

Spabond 345

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**
- **Temperature performance up to 84°C**

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 400ml cartridges, pails and drums.

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

Spabond 345 resin should be combined with Spabond 345 fast (purple or black), Spabond 345 slow (red) or extra slow (blue) hardener in the following mix ratio:

Spabond 345 resin	Spabond 345 hardener
100	: 48 (by weight)
100	: 50 (by 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 brown, black, orange or pale green colour, depending on the hardener used. 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	Hardener		
		Fast	Slow	Extra Slow
Mix Ratio (by weight)	100	48	48	48
Mix Ratio (by volume)	100	50	50	50
Viscosity @ 15°C (cP)	125,000	45,000	125,000	12,000
Viscosity @ 20°C (cP)	105,000	30,000	85,000	7,000
Viscosity @ 25°C (cP)	95,000	20,000	50,000	5,000
Viscosity @ 30°C (cP)	70,000	15,000	30,000	4,000
Shelf Life (months)	12	12	12	12
Colour	yellow	purple	red	blue
Mixed Colour	-	brown	pink	green
Component Dens. (g/cm³)	1.17	1.08	1.097	1.012
Mixed Density (g/cm³)	-	1.14	1.146	1.116
Hazard Definition	Xi, N	C, N	C	C

Notes: *Due to the thixotropic and filled nature of this system, these values are only indicative.

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.

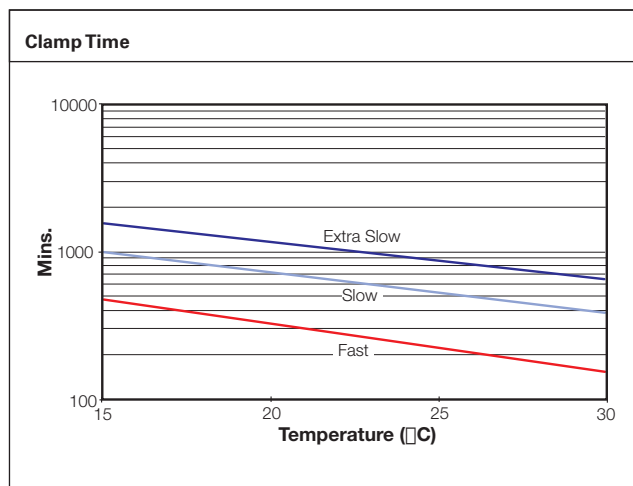
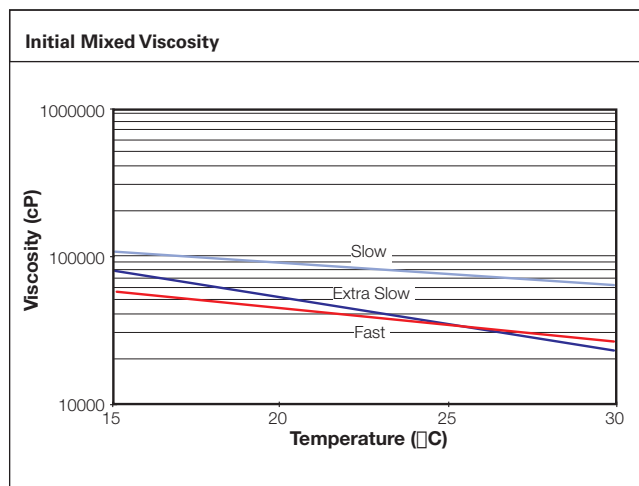
† All times are measured from when resin and hardener are first mixed together

Properties (Cont'd)

