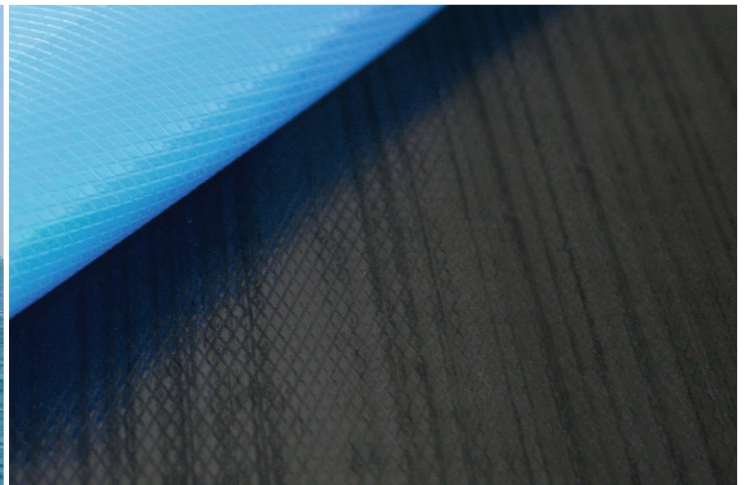
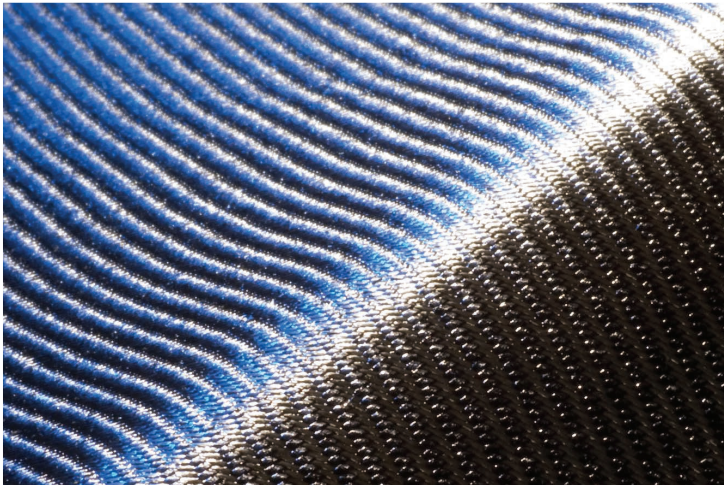


Prepregs





INTRODUCTION

Gurit's long history supplying prepregs to the wind energy, transportation and marine industries has allowed Gurit to lead the way by introducing the next generation of prepregs, specifically designed to make component manufacture faster, easier and cheaper.

Pre-impregnated materials (prepregs) are reinforcement fibres or fabrics into which a pre-catalysed resin system has been impregnated by a machine. The resin systems in these materials react only very slowly at room temperature, allowing a long shelf life and are cured by heating them to the prescribed elevated temperature.

Gurit's Prepreg offering is grouped into:

PERFORMANCE / HIGH PERFORMANCE PREPREGS

Structural prepreg technology for faster, easier and cheaper large-scale composite components.

INDUSTRIAL PREPREGS

Structural Industrial prepreg technology for faster, easier and cheaper large-scale composite components.

PREPREG PRODUCTS NAMING CONVENTION

Gurit's comprehensive prepreg offering has six main product formats aimed at out of autoclave processing:

- Epoxy Prepreg (**SE or WE**)
- SPRINT™ (**ST or WT**) Film Infusion Technology
- SparPreg™ UD Glass & Carbon Prepreg Solution
- Surfacing Films (**SF**)
- Film Adhesives (**SA**)
- Mono-component Pastes (**SP**)

