

SPABOND™ 345

TOUGHENED GAP FILLING EPOXY ADHESIVE SYSTEM

- High strength and toughness
- Excellent gap filling properties
- Designed for cartridge and mixing machine dispense
- Three hardener speeds give a range of working times / clamp times
- Low exotherm and shrinkage
- Lloyds Register & DNV-GL Certified Formats Available

INTRODUCTION

Spabond™ 345 is a toughened, high performance adhesive system ideal for bonding large structures where substrate surfaces have uneven geometry. The product has a thick, paste-like consistency, and can be applied without sag in thicknesses of over 30mm at 15°C, making it ideal where large, uneven vertical gluelines are required.

The product has a 2:1 mix ratio by volume. To aid mixing, the components are pigmented to give visual indication of mix quantity. The Fast hardener is coloured purple, but there is also a black version. This is useful for improving the cosmetic appearance of bondlines involving exposed carbon composites.

Spabond™ 345 is available in cartridges and straight-sided pails for machine mixing/dispense.

SYSTEM		Gel Time (150 g, mixed in water) at 25°C (hh:mm)	20°C CLAMP TIME* (hh:mm)	PAGE
Spabond™ 345	Product Information, Instructions for Use and Health & Safety			2
	Fast	00:28	05:30	3
	Fast Black (BL)	00:28	05:30	4
	Slow	03:50	12:10	5
	Extra Slow	06:00	19:25	6

**working time properties are highly subjective to ambient conditions and should be used as an approximate guideline for all SP 345 systems*



PRODUCT INFORMATION

The product is available in a number of formats please contact your local customer support or download the latest product catalogue available on www.gurit.com. The product formats listed to the right also benefit from 3rd Party Certification and specific details can be found by downloading the certificate from guriit.com.

PRODUCT DESCRIPTION	STATUS	CERTIFICATION
Spabond™ 345 Resin and All Hardeners	Approved	DNV-GL TAK00001H9
Spabond™ 345 Resin and All Hardeners	Approved	Lloyds Register MATS/4606-1

TRANSPORT & STORAGE

The resin and hardeners should be kept in securely closed containers during transport and storage. Any accidental spillage should be soaked up with sand, sawdust, cotton waste or any other absorbent material. The area should then be washed clean (see appropriate Safety Data Sheet). Storage should be in a warm dry place out of direct sunlight and protected from frost. The storage temperature should be kept constant between 10°C and 25°C, cyclic fluctuations in temperature can cause crystallization. Containers should be firmly closed. Hardeners, in particular, will suffer serious degradation if left exposed to air.

COMPONENT	UNITS	10 – 25°C
Spabond™ 345 Resin	months	24
Spabond™ 345 Fast, Fast BL, Slow Hardeners	months	24
Spabond™ 345 Extra Slow Hardener	months	12

For more information on crystallization please refer to the Adhesives section on the Gurit website. (www.gurit.com)

INSTRUCTIONS FOR USE

The product is optimised for use at 15 - 25°C. At lower temperatures the components thicken and may eventually become unworkable. To ensure accurate mixing and good workability pre-warm the resin & hardener as well as the surfaces to be bonded before use.

SURFACE PREPARATION

Before using the product ensure that surfaces to be bonded are clean, dry and dust-free. Prepare all surfaces by abrading with medium grit paper or other suitable abrasive, remove dust then wipe with acetone.

Metals - requires a chemical pre-treatment to create the best bond. Please contact Gurit for a Guide to Surface Preparation and Pre-treatments.

Polyester or vinylester - ensure laminates are fully cured before bonding, then prepare as above.

Epoxy laminates - it is recommended to use a suitable Peel Ply as the last stage in their manufacture, otherwise prepare as above. Trials may be required to test Peel Ply suitability.

Ferrocement - etch with 5% solution of hydrochloric acid, wash with fresh water, then dry.

Timber - sand with abrasive paper across grain. Degrease oily timber with a fast evaporating solvent (e.g. acetone). For resinous or gummy timber, etch with 2% caustic soda solution, wash off with fresh water and dry.

MIXING & HANDLING

Gurit recommends mixing machine dispense. If mixing by hand, mix thoroughly for at least one minute, paying particular attention to the sides and bottom of the mixing vessel, to ensure no streaks remain. Once fully mixed the adhesive should have a uniform colour. Use from pot quickly to maximise resin working life.