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	Slow	Extra Slow	Fast	Slow	Extra Slow	Fast	Slow	Extra Slow
T _g DMTA (Peak Tan δ)(°C)	66.8	70.0	70.4	80.0	82.2	82.6	89.0	96.2	93.3
T _g Ult - DMTA (°C)	91.7	106.5	103.6	91.7	106.5	103.6	91.7	106.5	103.6
T _{g2} - DSC (°C)	54.6	58.9	59.0	67.9	68.8	81.4	77.6	80.9	77.1
T _{g1} - DMTA (°C)	57.1	55.5	56.3	68.3	73.8	71.3	75.7	84.4	79.0
Cured Density (g/cm ³)	-	-	-	-	-	-	1.18	1.166	1.129
Linear Shrinkage (%)	-	-	-	-	-	-	1.15	1.212	1.057
Cleavage Strength (kN)	12.35	12.30	11.29	11.96	15.57	13.37	12.85	14.64	13.19
Shear Strength on Steel (MPa)	36.6	37.8	29.2	37.3	39.3	37.2	41.5	40.2	35.6
Shear Strength Wet Retention (%)	95.4	92.9	114.8	93.8	94.3	88.4	81.5	-	-

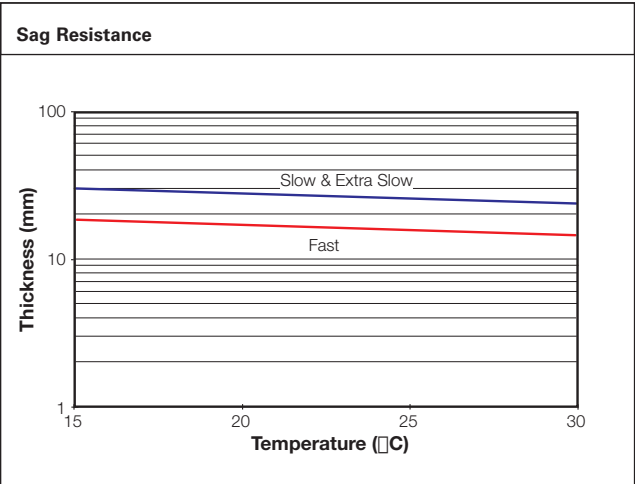
Working Properties vs. Temperature												
	Resin/Fast Hardener				Resin/Slow Hardener				Resin/Extra Slow Hardener			
	15°C	20°C	25°C	30°C	15°C	20°C	25°C	30°C	15°C	20°C	25°C	30°C
Initial Mixed Viscosity (cP)	52000	42,000	34,000	27,000	106,000	87,000	75,000	64,000	74,000	44,000	36,000	24000
†*Gel Time - 150g mix in water (hrs:mins)	0:39	0:28	0:20	0:15	5:15	3:50	2:48	2:00	8:27	6:00	4:10	2:55
†Pot Life - 500g mix in air (hrs:mins)	0:20	0:17	0:13	0:10	1:19	1:12	1:06	1:01	3:06	2:41	2:16	1:57
†Clamp Time (hrs:mins)	7:50	5:30	3:55	2:45	16:32	12:10	8:52	6:24	26:04	19:25	14:19	10:42
Sag Resistance (mm)	17	16	15	14	30	28	26	24	30	28	26	24

