Gurit EPOXY

PRODUCT DATASHEET

Gurit

SPABOND™ 400FR

STRUCTURAL FIRE-RETARDANT EPOXY ADHESIVE

Spabond 400FR adhesive combines high performance with fire retardancy.

Spabond 400FR adhesive exhibits excellent handling properties without compromising on the high mechanical properties associated with high performance epoxy adhesives. This two-component adhesive is designed for bonding a variety of composite materials, metals and other dissimilar substrates.

- Fire-retardant, capable of meeting UL-94
- High shear and peel strength
- Halogen-free
- Excellent gap filling properties
- Low exotherm
- Simple 3:1 mix ratio
- Available in cartridge formats

INSTRUCTIONS FOR USE

APPLICATION

The product is optimized 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. Maximum relative humidity for use is 70%.

SURFACE PREPARATION

Before using the product ensure that surfaces to be bonded are clean, degreased, dry and dust-free.
Prepare all surfaces by abrading either with shot blasting or with medium grit paper or other suitable abrasive.
After abrading ensure removal of all dust.

Metals – Prepared according to Gurit surface preparation guide

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.

Polyester or Vinylester laminates - ensure laminates are fully cured before bonding, it is recommended to use a suitable Peel Ply as the last stage in their manufacture, otherwise prepare as above.

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

When 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 color. Use from pot quickly to maximize 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.

CURE SCHEDULE

Adequate properties are achieved from a ambient cure 18-21°C. A post cure is only recommended to generate optimum properties and a typical post cure schedule is either 5 hours at 70°C or 16 hours at 50°C. The cured properties are shown in the tables below for 21°C cure versus elevated post cured.

TRANSPORT & STORAGE

The resin and hardener 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, as per table, from the date of manufacture for both the resin and hardeners, see product container label for expiry date.

COMPONENT	UNITS	10 – 25°C
Spabond 400FR Resin	Months	12
Spabond 400FR Hardener	Months	12

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. Hardener, in particular, will suffer serious degradation if left exposed to air. Hardeners may darken over time, however the physical properties are not affected.

SPABOND 400FR RESIN AND FAST HARDENER

This 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.

PROPERTY	UNITS	SP 400FR RESIN	SP 400FR HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - color	Description	Marbled Grey	Green / Brown	Marbled Grey	-
Appearance - form	Description		Thixotropic paste		
Mix ratio by weight	Parts by weight	100	27		-
Mix ratio by volume	Parts by volume	3	1	-	-
Density at 21 °C	g/cm^3	1.31	1.06	1.25	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY

PROPERTY	UNITS	20°C	25°C	TEST METHOD
Spabond 400FR Resin viscosity	P	-	55	-
Spabond 400FR Hardener viscosity	P	-	38.5	-
Initial mixed system viscosity	P	-	-	-
Gel Time (500g in air)**	hrs:min	0:25	-	-
Clamp time**	hrs:min	2:30	-	BS 5350 Part C1
Sag resistance*	mm	10-20	-	-

ADHESIVE PERFORMANCE

MECHANICAL PROPERTIES	SYMBOL	UNITS	5 HOURS AT 70°C***	TEST STANDARD
Cleavage on steel	$F_{cleavage}$	kN	6.6	BS 5350 Part C1
Lap shear on steel	τ_{steel}	MPa	33.5	BS 5350 Part C5

CURED MECHANICAL AND THERMAL PROPERTIES

MECHANICAL PROPERTIES	SYMBOL	UNITS	5 HOURS AT 70°C***	TEST STANDARD
Glass transition temperature	Tg_1	°C	90	ISO 6721 (DMA)
Tensile strength	σ_T	MPa	41	ISO 527-2
Tensile modulus	E_T	GPa	3.6	ISO 527-2
Tensile strain %	ε_T	%	1.82	ISO 527-2
Flexural strength	σ_F	MPa	75	ISO 178
Flexural modulus	E_F	GPa	3.5	ISO 178
Flexural elongation	ε_F	%	2.6	ISO 178

CURED FST PERFORMANCE

PROPERTY	SYMBOL	UNITS	5 HOURS AT 70°C***	TEST STANDARD
Flammability	Indicative result	V-0	Spabond™ 400FR 4mm RESIN CAST	UL 94

**working time properties are highly subjective to ambient conditions and should be used an approximate guideline*
***Clamp time data shows the time taken to achieve a 2000N steel block cleavage strength..*
****initial cure of 24 hours at 21°C*

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 moisturizing cream should be used after washing.
2. 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 vapors 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 & vaping
   - 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.

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.

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.

CONTACT INFORMATION

Please see local contact information at www.gurit.com

24-HOUR CHEMICAL EMERGENCY NUMBER

For advice on chemical emergencies, spillages, fires or exposures:

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