CARTRIDGE USE

If dispensing product from a two component cartridge, first prime the cartridge by dispensing slowly until both resin and hardener are at the outlet of the cartridge. Secondly, clean the outlet and attach the mixing head. When starting a new cartridge, dispense and discard a small amount of adhesive (typically the length of a mix head) prior to applying adhesive to the substrate, in order to ensure thorough mixing of the system. If using a pneumatic gun, regulate supply air pressure to a maximum of 4 Bar. Relieve the pressure on the cartridge after use.

HEALTH AND SAFETY

The following points must be considered:

1. Skin contact must be avoided by wearing protective gloves. Gurit recommends the use of disposable nitrile gloves for most applications. The use of barrier creams is not recommended, but to preserve skin condition a moisturising cream should be used after washing.
2. Overalls or other protective clothing should be worn when mixing, laminating or sanding. Contaminated work clothes should be thoroughly cleaned before re-use.
3. Eye protection should be worn if there is a risk of resin, hardener, solvent or dust entering the eyes. If this occurs flush the eye with water for 15 minutes, holding the eyelid open, and seek medical attention.
4. Ensure adequate ventilation in work areas. Respiratory protection should be worn if there is insufficient ventilation. Solvent vapours should not be inhaled as they can cause dizziness, headaches, loss of consciousness and can have long term health effects.
5. If the skin becomes contaminated, then the area must be immediately cleansed. The use of resin-removing cleansers is recommended. To finish, wash with soap and warm water. The use of solvents on the skin to remove resins etc must be avoided.
Washing should be part of routine practice:
 - before eating or drinking
 - before smoking
 - before using the lavatory
 - after finishing work
6. The inhalation of sanding dust should be avoided and if it settles on the skin then it should be washed off. After more extensive sanding operations a shower/bath and hair wash is advised.

APPLICABLE RISK & SAFETY PHRASES

Gurit produces a separate full Safety Data Sheet for all hazardous products. Please ensure that you have the correct SDS to hand for the materials you are using before commencing work.

SPABOND™ 345 & FAST HARDENER

This 1 page product summary is intended for use in conjunction with further advice provided under the Instructions for Use section. All data has been generated from typical production material and does not constitute a product specification.

MIXING AND HANDLING

PROPERTY	UNITS	Spabond™ 345 RESIN	FAST HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - colour	Description	Yellow	Purple	Brown	-
Appearance - form	Description	Thixotropic Paste			-
Mix ratio by weight	Parts by weight	100	48	-	-
Mix ratio by volume	Parts by volume	100	50	-	-
Density at 21 °C	g/cm ³	1.17	1.08	1.14	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	15 °C	20 °C	25 °C	30 °C	TEST METHOD
Spabond™ 345 Resin Viscosity	P	1250	1050	950	700	-
Spabond™ 345 Fast Hardener Viscosity	P	450	300	200	150	-
Initial Mixed System Viscosity	P	520	420	340	270	-
Gel Time (150 g, mixed in water)	hrs:min	00:39	00:28	00:20	00:15	-
Clamp Time* (time to 2kN cleavage strength)	hrs:min	07:50	05:30	03:55	02:45	BS 5350 Part C1
Sag resistance*	mm	17	16	15	14	-

ADHESIVE PERFORMANCE

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Cleavage on steel	F _{cleavage}	kN	12	12	13	BS 5350 Part C1
Lap shear on steel	τ _{steel}	MPa	37	37	42	BS 5350 Part C5

CURED MECHANICAL AND THERMAL PROPERTIES

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	57	68	76	ISO 6721 (DMA)
Cured Density	ρ _{ply}	g/cm ³	-	-	1.17	Archimedes
Volumetric Shrinkage		%	-	-	3.4	Archimedes

*working time properties are highly subjective to ambient conditions and should be used as an approximate guideline for all Spabond™ 345 systems

**initial cure of 24 hours at 21°C

SPABOND™ 345 & FAST BLACK (BL) HARDENER

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MIXING AND HANDLING

PROPERTY	UNITS	Spabond™ 345 RESIN	FAST HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - colour	Description	Yellow	Black	Dark Grey	-
Appearance - form	Description	Thixotropic Paste			-
Mix ratio by weight	Parts by weight	100	48	-	-
Mix ratio by volume	Parts by volume	100	50	-	-
Density at 21 °C	g/cm ³	1.17	1.08	1.14	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	15 °C	20 °C	25 °C	30 °C	TEST METHOD
Spabond™ 345 Resin Viscosity	P	1250	1050	950	700	-
Spabond™ 345 Fast (BL) Hardener Viscosity	P	450	300	200	150	-
Initial Mixed System Viscosity	P	520	420	340	270	-
Gel Time (150 g, mixed in water)	hrs:min	00:39	00:28	00:20	00:15	-
Clamp Time* (time to 2kN cleavage strength)	hrs:min	07:50	05:30	03:55	02:45	BS 5350 Part C1
Sag resistance*	mm	17	16	15	14	-

