MICROTEX COMPOSITES

E3-120

Versatile Toughened Epoxy Prepregs

TECHNICAL DATA SHEET

E3-120 is a thermosetting toughened epoxy matrix with process temperatures ranging from 80°C to 140°C.[1]

PRODUCT VARIANTS

E3-120: Standard version, unpigmented

SHELF LIFE

OUT LIFE[2]
45 days @ 21 °C

STORAGE LIFE
12 months @ -18 °C

TYPICAL APPLICATIONS

MARINE

INDUSTRIAL

SPORTING GOODS

FEATURES

- WIDE RANGE OF CURING TEMPERATURES BETWEEN 80 °C AND 140 °C
- MEDIUM TACK
- GOOD DRAPEABILITY
- GOOD SURFACE FINISH
- LOW VOLATILE CONTENT

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.

2 Out life is the maximum time allowed before cure after a single frozen storage cycle in the original prepreg bag unopened stored at -18°C or below for a period not exceeding the above mentioned frozen storage life.

Microtex Composites S.r.l.
Via del Pozzo di San Sebastiano, 15/C
51100 Pistoia (Italy)
Tel. +39 0574 627298
info@microtexcomposites.com
www.microtexcomposites.com

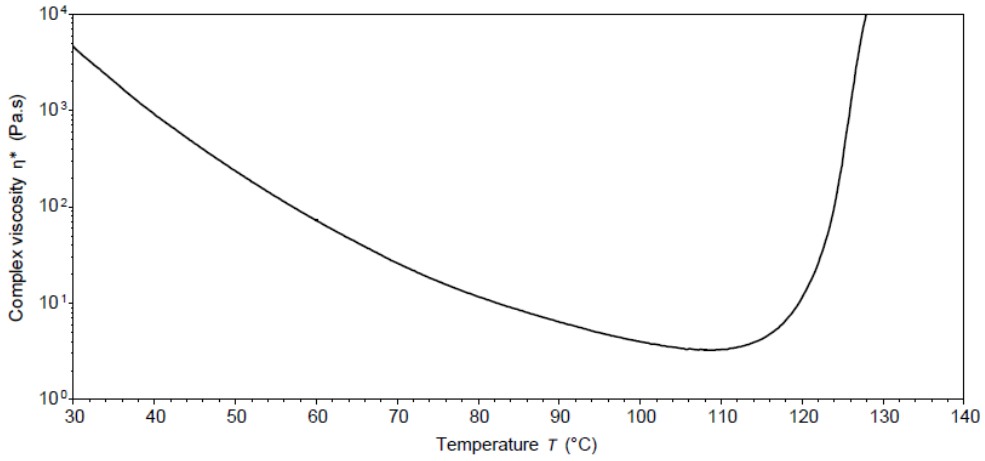
Quality system certified
ISO 9001:2015
by TUV Italia s.r.l.
cert. no. 50 100 12429

Quality system certified
IATF 16949:16
by TUV SUD Management Service GmbH
cert. no. 0447526

MATRIX PROPERTIES

E3-120 Cured resin density @ RT[3]: (average value) 1.20 g/cm³.

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



Gel time (rheometer): heat ramp: 10°C/min, strain 1.0%; angular frequency: 10 rad/s, strain 1,5%; isotherm at 80°C: gel time after 208min at 80°C.

