

Spabond 340LV

Epoxy Adhesive System

- **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**
- **Low exotherm and shrinkage**
- **Temperature performance up to 80°C**
- **Resin & hardener are pigmented to give a visual indication of mix quality**

Introduction

Spabond 340LV 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 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 weight and volume.

Spabond 340LV is available in cartridges, pails and 200 litre drums for machine mixing/dispense.

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 or SP Fast Epoxy Solvent (Solvent A).

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

Ensure that polyester or vinylester laminates are fully cured before bonding, then prepare as above. When bonding epoxy laminates, the use of a suitable Peel Ply as the last stage in their manufacture is recommended, otherwise prepare as above. Trials may be required to test Peel Ply suitability.

For ferrocement, etch with 5% solution of hydrochloric acid, wash with fresh water, then dry.

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

Mixing & Handling

The Spabond 340 components are supplied pigmented in the following colours:

Resin	-	yellow
Fast Hardener	-	red
Standard	-	mauve
Slow Hardener	-	purple
Extra Slow Hardener	-	blue

Spabond 340 resin should be combined with any one Spabond 340 hardener in the following mix ratio:

Spabond 340LV resin	Spabond 340 hardener
100 : 50 (by weight and volume)	

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.

We recommend the use of a new mix head for each application, particularly where the time between each application approaches the pot life.

Properties

Component Properties					
	Resin	Fast	Standard	Slow	Extra Slow
Mix Ratio (by weight)	100	50	50	50	50
Mix Ratio (by volume)	100	50	50	50	50
Viscosity @ 15°C (cP)	49000	59100	-	45000	44700
Viscosity @ 20°C (cP)	29000	38400	-	37920	36600
Viscosity @ 25°C (cP)	21000	25800	313000	30790	22400
Viscosity @ 30°C (cP)	13000	17100	-	23640	17500
Shelf Life (months)	24	24	24	24	24
Colour	yellow	red	mauve	purple	blue
Mixed Colour	-	pink	cream	grey	green
Component Dens. (g/cm ³)	1.1	1.1	1.1	1.1	1.1
Mixed Density (g/cm ³)	1.1	1.1	1.1	1.1	1.1
Hazard Definition	Xi	C	C	C	C

Properties (Cont'd)

Working Properties																
	Resin/Fast Hardener				Resin/Standard Hardener				Resin/Slow Hardener				Resin/Extra Slow Hardener			
	15°C	20°C	25°C	30°C	15°C	20°C	25°C	30°C	15°C	20°C	25°C	30°C	15°C	20°C	25°C	30°C
Initial Mixed Viscosity (cP)	43500	27600	19000	12500	-	-	25500	-	42000	27000	20000	10000	48000	34000	21000	14300
†Pot Life - 500g mix in air (hrs:mins)	0:20	0:16	0:12	0:10	-	00:30	-	-	01:00	00:45	00:34	00:26	3:10	2:20	1:40	1:15
*†Clamp Time (hrs:mins)	5:12	3:50	2:50	2:05	-	9:15	-	-	23:00	17:40	13:30	10:20	33:50	24:00	14:50	10:30
Sag Resistance (mm)	TBA	20	20	TBA	-	20	-	-	TBA	20	20	TBA	TBA	20	20	TBA

Cured System Properties													
	Room Temp. Cure (28 days @ 21°C)				Cured 24 hours @ 21°C +16 hours @ 50°C				Cured 5 hrs @ 70°C				
	Fast	Standard	Slow	Ex. Slow	Fast	Standard	Slow	Ex. Slow	Fast	Standard	Slow	Ex. Slow	
Tg DMTA (Peak Tanδ(°C))	65.8	TBC	60.0	60.9	74.1	84.8	81.7	76.3	80.8	TBC	79.7	77.4	
Tg Ult - DMTA (°C)	92.4	TBC	80.5	86.4	92.4	76.5	80.5	86.4	92.4	TBC	80.5	86.4	
Tg2 - DSC (°C)	55.0	TBC	52.8	54.2	71.8	74.1	67.4	63.7	72.3	TBC	69.1	66.5	
Tg1 - DMTA (°C)	54.9	TBC	50.4	51.5	63.3	74.1	67.5	65.1	69.2	TBC	68.5	67.1	
Cured Density (g/cm ³)	TBA				TBA	1.16	TBA		1.12	TBC	1.11	1.09	
Linear Shrinkage (%)	TBA				TBA				1.92	TBC	1.91	1.94	
Cleavage Strength (kN)	10.7	TBC	11.1	10.7	11.0	10.3	11.9	12.0	10.6	TBC	11.7	11.0	
Shear Strength on Steel (MPa)	24.9	TBC	27.0	30.7	28.0	32.5	31.0	32.2	33.3	TBC	34.5	33.4	
Shear Strength Wet Retention (%)	70.5	TBC	75.6	80.2	TBA				TBA				

Notes: For an explanation of test methods used see 'Formulated Products Technical Characteristics'.

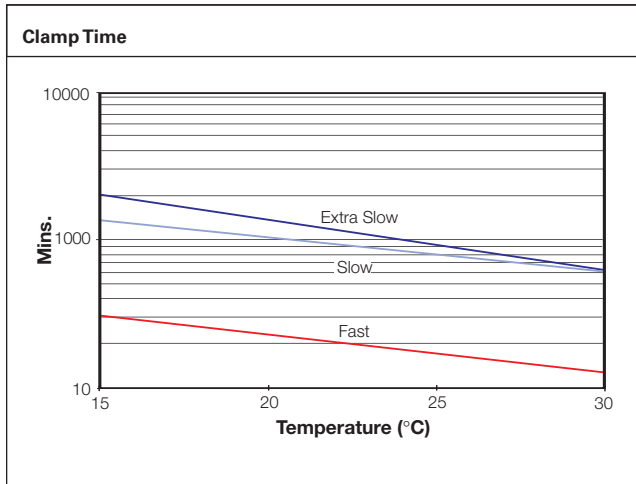
All figures quoted are indicative of the properties of the product concerned. Some batch to batch variation may occur.