ADHESIVE PERFORMANCE

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Cleavage on steel	F _{cleavage}	kN	12	12	13	BS 5350 Part C1
Lap shear on steel	τ _{steel}	MPa	37	37	42	BS 5350 Part C5

CURED MECHANICAL AND THERMAL PROPERTIES

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	57	68	76	ISO 6721 (DMA)
Cured Density	ρ _{ply}	g/cm ³	-	-	1.17	Archimedes
Volumetric Shrinkage		%	-	-	3.4	Archimedes

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**initial cure of 24 hours at 21°C

SPABOND™ 345 & SLOW HARDENER

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MIXING AND HANDLING

PROPERTY	UNITS	Spabond™ 345 RESIN	SLOW HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - colour	Description	Yellow	Red	Pink	-
Appearance - form	Description	Thixotropic Paste			-
Mix ratio by weight	Parts by weight	100	48		-
Mix ratio by volume	Parts by volume	100	50	-	-
Density at 21 °C	g/cm ³	1.17	1.10	1.15	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	15 °C	20 °C	25 °C	30 °C	TEST METHOD
Spabond™ 345 Resin Viscosity	P	1250	1050	950	700	-
Spabond™ 345 Slow Hardener Viscosity	P	1250	850	500	300	-
Initial Mixed System Viscosity	P	1060	870	750	640	-
Gel Time (150 g, mixed in water)	hrs:min	05:15	03:50	02:48	02:00	-
Clamp Time* (time to 2kN cleavage strength)	hrs:min	16:32	12:10	09:44	06:24	BS 5350 Part C1
Sag resistance*	mm	30	28	26	24	-

ADHESIVE PERFORMANCE

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Cleavage on steel	F _{cleavage}	kN	12	16	15	BS 5350 Part C1
Lap shear on steel	τ _{steel}	MPa	38	39	40	BS 5350 Part C5

CURED MECHANICAL AND THERMAL PROPERTIES

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	56	74	84	ISO 6721 (DMA)
Cured Density	ρ _{ply}	g/cm ³	-	-	1.17	Archimedes
Volumetric Shrinkage		%	-	-	5.7	Archimedes

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**initial cure of 24 hours at 21°C

SPABOND™ 345 EXTRA-SLOW HARDENER

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MIXING AND HANDLING

PROPERTY	UNITS	Spabond™ 345 RESIN	X-SLOW HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - colour	Description	Yellow	Blue	Green	-
Appearance - form	Description	Thixotropic Paste			-
Mix ratio by weight	Parts by weight	100	48		-
Mix ratio by volume	Parts by volume	100	50	-	-
Density at 21 °C	g/cm ³	1.17	1.01	1.12	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	15°C	20°C	25°C	30°C	TEST METHOD
Spabond™ 345 Resin Viscosity	P	1250	1050	950	700	-
Spabond™ 345 Extra-Slow Hardener Viscosity	P	120	70	50	40	-
Initial Mixed System Viscosity	P	740	440	360	240	-
Gel Time (150 g, mixed in water)	hrs:min	08:27	06:00	04:10	02:55	-
Clamp Time* (time to 2kN cleavage strength)	hrs:min	26:04	19:25	14:19	10:42	BS 5350 Part C1
Sag resistance*	mm	30	28	26	24	-

ADHESIVE PERFORMANCE

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Cleavage on steel	F _{cleavage}	kN	11	13	13	BS 5350 Part C1
Lap shear on steel	τ _{steel}	MPa	29	37	36	BS 5350 Part C5

CURED MECHANICAL AND THERMAL PROPERTIES

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HOURS AT 50°C**	5 HOURS AT 70°C**	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	56	71	79	ISO 6721 (DMA)
Cured Density	ρ _{ply}	g/cm ³			1.13	Archimedes
Volumetric Shrinkage		%			0.9	Archimedes

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**initial cure of 24 hours at 21°C

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
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