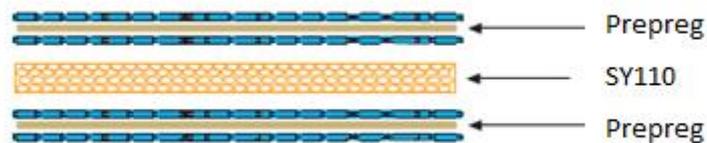


SY 110

LOW DENSITY SYNTACTIC CORE

- ▣ Lightweight drapable core material
- ▣ Co-curable with all Gurit Prepregs & SPRINT™
- ▣ Produces ultra-light and stiff panels
- ▣ Wide process window; curing from 85-130°C (185-266°F)
- ▣ Fast lay-up times
- ▣ Available at 0.7mm and 1.0mm thickness

INTRODUCTION



Typical Sandwich Panel using prepreg and SY 110

INSTRUCTIONS FOR USE

It is important to take care unrolling the material to avoid wrinkling or creasing the product. Do not leave the rolls lying flat on a bench/floor or box, as this will flatten one side of the product roll.

1. Place the SY 110 into the laminate lay-up as desired; it is usual for both faces of the SY 110 to be covered with a prepreg or SPRINT™ material to form an in-situ sandwich construction.

2. If required apply a peel ply, pre-impregnated or dry, over the top of the laminate stack. Note that for good secondary bonding of a peel-ply laminate, a nylon peel ply such as Gurit Stitch Ply A, is strongly recommended. If using SPRINT™, insert high tex glass strands at an interval of 0.5m on the perimeter of the tool on the front and back of the laminate lead them out so that they will protrude from underneath the next layer in the vacuum stack, the non-perforated release film and contact the breather material. Cover the peel ply entirely with a perforated release film. Cover the non-perforated release film with breather material such as Gurit / Tygavac Econoweave 44W or equivalent, so that it extends over the release film in all directions and contacts the dry glass strands.

3. Install a vacuum bag by standard techniques. Insert at least two vacuum stems through the bag connecting one to the vacuum source and the other, at a point on the part furthest from the source, to a calibrated vacuum gauge. Position part in the oven and draw vacuum to check for bag or system leaks.

4. Cure the laminate in accordance with the specification given later in this datasheet.

PRODUCT INFORMATION

TRANSPORT & STORAGE

When stored sealed & out of direct sunlight.

All SY 110 materials should be stored in a freezer when not in use to maximise their useable life, since the low temperature reduces the reaction of resin and catalyst to virtually zero. However, even at -18°C (0°F), the temperature of most freezers, some reaction will still occur. In most cases after some years, the material will become unworkable.

To avoid condensation on the rolls allow it to reach room temperature before unwrapping.

MINIMUM CURE TIME & TEMPERATURE

SY 110 cured using vacuum bag processing with recommended minimum cure of 10 hours at 85°C (185°F)

PROPERTY	LOW TEMPERATURE SLOW CURE	THIN SECTION RAPID CURE	HIGH TEMPERATURE STANDARD CURE	TEST STANDARD
Processing Method	Vacuum Bag			
Typical Ramp Rate	1°C (1.8°F) per minute	2°C (3.6°F) per minute	2°C (3.6°F) per minute	-
Cure Temperature	85°C (185°F)	120°C (248°F)	130°C (266°F)	-
Cure Dwell Time	600 (min)	110 (min)	30 (min)	-
Cure Pressure	-1 (bar)			-
Dry T _g (DMA)	tbd	> 110°C (230°F)		ISO 6721 (DMA)

CURING SCHEDULE

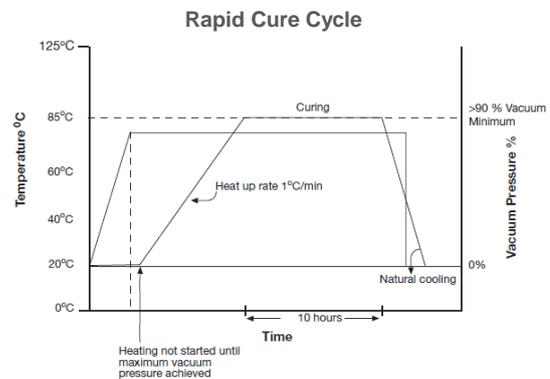
CURE ENVELOPE

SY 110 has a relatively flexible cure envelope. The minimum cure is 85°C (185°F) for 10 hours and a quick cure is 130°C (266°F) for 30 minutes.

SY 110 will co-cure with other Gurit prepreg and SPRINT™ products. However, the minimum cure table for SY 110 must be followed.