† All times are measured from when resin and hardener are first mixed together.

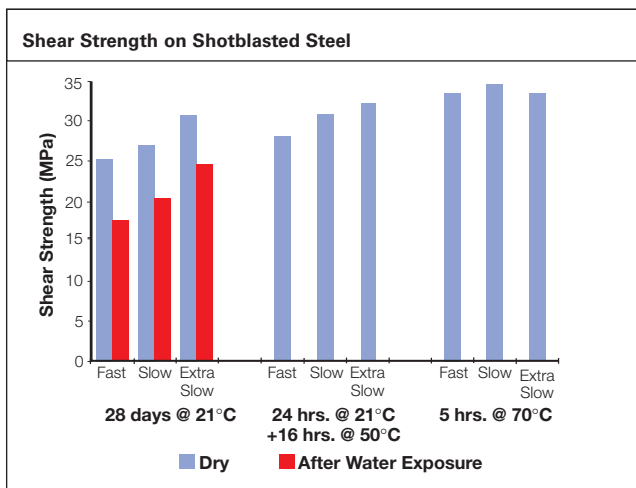
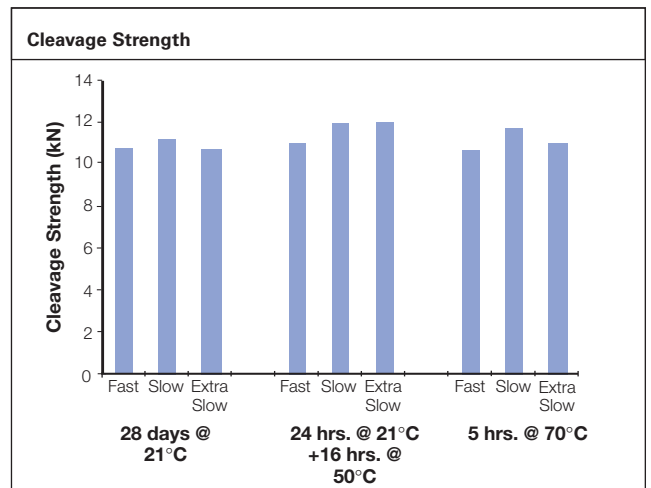
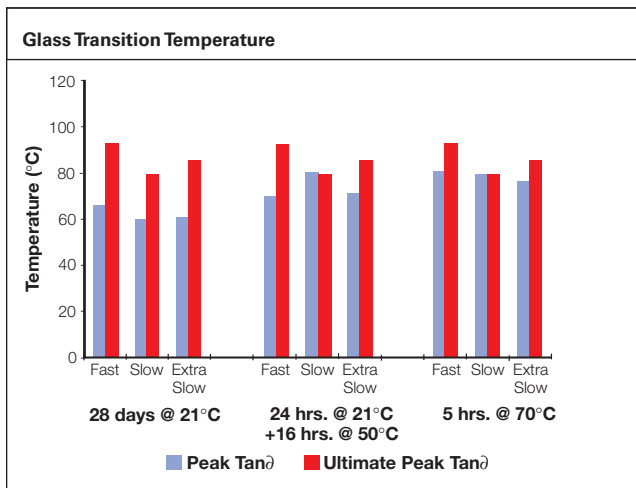
*Clamp time data shows the time taken to achieve a 2000N bond strength. This figure allows comparison of cure speed with other adhesive products of the Spabond range.

However, because of the unusual cure development of this product at 15 - 30°C, the time to reach a safe handling strength should be extended by approximately 50%. Alternatively, an elevated temperature posture should be applied before handling.

Working Properties



Mechanical Properties



Health and Safety

The following points must be considered:

1. Skin contact must be avoided by wearing protective gloves. SP 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.

SP produces a separate full Material Safety Data Sheet for all hazardous products. Please ensure that you have the correct MSDS to hand for the materials you are using before commencing work. A more detailed guide for the safe use of SP resin systems is also available from SP, and can be found on our website at www.gurit.com

Applicable Risk & Safety Phrases

Resin

R 36/38, 43, 51/53
S 24, 26, 28, 37/39, 60

Slow Hardener

R 22, 34, 43
S 20, 26, 28, 36/37/39, 45, 60

Fast Hardener

R 21/22, 34, 43, 52/53
S 20, 26, 36/37/39, 45, 60, 61

Extra Slow Hardener

R 34, 43
S 20, 26, 28, 36/37/39, 45, 60



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 two 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/marine)

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Gurit (UK) Ltd

St Cross Business Park
Newport, Isle of Wight
United Kingdom PO30 5WU

T +44 (0) 1983 828 000
F +44 (0) 1983 828 100
E marine@gurit.com
W www.gurit.com

Gurit (Australia) Pty Ltd

Unit 1A / 81 Bassett Street,
Mona Vale, 2103 NSW,
Australia

T +61 (0) 2 9979 7248
F +61 (0) 2 9979 6378
E sales-au@gurit.com
W www.gurit.com

Gurit (Canada) Inc

175 rue Péladeau,
Magog, (Québec)
J1X 5G9, Canada

T +1 819 847 2182
F +1 819 847 2572
E info-na@gurit.com
W www.gurit.com