GURIT'S RANGE OF PERFORMANCE & STRUCTURAL PREPREGS

	FORMAT	SYSTEM	MAIN FEATURES	LOWEST CURE		FASTEST CURE		TOUGH-ENED	RECOMMENDED PROCESSING METHOD	Max Tg1 BY DMA (°C)	SHELF-LIFE		3RD PARTY CERTIFICATIONS / QUALIFICATIONS*	TYPICAL APPLICATIONS	TYPICAL REIN-FORCEMENTS	ANCILLARY PRODUCTS	PAGE
				TEMP (°C)	TIME (HRS)	TEMP (°C)	TIME (MINS)				MTHS @ -18°C	DAYS @ +21°C					
PERFORMANCE	Prepreg	SE84LV	<ul style="list-style-type: none"> – Versatile high-strength prepreg system – Curable at 80°C in thick sections 	80	12	120	60	Yes	Autoclave Press Moulding Vacuum Bagging	115	24	56	DNV-GL approved: – UD carbon prepreg – Biax carbon Prepreg Lloyds approved: – UD carbon prepreg – Biax / woven carbon Prepreg	High performance light-weight, high-stress structures – round the world yacht hulls and decks	Carbon Aramid E-Glass	SF 80 SA 80 SP 4832 SP 9435	4
	SPRINT	ST94	<ul style="list-style-type: none"> – Drape and tackiness optimised for excellent handling – Ideal for complex or vertical mouldings – Excellent balance of mechanical performance and toughness 	85	10	120	45	Yes	Autoclave Press Moulding Vacuum Bagging	115	24	21	DNV-GL approved: – Biax / quad carbon SPRINT™ – Biax / woven E-glass SPRINT™	Ideal for large structures where heavyweight materials need to remain in the mould for long durations prior to curing	Carbon Aramid E-Glass	SF 80 SA 80 SP 4832	4
	SPRINT	ST95	<ul style="list-style-type: none"> – Drape and tackiness optimised for excellent handling – Ideal for complex or vertical mouldings – Excellent balance of mechanical performance and toughness 	85	10	120	60	Yes	Autoclave Press Moulding Vacuum Bagging	125	24	21	DNV-GL approved: – Biax / woven E-glass SPRINT™ – Biax / woven carbon SPRINT™	High volume industrial grade toughened SPRINT™ material	Carbon Aramid E-Glass	SF 80 SA 80 SP 4832	5
	SPRINT	ST 110	<ul style="list-style-type: none"> – Drape and thickness optimised for excellent handling – Ideal for complex or vertical mouldings – Excellent balance of mechanical performance & toughness 	85	10	130	30	No	Autoclave Vacuum Bagging	115	24	14		Body and closure panels for automotive applications	Carbon E-Glass	SY110, SF80, SF80 FROBL, SF95VH, SF96	5
HIGH PERFORMANCE	Prepreg	SC 110(T2)	<ul style="list-style-type: none"> – White spot free high clarity resin for cosmetic parts – Versatile, high strength prepreg resin system – Flexible cure as low as 85°C 	85	10	150	20	No	Autoclave Press Moulding	125	12	21		Ideal for high visual quality components without white-wash or white spots	Carbon E-Glass		6
	Prepreg	SC 160	<ul style="list-style-type: none"> – Class leading resin clarity – High temperature performance 	130**	1.5	160	15	Yes	Autoclave Press Moulding	180	12	21		Suitable for use in high temperature applications	Carbon		6
	Prepreg	Smartcure™	<ul style="list-style-type: none"> – Rapid cure in less than 5 minutes – Ideal for Hot-in Hot-out press moulding manufacture 	130	15	150	5	Yes	Press Moulding	175	18	56		High volume component manufacture KTL capable	Carbon		7
INDUSTRIAL	Prepreg	Sparpreg™	<ul style="list-style-type: none"> – Lloyds approved UD carbon prepreg – Excellent handling & processing properties – no de-bulk – Fully compatible with Gurit SPRINT™ & prepreg products – UD prepreg for thick structural sections 	85	10	120	45	No	Autoclave Press Moulding Vacuum Bagging	125	24	60	DNV-GL approved: – UD carbon prepreg – UD E-glass prepreg	High quality monolithic unidirectional Components that require fast single shot production in thick sections	Carbon Aramid E-Glass	SF 80 SA 80 SP 9435	7
	Prepreg	WE 91-1	– High tack epoxy prepreg	85	10	120	45	No	Autoclave Press Moulding Vacuum Bagging	125	24	21	DNV-GL approved: – Biax E-glass prepreg	Large Structural components such as wind turbine blade shells and shear webs	Carbon Aramid E-Glass	SF 80 SA 80 SP 9435	8
		WE 91-2	– Medium tack epoxy prepreg						Autoclave Press Moulding Vacuum Bagging								
SPRINT	WT 93	<ul style="list-style-type: none"> – Low tack epoxy SPRINT™ – Cost effective for large structures 	85	10	120	45	No	Autoclave Press Moulding Vacuum Bagging	125	24	21	DNV-GL approved: – Biax E-glass prepreg	Large Structural components such as wind turbine blade shells, shear webs, spars and roots	Carbon Aramid E-Glass	SF 80 SA 80 SP 9435	8	

* 3rd party certifications are format specific. Please contact Gurit Technical Support for further information.

