

# PRIME™ 37

## LOW TOXICITY EPOXY INFUSION SYSTEM

- Uses same Ampreg 3X low toxicity hardeners as the Ampreg range
- Blend-able hardener speeds.
- Fibre wetting technology reduces infusion time & improves laminate quality
- Cure characteristics optimised for infusion:
  - Mixed viscosity remains lower for longer
  - Faster through-cure, avoiding a “sugary phase”
  - Overall Improved exotherm control
- Lloyds Register & DNV certified formats available
- Includes Bio content as standard

### INTRODUCTION

**PRIME™ 37 is suitable for the female moulding of large, complex components incorporating advanced fibres such as carbon and aramid\*. Typical projects include spars, hulls and reinforcing structures.**

PRIME™ 37 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).

PRIME™ 37 resin uses a wide range of hardeners to give a range of working times and cure speeds. This enables the gel time of the resin to be closely matched to the required infusion time for any particular size of moulded part. It achieves excellent mechanical and physical properties, including a high Tg from a moderate (50°) post cure.

This system is available with Fast, Slow and Extra-Slow Ampreg 3X Hardener speeds, as well as PRIME High Tg hardener and in a wide range of formats from small pack sizes to drums and IBCs. For further advice please contact Gurit Technical Support.

| SYSTEM PROPERTIES AT 20°C** |   | MIXED VISCOSITY** | 150g POT-LIFE @ 25°C | LATEST FLOW UNDER VACUUM** | EARLIEST VACUUM-OFF TIME** | EARLIEST DEMOULD TIME**             | P/ |
|-----------------------------|---|-------------------|----------------------|----------------------------|----------------------------|-------------------------------------|----|
| PRIME™ 37 Resin             | Product Information, Instructions for Use and Health & Safety |                   |                      |                            |                            |                                     |    |
|                             | Ampreg 3X Fast Hardener                                       | 510               | ½ hour               | 2 ¼ hours                  | 4 hours                    | 5 ½ hours                           |    |
|                             | Ampreg 3X Standard Hardener                                   | 345               | 1 hour               | 3 hours                    | 4 ½ hours                  | 6 ¼ hours                           |    |
|                             | Ampreg X Slow Hardener  | 245               | 4 hours              | 5 ¾ hours                  | 11 hours                   | 16 hours                            |    |
|                             | Ampreg 3X Extra-slow Hardener                                 | 150               | 10 ½ hours           | 8 hours                    | 12 ½ hours                 | Not recommended without a post-cure |    |
|                             | PRIME™ High Tg Hardener                                       | 245               | 5 hours              | -                          | -                          | Not recommended without a post-cure |    |

\*unidirectional carbon fibre is acknowledged difficult to infuse. Please contact a member of technical team before attempting a carbon infusion with PRIME™ 37.

\*\*working time properties are highly subjective to ambient conditions and should be used as an approximate guideline for all PRIME™ 37 systems at 25°C.



## PRODUCT INFORMATION

### AVAILABILITY

The product is available in a number of formats please contact your local customer support for more information. This product also benefits from the 3<sup>rd</sup> party certifications summarised in the table (right).

| PRODUCT DESCRIPTION   | STATUS    | CERTIFICATION                  |
|---|-----------|--------------------------------|
| PRIME™ 37 Resin with Fast, Slow & Extra-Slow Ampreg 3X Hardeners  | Certified | Lloyd's Register LR21145785ALP |
| PRIME™ 27 Resin with PRIME™ High Tg Hardener (note that PRIME™ 27 & PRIME™ 37 resins are identical)         | Certified | DNV-GL TAK00014W               |
| PRIME™ 37 Resin with Fast, Slow & Extra-Slow Ampreg 3X Hardeners for Wind, Marine & Industrial Applications | Pending   | DNV-GL tbc                     |
| PRIME™ 27 Resin with PRIME™ High Tg Hardener (note that PRIME™ 27 & PRIME™ 37 resins are identical)         | Certified | Lloyd's Register MATS/4871/1   |

### 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).

| COMPONENT       | UNITS  | 10 – 25°C |
|-----------------|--------|-----------|
| PRIME™ 37 Resin | months | 24        |
| All Hardeners   | months | 24        |

Adequate long term storage conditions will result in a shelf life of 24 months 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.