Working Properties

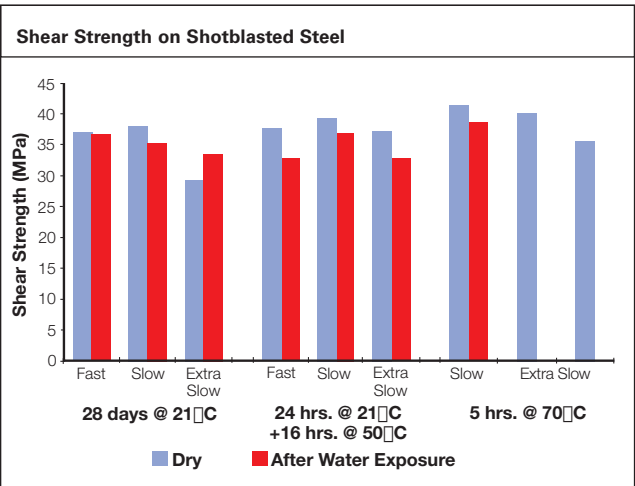
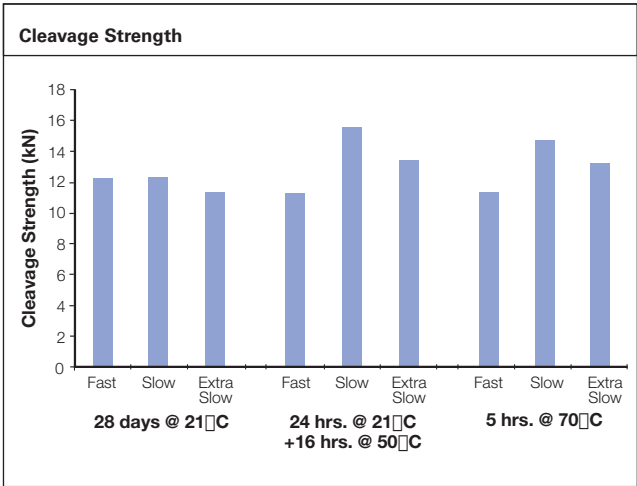
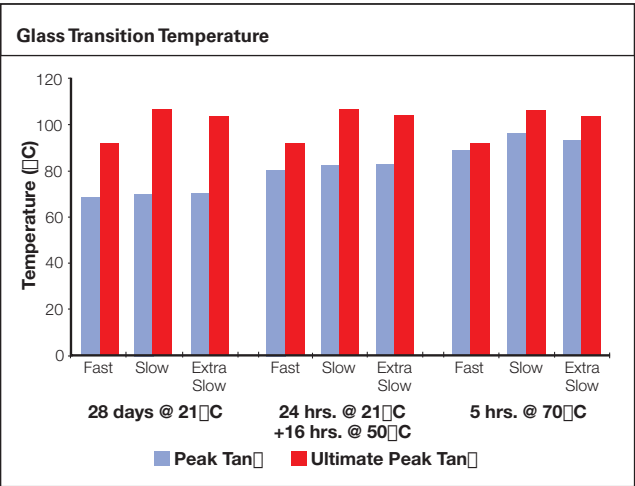


Notes: *Due to the thixotropic and filled nature of this system, these values are only indicative.
 For an explanation of test methods used see 'Formulated Products Technical Characteristics'.
 All figures quoted are indicative of the properties of the product concerned. Some batch to batch variation may occur.
 † All times are measured from when resin and hardener are first mixed together

Working Properties (cont'd)



Mechanical Properties



Health and Safety

The following points must be considered:

- 1. Skin contact must be avoided by wearing protective gloves. SP-High Modulus 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-High Modulus 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-High Modulus, and can be found at www.gurit.com

Applicable Risk & Safety Phrases

Resin

R 36/38, 43, 51/53
S 24, 26, 28, 37/39, 57, 60

Fast Hardener

R 20/21/22, 34, 43, 52/53, 62, 63, 68
S 9, 20, 26, 36/37/39, 45, 57

Slow Hardener

R 22, 35, 43
S 20, 26, 36/37/39, 43, 45, 60

Extra Slow Hardener

R 22, 35, 43
S 20, 26, 36/37/39, 43, 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 temperature should be between 10°C and 25°C. Containers should be firmly closed. Hardeners, in particular, will suffer serious degradation if left exposed to air.

Notice

SP-High Modulus is the marine business of Gurit (the company). All advice, instruction or recommendation is given in good faith but 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 the Company's Website: www.gurit.com/termsandconditions_en.html.

The Company strongly recommends that Customers make test panels and conduct appropriate testing of any goods or materials supplied by the Company 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. 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 are continuously reviewing and updating literature. Please ensure that you have the current version, by contacting Gurit Marketing Communications or your sales contact and

UK

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

Australia

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

New Zealand

32 Canaveral Drive, Albany,
Private Box 302-191,
North Harbour, 0751
Auckland, New Zealand

T +64 (0) 9 415 6262
F +64 (0) 9 415 7262
W www.gurit.com

Canada

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