** Will require post cure to maximise thermal properties, please refer to TDS.

SE 84LV

Toughened Epoxy Prepreg

80°C cure temperature



Lloyds approved



DNV-GL approved



- Curable at temperatures as low as 80°C
- Versatile, high-strength prepreg system
- Low viscosity - Ideal for use with heavy fibre weights
- Lloyds and DNV-GL approved
- Can be processed with vacuum-only processing

SE 84LV is an exceptionally versatile hot-melt, epoxy prepreg. It can be cured at temperatures as low as 80°C, or for faster moulding of components at 120°C. This is achieved with an extremely good out-life of up to 8 weeks at 18-22°C. SE 84LV is a toughened system, and offers excellent mechanical properties on a wide variety of reinforcing fabrics and fibres and is commonly used in vacuum bagging, press-moulding, autoclave and other pressure moulding processes. SE 84LV is a low viscosity system used with heavy fibre weights where low-flow processing conditions (vacuum bag pressure and minimum cure temperature), are likely to be used. With its high compressive strength it is widely used in large heavily loaded components, such as yacht hulls, and spars.

TYPICAL APPLICATIONS

SE 84LV has been selected for use by various America's Cup syndicates and boats racing in the Volvo Ocean Race. SE 84LV is widely used in sandwich structures with honeycomb, foam and balsa cores, primarily with the toughened SA 80 Adhesive Film.

ST 94

Single-sided SPRINT™

DNV-GL approved



Lloyds approved



Ideal for thick sections



- Drape and tackiness optimised for excellent handling
- Ideal for complex or vertical mouldings
- Excellent balance of mechanical performance and toughness

ST 94 is a tough hot-melt, epoxy resin that offers an extremely good balance of mechanical properties. It has been formulated to give an ideal tack level at workshop temperature. It is ideal for structural components where improved impact performance and resistance to resin microcracking is desired.

TYPICAL APPLICATIONS

Ideal for large structures where heavyweight materials need to remain in the mould for long durations prior to curing.

ST 95

Toughened Structural SPRINT™

DNV-GL approved



Fast layup



Rubber toughened system



- Extremely low void content
- Excellent laminate quality
- Variable cure temperature (85-120°C)
- Drapeable and conformable
- No debulk necessary between plies
- DNV GL Approved

ST 95 is a toughened hot-melt, epoxy resin that offers an extremely good balance of mechanical properties. It has been specially formulated to maximise the outlife of SPRINT™ products at room temperature. It is ideal for structural components where improved impact performance and resistance to resin microcracking is desired.

TYPICAL APPLICATIONS

Ideal for making general, structural items for automotive, marine and industrial applications.

ST 110

Car Body Panel System SPRINT™ Resin

SPRINT™ Technology



Good mechanical performance



- Drape and thickness optimised for excellent handling
- Ideal for complex or vertical mouldings
- Excellent balance of mechanical performance and toughness
- Suitable for autoclave and vacuum bag processing

ST 110 is used alongside a suitable surfacing film (SF 80, SF 95VH, SF 80FROBL or SF 96) and SY 110 Syntactic Core to build up a CBS panel. The woven carbon and glass reinforcements can be used to lay up various panel combinations to suit the required stiffness and weight targets needed.

TYPICAL APPLICATIONS

Structural ST 110 is used to form a multi layered material referred to as CBS Car Body SPRINT™ for body and closure panels for automotive applications.

SC 110(T2)

Cosmetic Carbon Prepreg

45 min cure
at 120°C



Ultra high
clarity



- Ultra high clarity – ideal for cosmetic components with no white-wash or spots
- High-strength prepreg system
- Versatile process window with autoclave and press moulding
- Curable at temperatures as low as 80°C
- Fast 45 min cure at 120°C
- Rapid 20 minute cure at 150°C in a press
- Excellent tack allowing easy in-mould repositioning

SC 110(T2) is ideally suited to achieve visual surface quality. This cosmetic grade prepreg utilizes a high clarity, versatile, hot-melt epoxy resin formulation. This specifically developed, unique formulation produces truly white-wash-free parts resulting in increased production output and scrap cost savings of up to 20%. SC 110(T2) can be cured at temperatures as low as 80°C or even faster cures are achievable using press moulding technologies at temperatures up to 150°C. QUV SE Accelerated Weathering Test has revealed that Gurit SC 110(T2) carbon prepreg offers superior weathering performance compared with the current market range.