## INSTRUCTIONS FOR USE

The product is optimised for use between 18 - 25°C. At lower temperatures the product thickens and may become unworkable. At higher temperatures working times will be significantly reduced. Maximum relative humidity for use is 70%.

### MIXING AND HANDLING

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. Ampreg™ 3X Fast and Extra-slow hardeners can be blended in order to achieve intermediate speeds as indicated in the table (right). When blending hardeners, it is recommended that the hardener components are dispensed and mixed together for approximately 2 minutes before the addition to the resin.

| Hardener             | Fast | Standard | Slow | Extra-slow |
|----------------------|------|----------|------|------------|
| Ampreg 3X Fast       | 100% | 67%      | 25%  | 0%         |
| Ampreg 3X Extra-slow | 0%   | 33%      | 75%  | 100%       |

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](http://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™ 37 resin used with Ampreg 3X hardeners 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. However, if further information is required 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 7 hours at 65°C or 16 hours at 50°C. Ambient temperature cure of this system will not generate adequate 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) to give the part sufficient strength and stiffness to allow earlier demoulding. Such parts should still be post cured for the minimum recommended time/temperature indicated above, to obtain adequate inservice mechanical properties. Contact Gurit Technical Support for "pre-cure" time and temperature recommendations.

If using Slow or Extra Slow Hardener the part requires a post-cure before de-moulding. When sanding or machining a component made from PRIME™ 37, which has seen no heat, there will be very low degree of cure, and the sanding dust will be more irritating than dust from a laminate, which has seen heat to effect more thorough cross-linking.

## HEALTH AND SAFETY

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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.

## PRIME™ 37 RESIN & AMPREG 3X 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             | PRIME™ 37 RESIN | A3X FAST HARDENER | MIXED SYSTEM | TEST METHOD |
|---------------------|-------------------|-----------------|-------------------|--------------|-------------|
| Mix ratio by weight | Parts by weight   | 100             | 29                | -            | -           |
| Mix ratio by volume | Parts by volume   | 100             | 34                | -            | -           |
| Density at 21 °C    | g/cm <sup>3</sup> | 1.13            | 0.90 – 1.10       | 1.10         | ISO 1183-1B |

### COMPONENT & MIXED SYSTEM PROPERTIES\*

| PROPERTY                          | UNITS   | 15 °C      | 20 °C     | 25 °C     | 30 °C     | TEST METHOD            |
|-----------------------------------|---------|------------|-----------|-----------|-----------|------------------------|
| PRIME™ 37 Resin Viscosity         | cP      | 956 - 1130 | 675 - 731 | 415 - 515 | 270 - 395 | -                      |
| Ampreg 3X Fast Hardener Viscosity | cP      | 900 - 1000 | 500 - 600 | 300 - 500 | 150 - 250 | -                      |
| Initial Mixed System Viscosity    | cP      | -          | 771       | 510       | 375       | -                      |
| Pot-life (150 g, mixed in water)* | hrs:min | -          | -         | 00:30     | -         | Tecam Gel Time         |
| Latest flow under vacuum          | hrs:min | 02:32      | 02:12     | 01:41     | 01:16     | Theoretical, Thin Film |
| Earliest vacuum off time          | hrs:min | 04:47      | 03:53     | 02:26     | 02:00     | Theoretical, Thin Film |
| Demould Time                      | hrs:min | 07:13      | 05:34     | 04:01     | 02:56     | Theoretical, Thin Film |

