ 125°C	123	137
Max Wet Tg ⁷	79	93

⁴ Temperature must be measured by the lagging thermocouple attached to the part.

⁵ Vacuum bag pressure: 0.9 bar.

⁶ On a sandwich production, adjust the pressure on core specifications to avoid buckling and/or distortion.

⁷ Wet conditioning: 14 days immersion in water @ 70 °C.

MECHANICAL PROPERTIES

60 min @ 125 °C, 6 bar		GG285T-40 ⁸	GG380T-38 ⁹	GG380T-36 ¹⁰	GG630T-37 ¹¹
Property	Test Method	Values*			
0° Tensile strength [MPa]	ASTM D3039	1236	1098	1246	979
0° Tensile modulus [GPa]		83	68	77	66
90° Tensile strength [MPa]		1349	1193	1239	868
90° Tensile modulus [GPa]		84	66	77	66
In plane shear strength (IPSS) [MPa]	ASTM D3518	-	-	80.5	-
In plane shear modulus (IPSM) [GPa]		-	-	6.6	-
0° Compressive strength [MPa]	SACMA SRM 1R-94	624	641	661	586
0° Compressive modulus [GPa]		56	64	59	63
90° Compressive strength [MPa]		633	598	654	490
90° Compressive modulus [GPa]		57	65	60	53
0° Interlaminar shear strength (ILSS) [MPa]	ASTM D2344	67	66	64	63
0° Flexural strength [MPa]	ASTM D790	864	886	881	814
0° Flexural modulus [GPa]		67	54	65	53
Mode I strain energy release rate G1c [J/m ²]	ASTM D5528 (MBT METHOD)	1242	1506	1596	1983

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

8 h @ 85 °C, 4 bar		GG380T-38 ⁹
Property	Test Method	Value*
0° Tensile strength [MPa]	ASTM D3039	1137
0° Tensile modulus [GPa]		68
0° Compressive strength [MPa]	SACMA SRM 1R-94	653
0° Compressive modulus [GPa]		62
0° Interlaminar shear strength (ILSS) [MPa]	ASTM D2344	62
0° Flexural strength [MPa]	ASTM D790	914
0° Flexural modulus [GPa]		54
Mode I strain energy release rate G1c [J/m ²]	ASTM D5528 (MBT METHOD)	1594

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

⁸ HS Carbon fabric 285 gsm S5H 12K SYT-55S, RC 40%.

⁹ HS Carbon fabric 380 gsm twill 2/2 12K Pyrofil TR50S, RC 38%.

¹⁰ HS Carbon fabric 380 gsm twill 2/2 12K Pyrofil MR60H, RC 36%.

¹¹ HS Carbon fabric 630 gsm twill 2/2 12K Pyrofil TR50S, RC 37%.

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

E4-123 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: E4-123: SDS-444