TYPICAL APPLICATIONS

Gurit's SC 110(T2) is suitable for automotive applications where a high clarity finish is required.

SC 160

Cosmetic Carbon Prepreg

15 min cure
at 160°C



Ultra high
clarity



- Ultra-high clarity prepreg system
- Ideal for visual components
- Autoclave cure offers 180°C (356°F) Tg
- Rapid press moulding
- Curable at temperatures as low as 130°C (266°F)
- High tack and drape allowing easy in-mould repositioning

SC 160 is a visual grade prepreg that utilises a high clarity, versatile, hot-melt epoxy resin formulation.

The unique formulation is ideal for manufacturing visual quality components using autoclave and press moulding. It can be cured at temperatures as low as 130°C (266°F), or it can be used for rapid press moulding of components at 160°C (320°F). A maximum resin Tg of 180°C (356°F) can be achieved from an autoclave cure. The product has high tack which aids the moulding of complex components in metal and carbon tooling, whilst maintaining a good out-life of up to 3 weeks at 21°C (70°F). SC 160 is a toughened system and offers excellent mechanical properties on a wide variety of reinforcing fabrics and fibres.

TYPICAL APPLICATIONS

SC 160 is suitable for interior and exterior automotive applications where a high clarity finish is required in conjunction with a high Tg.

Smartcure™

5 minute Curing Prepreg

Developed for
automotive



5 minute
cure time @
150°C



- Epoxy Prepreg Optimised for Press Moulding Applications
- Developed for Automotive Component Production
- Good Surface Finish
- Net Shape Components
- Hot-in, Hot-out Press Processing
- 5 Minute Cure Time at 150°C

Smartcure™ Prepreg has been specifically developed for high volume press moulding applications and enables users to perform cycle times of 5 minutes.

The products characteristics facilitate simple preforming prior to moulding and the ability to fill edged detail during moulding, allowing net shaped parts to be manufactured.

TYPICAL APPLICATIONS

High volume component manufacture. KTL capable.

SparPreg™

Unidirectional
epoxy prepreg

DNV-GL
approved



High performance
UD Prepreg



Out of
autoclave



- UD prepreg ideal for use in thick sections
- Available with glass or carbon fibre
- Excellent mechanical properties
- Out-of-autoclave curing
- Excellent handling & processing properties during lamination
- Recommended cure between 85°C / 185°F and 120°C / 250°F

SparPreg™ was developed to benefit the lay-up of thick UD sections, such as wind turbine blade spars. The material can produce thick laminates of exceptional quality with low void content, without the need for an intermediary debulking process or additional dry fabric reinforcement to aid air removal. The net result enables blade manufacturers to eliminate production steps and redundant materials and increase capacity.

SparPreg™ has been specially formulated to achieve the outstanding in-cure and mechanical performance of the WE 91 prepreg and WT 93 SPRINT™ resin systems. SparPreg™ can be cured at temperatures as low as 85°C / 185°F, but can also be used for the rapid manufacture of components at 120°C / 250°F.

TYPICAL APPLICATIONS

SparPreg™ is an advanced UD prepreg, developed to enable the economic manufacture of unidirectional spar caps for more demanding blade designs, ideal for use in conjunction with other Gurit products.

WE 91-1 / WE 91-2

High flow epoxy prepregs

Long shop life



Cure from
85°C to 120°C



DNV-GL
approved



- High flow epoxy resin matrix
- High (WE 91-1) and medium (WE 91-2) tack prepreg
- Long ambient shelf-life - up to 2 months

Gurit's WE 91 prepreg product range comprises of two tack variants; WE 91-1 high tack and WE 91-2 medium tack prepreps. WE 91 is a high flow epoxy prepreg ideally suited to structural composite component manufacture. It can be cured at temperatures as low as 85°C / 185°F, but can also be used for the rapid manufacture of components through its 45-minute cure at 120°C / 250°F. All of this can be achieved together with an out-life of 60 days at 21°C / 70°F. WE 91 is designed for vacuum bag processing and offers excellent mechanical performance on glass and carbon fibre reinforcements.