### CURED RESIN MECHANICAL AND THERMAL PROPERTIES

| PROPERTIES                   | SYMBOL             | UNITS             | 16 HOURS AT 50°C** | TEST STANDARD  |
|------------------------------|--------------------|-------------------|--------------------|----------------|
| Glass Transition Temperature | T <sub>g</sub>     | °C                | 71.5               | ISO 6721 (DMA) |
| Cured Density                | ρ <sub>CURED</sub> | g/cm <sup>3</sup> | 1.175              | ISO 1183-1A    |
| Barcol Hardness              | -                  | mg                | 31.9               | ISO 62         |
| Tensile Strength             | σ <sub>T</sub>     | MPa               | 72.4               | ISO 527-2      |
| Tensile Modulus              | E <sub>T</sub>     | GPa               | 3.26               | ISO 527-2      |
| Flexural Strength            | σ <sub>F</sub>     | MPa               | 116                | ISO 178        |
| Flexural Modulus             | E <sub>F</sub>     | GPa               | 3.21               | 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. Conditioning: as stated in column heading.

| PROPERTIES              | SYMBOL            | UNITS | 16 HOURS AT 50°C** | TEST STANDARD         |
|-------------------------|-------------------|-------|--------------------|-----------------------|
| Fibre Volume Fraction   | V <sub>FVF</sub>  | %     | 52%                | ASTM D 3171 Method II |
| Tensile Strength***     | σ <sub>T</sub>    | MPa   | 579                | ISO 527-4             |
| Tensile Modulus***      | E <sub>T</sub>    | GPa   | 28.0               | ISO 527-4             |
| Compressive Strength*** | σ <sub>C</sub>    | MPa   | 528                | SACMA SRM1-94         |
| Compressive Modulus***  | E <sub>C</sub>    | GPa   | 29.0               | SACMA SRM1-94         |
| Flexural Strength       | σ <sub>F</sub>    | MPa   | 646                | ISO 14125             |
| Flexural Modulus        | E <sub>F</sub>    | GPa   | 15.1               | ISO 14125             |
| ILSS                    | X <sub>ILSS</sub> | MPa   | 44.3               | ISO 14130             |

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

\*\*initial cure of 24 hours at 21°C

\*\*\*normalised to 55% fibre volume fraction

## PRIME™ 37 RESIN & AMPREG 3X STANDARD 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             | PRIME™ 37 RESIN | A3X STANDARD HARDENER | MIXED SYSTEM | TEST METHOD |
|---------------------|-------------------|-----------------|-----------------------|--------------|-------------|
| Mix ratio by weight | Parts by weight   | 100             | 29                    | -            | -           |
| Mix ratio by volume | Parts by volume   | 100             | 34                    | -            | -           |
| Density at 21 °C    | g/cm <sup>3</sup> | 1.13            | 0.95 – 1.10           | 1.11         | ISO 1183-1B |

### COMPONENT & MIXED SYSTEM PROPERTIES\*

| PROPERTY                              | UNITS   | 15 °C      | 20 °C     | 25 °C     | 30 °C     | TEST METHOD            |
|---------------------------------------|---------|------------|-----------|-----------|-----------|------------------------|
| PRIME™ 37 Resin Viscosity             | cP      | 956 - 1130 | 675 - 731 | 415 - 515 | 270 - 395 | -                      |
| Ampreg 3X Standard Hardener Viscosity | cP      | 200 - 300  | 150 - 200 | 100 – 150 | 50 – 100  | -                      |
| Initial Mixed System Viscosity        | cP      | -          | 569       | 345       | 267       | -                      |
| Pot-life (150 g, mixed in water)*     | hrs:min | -          | -         | 0:53      | -         | Tecam Gel Time         |
| Latest flow under vacuum              | hrs:min | 5:20       | 4:07      | 3:10      | 2:18      | Theoretical, Thin Film |
| Earliest vacuum off time              | hrs:min | 7:38       | 5:33      | 4:28      | 3:00      | Theoretical, Thin Film |
| Demould Time                          | hrs:min | 10:00      | 8:08      | 6:10      | 4:21      | Theoretical, Thin Film |

