

X4-140 MATRIX is a 130°C curing epoxy matrix specifically designed for achieving a high quality, resin rich surface finish in composites, to 'Class A' standards. It is a transparent matrix, with non-yellowing properties (excellent UV and Heat resistance), and high Tg.¹

PRODUCT VARIANTS

X4-140: Solvent version

X4-140HM: Hotmelt version

SHELF LIFE



OUT LIFE
> 4 weeks @ 21 °C



STORAGE LIFE
12 months @ -18 °C

TYPICAL APPLICATIONS



AUTOMOTIVE



SPORTING
GOODS

FEATURES

✦ HIGH COSMETIC PROPERTIES

🌡️ HIGH Tg

☀️ HIGH UV RESISTANCE

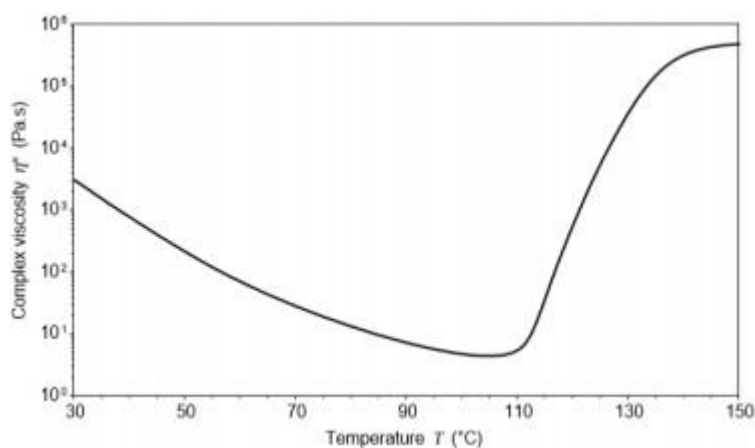
¹ Where the intended end application is for a cosmetic product, customers are advised to consult a Microtex Composites sales representative for specific advice on fibre selection when placing an order for material.

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MATRIX PROPERTIES

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

Resin viscosity: ramp rate = 2°C/min, 10 rad/s.



Gel Time: (Hot Plate)

1 minute ± 30 seconds @ 140°C

3 minutes @ 130°C

AGING TEST

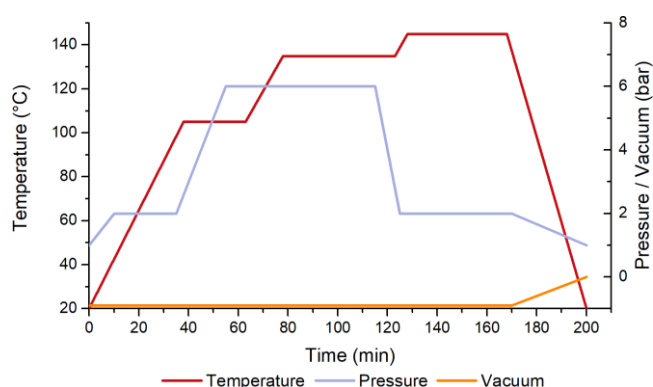
PV1200 (8 cycles)	Long Term Heat Exposure (7 days @ 140°C)
Pass ²	dE 0.10 ²

² No painted

CURING CONDITIONS

Preliminary Note: The matrix rheology, reaction times and final component surface quality are all affected by the chosen heat up rates. Heating rates are generally related to components size (large and thick components require slow heating rates). The heat up rate selected should avoid large temperature differentials between the component, tool and the heat source. For certain configurations and for most large components, an intermediate dwell can also be introduced into the cure cycle. It will guarantee even temperature distribution throughout the tooling and component. Good temperature control will provide consistent and improved resin flow characteristics during cure. To ensure that the matrix stability is fully developed, no polymerization residual should be present on the products.

Autoclave Cure ^{3,4,5}			
Time (min)	Temp. (°C)	Time (min)	Pressure (bar)
0	20	0	1
38	105	10	2
63	105	35	2
78	135	55	6
123	135	115	6
128	145	125	2
168	145	170	2
200	20	200	1



ALTERNATIVE CURING CYCLES AND Tg's

Cure cycle	Tg (DMA) Onset (°C)	Tg (DMA) tanδ (°C)
90 min @ 135 °C	125	140
45 min @ 135 °C + 40 min @ 145 °C	132	146

The reported DMA tests were performed on the following carbon fiber support: GG245T 3K 8 plies

³ Temperature must be measured by the lagging thermocouple attached to the part.

⁴ Vacuum bag pressure: 0.9 bar.

⁵ Suggested Release film: Not perforated release film

MECHANICAL PROPERTIES

90 min @ 135 °C, 6 bar		GG245T-42 ⁶	GG380T-36 ⁷	GG600T-36 ⁸
Property	Test Method	Values*		
0° Tensile strength [MPa]	ASTM D3039	657	1172	796
0° Tensile modulus [GPa]		65	60	57
0° Tensile Poisson ratio		0.06	0.09	-
90° Tensile strength [MPa]		659	1023	605
90° Tensile modulus [GPa]		64	59	54
90° Tensile Poisson ratio		0.06	0.03	-
0° Compressive strength [MPa]	ASTM D6641	742	648	496
0° Compressive modulus [GPa]		59	58	56
90° Compressive strength [MPa]		725	574	462
90° Compressive modulus [GPa]		60	57	53
0° Compressive strength [MPa]	SRM 1-94	797	700	-
0° Compressive modulus [GPa]		62	66	-
90° Compressive strength [MPa]		776	715	-
90° Compressive modulus [GPa]		63	65	-
0° Interlaminar shear strength (ILSS) [MPa]	ASTM D2344	-	-	44
0° Flexural strength [MPa]	ASTM D790	-	-	819
0° Flexural modulus [GPa]		-	-	50
0° Flexural strength [MPa]		987	905	-
0° Flexural modulus [GPa]	ASTM D7264 (B METHOD)	75	89	-
90° Flexural strength [MPa]		928	864	-
90° Flexural modulus [GPa]		75	94	-
Mode I strain energy release rate G1c [J/m ²]	ASTM D5528 (MBT METHOD)	-	-	714

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

⁶ HS Carbon fabric 245 gsm twill 2/2 3K TC , RC 42%
⁷ HS Carbon fabric 380 gsm twill 2/2 12K ZH, RC 36%.
⁸ HS Carbon fabric 600 gsm 24K T620, RC 36%.

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.

CHARACTERISTIC MARKS

This resin is sensitive to the aggressive use of solvents. Do not use solvents to clean the final components.

AVAILABILITY

X4-140 series prepregs are available in a wide range of reinforcing fabrics, 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: X4-140: SDS-438