TYPICAL APPLICATIONS

Technically and commercially competitive engineering materials.

WT 93

Low tack epoxy SPRINT™

DNV-GL
approved



Ideal for thick
UD sections



Out of
autoclave



- WT 93 low tack SPRINT™ resin matrix
- Good out-life at 21°C / 70°F
- Cure from 85°C - 120°C / 185°F - 250°F
- Dry fabric enables efficient air evacuation
- Suitable for automated lay-up
- Excellent laminate quality with low void content

INTRODUCTION

WT 93 is part of Gurit's comprehensive offering of structural composite product solutions comprising of 3 main product groups; Prepreg, SPRINT™ and SparPreg™. This unique product range provides technically and commercially competitive engineering materials, ideal for use either solely, or in conjunction with other Gurit products from within the range. WT 93 can be cured at temperatures as low as 85°C / 185°F, but can also be used for the rapid manufacture of components through its 45-minute cure at 120°C / 250°F. All of this can be achieved together with an out-life of 21 days at 21°C / 70°F. WT 93 is designed for vacuum bag processing and offers excellent mechanical performance on glass and carbon fibre reinforcements.

TYPICAL APPLICATIONS

Gurit's innovative WT 93 SPRINT™ product range uses a high flow, low tack epoxy prepreg ideally suited to the manufacture of thick sections such as turbine blade roots or spars.

GURIT'S RANGE OF ANCILLARY PRODUCTS

MONOCOMPONENTS	PRODUCT NAME	MAIN FEATURES	LOWEST CURE		FASTEST CURE		RECOMMENDED PROCESSING METHOD	MAX T _g , BY DMA (°C)	SHELF-LIFE		DENSITY (g/cm ³)	TYPICAL APPLICATIONS	PAGE	
			TEMP (°C)	TIME (HRS)	TEMP (°C)	TIME (MINS)			MTHS @ -18°C	DAYS @ +21°C				
	SP 11100		70	16	N/A	N/A		75	12	20	0.75	Core splicing for use with 70°C prepregs systems Low temperature	12	
	SP 4832	<ul style="list-style-type: none"> → Co-curable with prepreg systems → Compatability of handling and processing → Ideal for core splicing and gap filling 	80	12	N/A	N/A	Autoclave Pressed Vacuum Bagging	85	24	20	0.7	Core splicing for use with 80°C prepregs systems Low density, elevated temperature		
	SP 9435		85	12	120	60		95	12	84	0.75	Core splicing and to stop bridging of prepregs High temperature		
FILM ADHESIVES	PRODUCT NAME	MAIN FEATURES	LOWEST CURE		FASTEST CURE		RECOMMENDED PROCESSING METHOD	MAX T _g , BY DMA (°C)	SHELF-LIFE		TOUGHENED	TYPICAL APPLICATIONS	PAGE	
			TEMP (°C)	TIME (HRS)	TEMP (°C)	TIME (MINS)			MTHS @ -18°C	DAYS @ +21°C				
	SA 80	<ul style="list-style-type: none"> → Consistent bond-line thickness and weight → High strain to failure, high toughness → Handling & no mixing convenience 	80	12	120	60	Autoclave Pressed Vacuum Bagging	100	24	56	Yes	Co-cure with 80°C prepregs for core and high strength adhesive bonding applications	12	
SURFACING FILMS	PRODUCT NAME	MAIN FEATURES	LOWEST CURE		FASTEST CURE		RECOMMENDED PROCESSING METHOD	MAX T _g , BY DMA (°C)	SHELF-LIFE		TOUGHENED	TYPICAL APPLICATIONS	PAGE	
			TEMP (°C)	TIME (HRS)	TEMP (°C)	TIME (MINS)			MTHS @ -18°C	DAYS @ +21°C				
		SF 80	<ul style="list-style-type: none"> → Surface film to generate a resin rich surface → Suitable for subsurface applications → Available in different colours 	80	12	120	60		100	24	14	Yes	Co-cure with 80°C prepregs for resin rich surface	13
		SF 96	<ul style="list-style-type: none"> → Pinhole free surface for the easy application of paint systems 	85	10	120	60	Autoclave Vacuum Bagging	115	24	5	No	Co-cure with 85°C prepregs for resin rich surface ideal for sanding / priming prior to painting	13
	SF 95VH	<ul style="list-style-type: none"> → Silicon Carbide filled film to generate very hard wearing surfaces 	85	10	120	60		130	24	3	Yes	Ideal for applications that require a highly toughened system such as car body undertrays	14	
SYNTACTIC CORE	SY 110	<ul style="list-style-type: none"> → Lightweight, drapable core material → Available at 0.7 and 1.0mm thickness 	85	10	130	30	Vacuum Bagging	110	12	56	No	Produces ultra light and stiff panels	14	

