

SPABOND 340LV HT

HIGH TG STRUCTURAL EPOXY ADHESIVE

- Reduced component weights; lower density when compared to glass filled adhesives
- Higher thermal performance & fast cure progression
- High strength and toughness industrial adhesive
- Excellent gap filling properties
- Designed for cartridge and mixing machine dispense
- Three hardener speeds give a range of working times / clamp times
- Resin & hardener are pigmented to give a visual indication of mix quality
- DNV-GL Certified Formats Available

INTRODUCTION

Spabond 340 LV HT is a high performance adhesive designed for bonding large structures such as yacht hulls and wind turbine blades. It is a cost-effective system with good thermal and mechanical properties.

The formulation gives high thermal performance and allows fast curing, making this product ideal for bonding large composite structures where minimising cure time and increasing productivity is of value.

The components are pigmented to give a visual indication of mix quality, which is a useful feature when mixing by hand or with a machine. The system has a simple 2:1 mix ratio by volume.

Spabond 340LV HT is available in cartridges, straight-sided pails and 205 litre drums for machine mixing and dispense.

SYSTEM		20°C POT-LIFE (500 G, MIXED IN AIR)*	20°C CLAMP TIME*	PAGE
SP 340LV	Product Information, Instructions for Use and Health & Safety			2
	Fast (HT)	16 minutes	3 hours 50 minutes	3
	Slow (HT)	45 minutes	17 hours 40 minutes	4
	Extra Slow (HT)	2 hours 20 minutes	24 hours	5

**working time properties are highly subjective to ambient conditions and should be used as an approximate guideline for all SP 340 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.

PRODUCT DESCRIPTION	STATUS	CERTIFICATION
Spabond 340LV Resin and HT Hardeners	Renewal in progress	DNV-GL WP 1440016 HH

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).

Adequate long term storage conditions will result in a shelf life of 2 years for both the resin and hardeners. 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.

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

COMPONENT	UNITS	10 – 25°C
Spabond 340LV Resin	months	24
Spabond 340 HT Hardeners	months	24

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 vinyl ester - 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 twin cartridges with a mixing / dispensing head, please discard the first mix head length of resin and hardener components, prior to applying adhesive to the job, in order to ensure thorough mixing of the system.

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 340LV & HT 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	SP 340LV RESIN	FAST HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - colour	Description	Yellow	Red	Pink	-
Appearance - form	Description	Thixotropic Paste			-
Mix ratio by weight	Parts by weight	100	49		-
Mix ratio by volume	Parts by volume	100	50	-	-
Density at 21 °C	g/cm ³	1.13	1.10	1.11	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	15 °C	20 °C	25 °C	30 °C	TEST METHOD
SP 340LV Resin Viscosity	P	490	290	257	130	-
SP 340LV HT Fast Hardener Viscosity	P	713	472	322	259	-
Initial Mixed System Viscosity	P	733	427	275	196	-
Pot-life (500 g, mixed in air)*	hrs:min	00:20	00:16	00:12	00:10	-
Clamp Time* (time to 2kN cleavage strength)	hrs:min	05:12	03:50	02:50	02:05	BS 5350 Part C1
Sag resistance*	mm	-	20	20	-	-

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	9.2	11.3	7.8	BS 5350 Part C1
Lap shear on steel	τ _{steel}	MPa	29	31	30	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	54	67	71	ISO 6721 (DMA)
Cured Density	ρ _{ply}	g/cm ³	1.17	1.17	1.17	Archimedes
Volumetric Shrinkage		%	5.77	5.41	5.32	Archimedes
Tensile Strength	σ _T	MPa	37	50	48	ISO 527-2
Tensile Modulus	E _T	GPa	2.85	2.77	2.75	ISO 527-2
Tensile Strain	ε _T	%	7.73	9.07	10.1	ISO 527-2
3-point flexural strength	σ _F	N/mm ²	72	85	83	ISO 178
3-point flexural modulus	E _F	GPa	2.75	2.53	2.46	ISO 178
Charpy (notched)		kJ/m ²	1.49	2.26	1.91	ISO 179-1