TYPICAL CURE PROFILES

The successful use of these cure schedules will depend on part size and laminate construction. Heat up rate and dwell periods need to be tailored to take consideration of oven capacity, thermal mass of tool, laminate construction etc. It is recommended that Gurit Technical Support is contacted for further advice before utilising any suggested cure cycles. Please contact Gurit Technical Support for advice on post-cure schedule to achieve appropriate body panel T_g.



SY 110 is also suitable for press moulding; please contact Gurit Technical Support for further information.

STORAGE TEMP		UNIT	VALUE
-18°C	0°F	months	12
+18-22°C	64-72°F	weeks	8

HEALTH AND SAFETY

Please refer to product SDS for up to date information specific to this product.

LAMINATE PROPERTIES

CURED LAMINATE PROPERTIES

When used in conjunction with single sided SPRINT™. Cured using standard processing techniques and a minimum cure time of 10 hours at 85°C (185°F).

PROPERTY	SYMBOL	RC200T RC2/0.7/RC2	RC300T RC3/1/RC3	W5/1/W5	TEST STANDARD
Skin 1 Construction	-	198gsm HS-3k 2x2 twill woven carbon	300gsm HS-6k 2x2 twill woven carbon	580gsm 2x2 twill woven E glass	-
Core	-	0.7mm SY 110	1.0mm SY 110	1.0mm SY 110	-
Skin 2 Construction	-	198gsm HS-3k 2x2 twill woven carbon	300gsm HS-6k 2x2 twill woven carbon	580gsm 2x2 twill woven E glass	-
Cured Ply Thickness	t_{ply}	1.2mm	1.75mm	2.0mm	ASTM S 3171 Method II
Cured Weight	W_{cured}	1140gsm	1660gsm	2250gsm	-
Cure Method	-	Vacuum Bag	Vacuum Bag	Vacuum Bag	-
Cure Schedule	-	10 hours / 85°C (185°F) / -1 bar	10 hours / 85°C (185°F) / -1 bar	10 hours / 85°C (185°F) / -1 bar	-
Number of Plies	-	1	1	1	-
Temperature Performance	T_{g1}	<120°C (248°F)	<120°C (248°F)	<120°C (248°F)	ISO 6721
Poissons Ration	ν	0.037	0.037	0.089	ISO 527-5 Type A
0 / 90° Modulus	E_T	22.1 GPa 3.2 msi	23.0 GPa 3.3 msi	9.7 GPa msi	ISO 527-5 Type A
0 / 90° flexural modulus	E_F	42.4 GPa 6.2 msi	43.7 GPa 6.3 msi	16.9 GPa msi	ISO 14125
Shear Modulus	G_{12}	1.44 GPa 0.21 msi	1.50 GPa 0.22 msi	1.70 GPa msi	ISO 14129
Equivalent steel thickness / weight saving	t_{steel} / M	0.7mm / 80%	1.0mm / 80%	0.9mm / 61%	-
Equivalent aluminium thickness / weight saving	$t_{alu.} / M$	1mm / 60%	1.5mm / 60%	1.3mm / 22%	-

NOTICE

All advice, instruction or recommendation is given in good faith but the selling Gurit entity (the Company) only warrants that advice in writing is given with reasonable skill and care. No further duty or responsibility is accepted by the Company. All advice is given subject to the terms and conditions of sale (the Conditions) which are available on request from the Company or may be viewed at Gurit's Website: www.gurit.com/terms-and-conditions.aspx

The Company strongly recommends that Customers make test panels in the final process conditions and conduct appropriate testing of any goods or materials supplied by the Company prior to final use to ensure that they are suitable for the Customer's planned application. Such testing should include testing under conditions as close as possible to those to which the final component may be subjected. The Company specifically excludes any warranty of fitness for purpose of the goods other than as set out in writing by the Company. Due to the varied nature of end-use applications, the Company does, in particular, not warrant that the test panels in the final process conditions and/or the final component pass any fire standards.

The Company reserves the right to change specifications and prices without notice and Customers should satisfy themselves that information relied on by the Customer is that which is currently published by the Company on its website. Any queries may be addressed to the Technical Services Department.

Gurit is continuously reviewing and updating literature. Please ensure that you have the current version by contacting your sales contact and quoting the revision number in the bottom left-hand corner of this page.

TECHNICAL CONTACT INFORMATION

For all other enquiries such as technical queries:

Telephone + 44 1983 828000 (08:30 – 17:00 GMT)
Email technical.support@gurit.com

24-HOUR CHEMICAL EMERGENCY NUMBER

For advice on chemical emergencies, spillages, fires or exposures:

Europe +44 1273 289451
Americas +1 646 844 7309
APAC +65 3158 1412

All trademarks used or mentioned in this document are protected by law.

E customer.support@gurit.com

W www.gurit.com