SP 11100, SP 4832, SP 9435

Monocomponent Fillers

Co-curable with
prepreg systems



Ideal for core
splicing and
gap filling



- Co-curable with prepreg systems
- Compatibility of handling and processing
- Ideal for core splicing and gap filling

SP 11100 - for use with 70°C Prepregs systems

SP 4832 - for use with 80°C Prepregs systems, low density

SP 9435 - for use with 85°C Prepregs systems, high density for high temperature applications

TYPICAL APPLICATIONS

Core splicing for use with 70°C - 85°C Prepregs systems.

SA 80

Toughened Epoxy
Film Adhesive

80°C cure
temperature



Ideal for
core bonding



High
toughness



- Low temperature cure
- Designed for bonding prepreg skins to honeycomb and certain foam cores
- Controlled flow for maximum bond integrity
- Toughened for impact resistance and peel strength

SA 80 is a film adhesive that is designed for secondary bonding, core-bonding and for co-curing with the range of Gurit prepregs. It can be cured at temperatures as low as 80°C, or can be more quickly cured at temperatures above 120°C. It has an out-life of 56 days at room temperature.

TYPICAL APPLICATIONS

Suitable for bonding aluminium, foam and honeycomb cores in conjunction with Gurit's range of Prepreg or Ampreg laminating systems. See individual Technical Datasheets for further information.

PACK SIZES & AVAILABILITY

SA 80 is available in weights up to 300g resin films with or without* a glass carrier.

*150 and 250g only

SF 80

Toughened Surfacing Film

Surface film to
generate a resin
rich surface



80°C cure
temperature



- Toughened System
- Protects underlying laminate
- Reduction in surface film-laminate interfacial voids
- Improved resistance to water ingress
- Suitable for post painting

SF 80 surfacing material is a light green, toughened, epoxy film designed to enhance the surface finish of moulded composite components. It allows a good surface finish to be obtained by vacuum-bag moulding processes. It can be used directly against a suitably release treated mould surface, with prepreg or SPRINT™ plies laid up behind it. When fully cured with SPRINT™ or prepreg, SF 80 forms a stable tough surface which can be sanded in preparation for painting. The epoxy system is supplied ready impregnated into a supporting medium and ready catalysed, requiring only a moderate temperature cure.

TYPICAL APPLICATIONS

Co-cure with 80-120°C prepregs for resin rich surface.

SF 96

Sandable Surfacing Film

Surface film to
generate a resin
rich surface



Stable surface
up to 115°C



Pinhole Free
surface



- Easy to sand
- Significant reduction in print-through
- Reduction in surface film-laminate interfacial voids
- Improved opacity
- Stable surface up to 115°C (depending on cure)

SF 96 surfacing material is an epoxy film designed to enhance the surface finish of moulded composite components. It allows a good surface finish to be obtained by vacuum-bag moulding processes. It can be used directly against a suitably release treated mould surface, with prepreg or SPRINT™ plies laid up behind it. When fully cured with SPRINT™ or prepreg, SF 96 forms a stable sandable surface which, once lightly sanded to provide a key for painting, provides a pin-hole free laminate. The epoxy system is supplied ready impregnated into a supporting medium and ready catalysed, requiring only a moderate temperature cure.

TYPICAL APPLICATIONS

Co-cure with 85°C prepregs for resin rich surface ideal for sanding / priming prior to painting.

