PRIME™ 38

UV RESISTANT EPOXY INFUSION SYSTEM

PRIME™ 38 is a low viscosity epoxy resin which has been optimised to resist UV yellowing. Its intended use is for moulding fibre reinforced components via vacuum infusion or low-pressure resin transfer moulding. The extended gel time at room temperatures make the product particularly suited to the manufacture of large components. The base resin has a slightly cloudy appearance which may be seen at resin rich areas to the part surface.

PRIME™ 38 offers outstanding performance in a variety of liquid infusion processes including SCRIMP™, RIFT (resin infusion under flexible tooling), VARTM (vacuum assisted resin transfer moulding) and RTM (resin transfer moulding).

This system is available in sIzes from drums to IBCs.

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- Low viscosity resin and hardener for infusion processes
- Resistance to UV yellowing
- High thermal performance
- Extended gel time at 25°C for large component manufacture
- Mix Ratio by Weight 100:24

INSTRUCTIONS FOR USE

The product is optimised for use between 18 - 25°C (64 - 77°F). At lower temperatures the products viscosity will start to increase. At higher temperatures working times will be reduced. Maximum recommended relative humidity for use is 70%.

MIXING AND HANDLING

PRIME 38 should only be mixed with PRIME HIGH Tg HARDENER. Accurate measurement and thorough mixing are essential when using this system, and any deviation from the prescribed mix ratios will seriously degrade the physical properties of the cured system.

The resin and hardener must be stirred well for two minutes or more, with particular attention being paid to the sides and bottom of the container. As soon as the material is mixed the reaction begins. This reaction produces heat (exothermic), which will in turn accelerate the reaction. If this mixed material is left in a confined mixing vessel the heat cannot disperse and the reaction will become uncontrollable.

Gurit produces a separate full Safety Data Sheet for each component of this system. Please ensure that you have the correct SDS to hand for the materials you are using before commencing work. A more detailed guide for the safe use of Gurit resin systems is also available from Gurit and can be found on our website at www.gurit.com. 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).

APPLICATION

PRIME™ 38 is intended for use in any established resin infusion process. The information provided in the tables in this data sheet should allow the user to achieve a successful result with this system. For further advice, please contact Gurit Technical Support.

CURE SCHEDULE

A post-cure is required to generate optimum mechanical properties for this system. The recommended minimum cure schedule is 5 hours at 70°C (158°F) or 16 hours at 50°C (122°F). Ambient temperature cure of this system will not generate adequate inservice mechanical properties and is therefore not recommended. Infused parts can be pre-cured on the mould at temperatures just above ambient eg 30 - 45°C (86 - 133°F) to give the part sufficient strength and stiffness to allow earlier demoulding.

When postcuring it is recommended to use a ramp rate of 10°C (18°F) / hour when heating from ambient to the postcure temperature, to ensure that the thermal performance of the laminate stays ahead of the oven temperature. Higher ramp rates may result in the resin softening and distortion of the part.

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 (50 - 77°F)
Prime 38 Resin	months	24
Prime High Tg Hardener	months	24

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 - 25°C (50 - 77°F), 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. Be aware of a possible mixed system colour change if very old and new hardeners are used on the same project.

PRIME™ 38 RESIN & PRIME™ HIGH TG 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	PRIME™ 38 RESIN	HIGH TG HARDENER	MIXED SYSTEM	TEST METHOD
Colour	-	Opaque	Clear	Opaque	-
Mix Ratio by Weight	Parts by weight	100	24	-	-
Mix Ratio by Volume	Parts by volume	100	30	-	-
Density at 21°C (ISO 1183-1B)	g/cm3	1.13	0.92	1.08	ISO 1183-1B

COMPONENT & MIXED SYSTEM PROPERTIES

PROPERTY	UNITS	TEMPERATURE 25°C	TEST METHOD
PRIME™ 38 Resin Viscosity	cP	415 - 515	-
PRIME™ High Tg Hardener Viscosity	cP	25 - 27	-
Initial Mixed System Viscosity	cP	245	-
Geltime (150 g, mixed in water)*	mins	320 - 340	Tecam Gel Time
Thin film gel time.	hrs:min	12 - 13	-

THERMAL PROPERTIES CURE PROGRESSION

PROPERTIES	UNITS	16 HOURS AT 50°C	16HRS 50 + 5HRS 70	12 HOURS AT 85°C	16 HRS 50 + 5HRS 90°C	12 HOURS AT 100°C	16HRS 50 + 5 HRS 100°C	1 HOUR AT 150°C	TEST METHOD
Tg1 by DMA	°C	75	93	109	108	120	114	120	ISO 6721 (DMA)
Tg2 by DSC	°C	74	83	105	101	110	108	117	ISO 11357 (DSC)

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	16 Hours @ 50°C*	TEST METHOD
Cured Density	ρ_{CURED}	g/cm3	1.1	ISO 1183-1A
Linear Shrinkage	-	%	1.8	ISO 1183-1A
Barcol Hardness	-	mg	34	ISO 62
Tensile Strength	σ_T	MPa	70	ISO 527-2
Tensile Modulus	E_T	GPa	3.5	ISO 527-2
Flexural Strength	σ_F	MPa	105	ISO 178
Flexural Modulus	E_F	GPa	3.6	ISO 178

CURED LAMINATE MECHANICAL PROPERTIES

Laminate: 4 plies of XE600 biaxial e-glass. Cure: 24 hours at 21°C + 16 hours at 50°C post-cure.

PROPERTY	SYMBOL	UNITS	16 hours at 50°C	TEST METHOD
Fibre Volume Fraction	V_{FVF}	%	51 – 53	ASTM D 3171 Method II
Tensile Strength***	σ_T	MPa	608	ISO 527-4
Tensile Modulus***	E_T	GPa	30.0	ISO 527-4
Compressive Strength***	σ_C	MPa	592	SACMA SRM1-94
Compressive Modulus***	E_C	GPa	29.8	SACMA SRM1-94
Flexural Strength	σ_F	MPa	692	ISO 14125
Flexural Modulus	E_F	GPa	17.9	ISO 14125
ILSS	X_{ILSS}	MPa	-	ISO 14130

**working time properties are highly subjective to ambient conditions and should be used as an approximate guideline*
***initial cure of 24 hours at 21°C ***normalised to 55% fibre volume fraction*

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. 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 & 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

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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.

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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