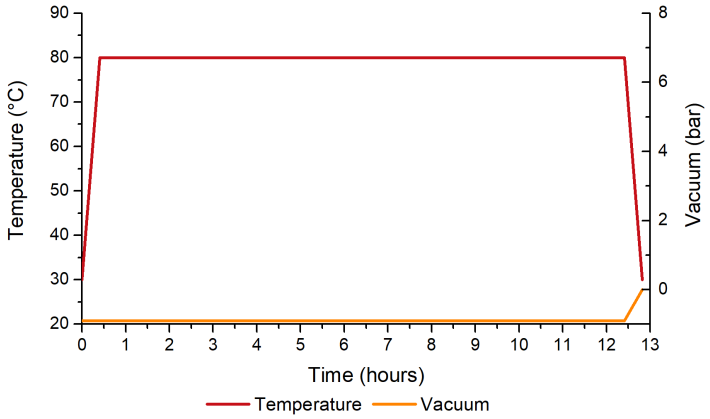
PREPREG PROCESSING BY OVEN VACUUM BAG CURING

The following can be helpful for producing good quality mouldings:
Prepreg should normally be cut to shape using templates and laid up in accordance with design instructions.
Care must be taken to ensure the prepreg conforms exactly to the tool shape, especially around internal corners.
If necessary, the tack of the system may be increased by gentle warming with hot air.
The lay up should be vacuum debulked at regular intervals using a P3 (pin pricked) release film on the prepreg surface and 2 thin breather layers.
The laminate is vacuum bagged and a vacuum of 980 mbar (29 mm Hg) applied for 5 to 10 minutes.
Once the required thickness has been built up, the laminate may be prepared for cure.
Holding the bagged uncured panel under vacuum for an extended period before curing (e.g. overnight). Whilst time consuming, it does helps air removal.
Use a slow ramp (around 1°C/minute) at the beginning of the cure cycle, with a low temperature (warm) dwell, whilst the resin still fairly viscous.
Debulking:
Repeat: Unitape: Every 4 plies; Fabric: Every 2 plies.
Vacuum: 29 mmHg.
Time: Unitape: 5 to 10 minutes; Fabric: 5 minutes. Temperature: Ambient.

[3] Cure cycle: 1h @ 120 °C

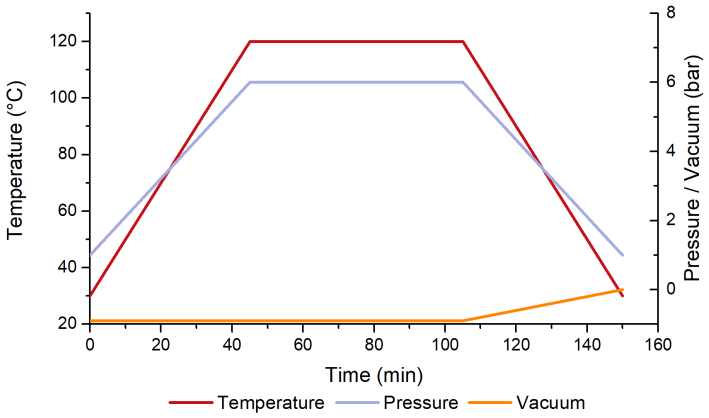
OoA CURING CONDITIONS

Recommended OoA Cure (Oven Vacuum bag)[4]			
Time (h:min)	Temp. (°C)	Time (h:min)	Vacuum (bar)
0:00	30	0:00	0.9
0:25	80	0:25	0.9
12:25	80	12:25	0.9
12:50	30	12:50	0



AUTOCLAVE CURING CONDITIONS

Autoclave Cure[4,5]			
Time (min)	Temp. (°C)	Time (min)	Pressure (bar)
0	30	0	1
45	120	10	6
105	120	30	6
150	30	50	1



CURING TEMPERATURES AND Tg's[5]

Unidirectional carbon laminate[7]		
Cure cycle	Tg (DMA) Onset (°C)	Tg (DMA) tanδ (°C)
12 h @ 80°C (OoA)	112	123
1 h @ 120°C	126	137

4 A temperature reference thermocouple (for temperature control during curing cycle) must be fitted underneath the first material ply on a non-critical mold surface area. Working with air temperature as Temperature control may result in lack in polymerization and/or reduction in the developed Tg .

5 Vacuum bag pressure: 0.9 bar.

6 Low temperature cure cycles may result in a laminate with a reduced Tg. It may be appropriate to postcure the component.

7 250 gsm T700 grade fiber.

Microtex Composites S.r.l.
Via del Pozzo di San Sebastiano, 15/C
51100 Pistoia (Italy)
Tel. +39 0574 627298
info@microtexcomposites.com
www.microtexcomposites.com

MECHANICAL PROPERTIES

Unidirectional carbon laminate[8]		60 min, 120°C, 6 bar	12h 80°C OoA
Property	**Test Method**	**Values***	
Tensile strength [MPa]	ASTM D3039	2543	2547
Tensile modulus [GPa]		134	138
Compressive strength [MPa]	SACMA SRM 1R-94	1319	1249
Compressive modulus [GPa]		115	117
Interlaminar shear strength (ILSS) [MPa]	ASTM D2344	89	83
Flexural strength [MPa]	ASTM D790	1381	1335
Flexural modulus [GPa]		108	108

* Test conditions: room temperature, dry. Normalized values at 60% VF .

AVAILABILITY

E3-120 Series 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: E3-120: SDS-449

8 250 gsm T700 grade fiber.

Microtex Composites S.r.l.
Via del Pozzo di San Sebastiano, 15/C
51100 Pistoia (Italy)
Tel. +39 0574 627298
info@microtexcomposites.com
www.microtexcomposites.com