SF 95VH

Abrasion-Resistant
Surfacing Film

Hard protective
coating



Abrasion
resistant



- Hard protective coating
- Increases surface longevity by up to 300%
- Reduction in surface film laminate interfacial voids
- Improved opacity

SF 95VH surfacing material is a very hard, abrasion-resistant epoxy film. It is designed to protect vulnerable underbody components from damage caused by foreign objects. Typical applications include inner wings, and front wheel diffusers. SF 95VH can be used directly against a suitably release treated mould surface, with prepreg or SPRINT™ plies laid up behind it, or as a final layer in the mould. It can be cured with vacuum only processing. Due to abrasion-resistance of this material, it would not be usual to apply a paint finish. The epoxy system is supplied ready impregnated into a supporting medium and ready catalysed, requiring only a moderate temperature cure.

TYPICAL APPLICATIONS

Ideal for applications that require a highly toughened system such as car body undertrays.

SY 110

Low Density Syntactic Core

Curing from
85°C - 130°C



Fast lay-up
times



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

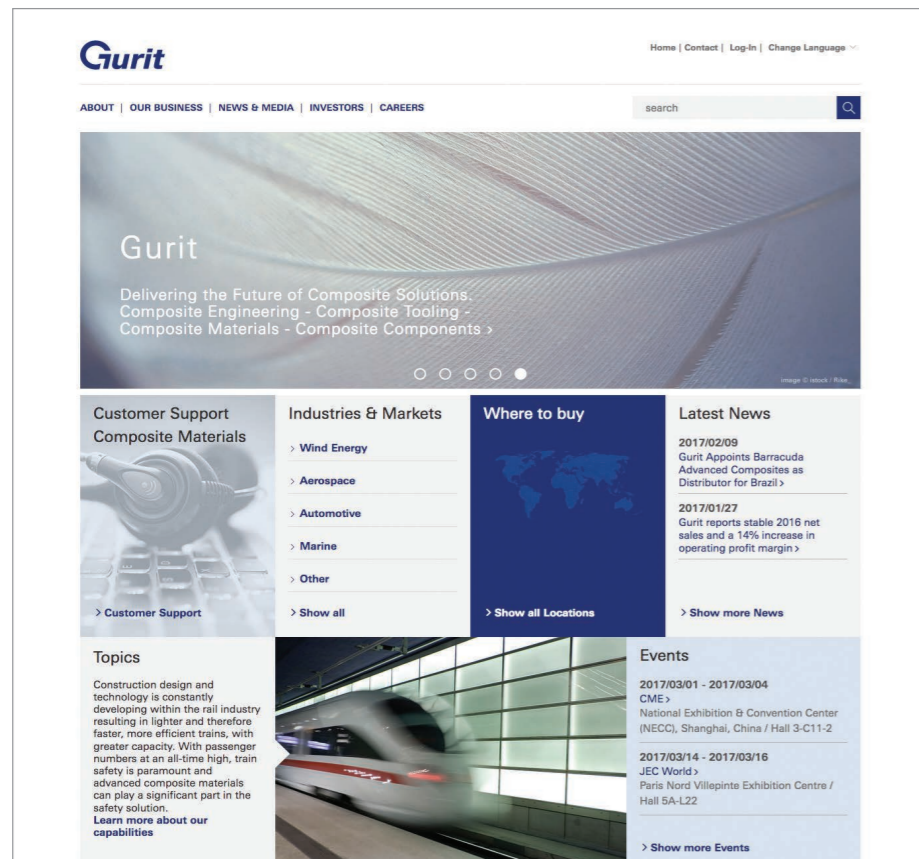
SY 110 is a lightweight, drapable core material that is designed to be co-curable with most Gurit Epoxy Prepreg and SPRINT™ materials, to produce ultra-light and stiff panels.

TECHNICAL INFORMATION AND PRICING

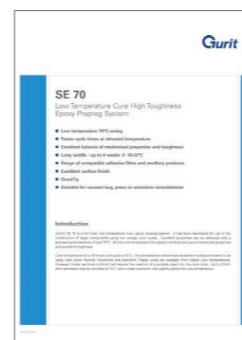
For more detailed information on performance and structural prepreg materials, as well as the complete Gurit product portfolio, please visit: www.gurit.com to view the following:

- Product Data Sheets
- News / Case Studies
- Events Schedules
- Product Brochures
- Composite Guides
- Representatives Contact Details

For pricing or other enquiries, please contact customer.support@gurit.com



www.gurit.com



Product Datasheets



Case Studies