*working time properties are highly subjective to ambient conditions and should be used as an approximate guideline for all SP 340 systems

**initial cure of 24 hours at 21°C

SPABOND 340LV & HT SLOW HARDENER

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MIXING AND HANDLING

PROPERTY	UNITS	SP 340LV RESIN	SLOW HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - colour	Description	Yellow	Purple	Grey	-
Appearance - form	Description	Thixotropic Paste			-
Mix ratio by weight	Parts by weight	100	49		-
Mix ratio by volume	Parts by volume	100	50	-	-
Density at 21 °C	g/cm ³	1.13	1.11	1.12	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	15 °C	20 °C	25 °C	30 °C	TEST METHOD
SP 340LV Resin Viscosity	P	490	290	257	130	-
SP 340LV HT Slow Hardener Viscosity	P	559	391	282	232	-
Initial Mixed System Viscosity	P	673	403	264	190	-
Pot-life (500 g, mixed in air)*	hrs:min	01:00	00:45	00:34	00:26	-
Clamp Time* (time to 2kN cleavage strength)	hrs:min	23:00	17:40	13:30	10:20	BS 5350 Part C1
Sag resistance*	mm	-	20	20	-	-

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	8.9	12.0	10.1	BS 5350 Part C1
Lap shear on steel	τ_{steel}	MPa	32	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	52	66	72	ISO 6721 (DMA)
Cured Density	ρ_{ply}	g/cm ³	1.18	1.17	1.17	Archimedes
Volumetric Shrinkage		%	5.18	4.64	4.29	Archimedes
Tensile Strength	σ_T	MPa	34	49	49	ISO 527-2
Tensile Modulus	E_T	GPa	2.93	2.58	2.89	ISO 527-2
Tensile Strain	ϵ_T	%	6.31	7.83	8.28	ISO 527-2
3-point flexural strength	σ_F	N/mm ²	68	85	87	ISO 178
3-point flexural modulus	E_F	GPa	3.04	2.62	2.67	ISO 178
Charpy (notched)		kJ/m ²	1.42	2.53	2.56	ISO 179-1

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**initial cure of 24 hours at 21 °C

SPABOND 340LV & HT EXTRA-SLOW HARDENER

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MIXING AND HANDLING

PROPERTY	UNITS	SP 340LV 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	47		-
Mix ratio by volume	Parts by volume	100	50	-	-
Density at 21 °C	g/cm ³	1.13	1.05	1.11	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	15 °C	20 °C	25 °C	30 °C	TEST METHOD
SP 340LV Resin Viscosity	P	490	290	257	130	-
SP340LV HT Extra-Slow Hardener Viscosity	P	578	330	215	150	-
Initial Mixed System Viscosity	P	683	381	242	167	-
Pot-life (500 g, mixed in air)*	hrs:min	03:10	02:20	01:40	01:15	-
Clamp Time* (time to 2kN cleavage strength)	hrs:min	33:50	24:00	14:50	10:30	BS 5350 Part C1
Sag resistance*	mm	-	20	20	-	-

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	7.9	11.2	11.9	BS 5350 Part C1
Lap shear on steel	τ_{steel}	MPa	29	34	35	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	51	66	72	ISO 6721 (DMA)
Cured Density	ρ_{ply}	g/cm ³	1.15	1.14	1.15	Archimedes
Volumetric Shrinkage		%	3.42	3.06	3.15	Archimedes
Tensile Strength	σ_T	MPa	31	47	44	ISO 527-2
Tensile Modulus	E_T	GPa	2.90	2.63	2.89	ISO 527-2
Tensile Strain	ϵ_T	%	3.46	4.77	6.15	ISO 527-2
3-point flexural strength	σ_F	N/mm ²	63	84	83	ISO 178
3-point flexural modulus	E_F	GPa	2.89	2.68	2.70	ISO 178
Charpy (notched)		kJ/m ²	1.24	2.12	1.93	ISO 179-1

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**initial cure of 24 hours at 21 °C

NOTICE

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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

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E customer.support@gurit.com

W www.gurit.com