### CURED RESIN MECHANICAL AND THERMAL PROPERTIES

| PROPERTIES                   | SYMBOL             | UNITS             | 16 HOURS AT 50°C** | TEST STANDARD  |
|------------------------------|--------------------|-------------------|--------------------|----------------|
| Glass Transition Temperature | T <sub>g</sub>     | °C                | 72.3               | ISO 6721 (DMA) |
| Cured Density                | ρ <sub>CURED</sub> | g/cm <sup>3</sup> | 1.170              | ISO 1183-1A    |
| Barcol Hardness              | -                  | mg                | 34                 | ISO 62         |
| Tensile Strength             | σ <sub>T</sub>     | MPa               | 70.1               | ISO 527-2      |
| Tensile Modulus              | E <sub>T</sub>     | GPa               | 3.1                | ISO 527-2      |
| Flexural Strength            | σ <sub>F</sub>     | MPa               | 112                | ISO 178        |
| Flexural Modulus             | E <sub>F</sub>     | GPa               | 3.11               | 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. Conditioning: as stated in column heading.

| PROPERTIES              | SYMBOL            | UNITS | 16 HOURS AT 50°C** | TEST STANDARD         |
|-------------------------|-------------------|-------|--------------------|-----------------------|
| Fibre Volume Fraction   | V <sub>FVF</sub>  | %     | 53%                | ASTM D 3171 Method II |
| Tensile Strength***     | σ <sub>T</sub>    | MPa   | 552                | ISO 527-4             |
| Tensile Modulus***      | E <sub>T</sub>    | GPa   | 28.7               | ISO 527-4             |
| Compressive Strength*** | σ <sub>C</sub>    | MPa   | 540                | SACMA SRM1-94         |
| Compressive Modulus***  | E <sub>C</sub>    | GPa   | 29.2               | SACMA SRM1-94         |
| Flexural Strength       | σ <sub>F</sub>    | MPa   | 820                | ISO 14125             |
| Flexural Modulus        | E <sub>F</sub>    | GPa   | 22.7               | ISO 14125             |
| ILSS                    | X <sub>ILSS</sub> | MPa   | 42.2               | ISO 14130             |

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

\*\*initial cure of 24 hours at 21°C

\*\*\*normalised to 55% fibre volume fraction

## PRIME™ 37 RESIN & AMPREG 3X SLOW 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             | PRIME™ 37 RESIN | A3X SLOW HARDENER | MIXED SYSTEM | TEST METHOD |
|---------------------|-------------------|-----------------|-------------------|--------------|-------------|
| Mix ratio by weight | Parts by weight   | 100             | 29                | -            | -           |
| Mix ratio by volume | Parts by volume   | 100             | 35                | -            | -           |
| Density at 21 °C    | g/cm <sup>3</sup> | 1.13            | 0.90 – 1.10       | 1.10         | ISO 1183-1B |

### COMPONENT & MIXED SYSTEM PROPERTIES

| PROPERTY                          | UNITS   | 15°C       | 20°C      | 25°C      | 30°C      | TEST METHOD            |
|-----------------------------------|---------|------------|-----------|-----------|-----------|------------------------|
| PRIME™ 37 Resin Viscosity         | cP      | 956 - 1130 | 675 - 731 | 415 - 515 | 270 - 395 | -                      |
| Ampreg 3X Slow Hardener Viscosity | cP      | 34 - 42    | 24 - 34   | 20 - 30   | 14 - 20   | -                      |
| Initial Mixed System Viscosity    | cP      |            |           | 245       |           | -                      |
| Pot-life (150 g, mixed in water)* | hrs:min | -          | -         | 04:00     | -         | Tecam Gel Time         |
| Latest flow under vacuum          | hrs:min | 08:45      | 06:43     | 05:07     | 03:47     | Theoretical, Thin Film |
| Earliest vacuum off time          | hrs:min | 14:43      | 10:52     | 08:10     | 05:47     | Theoretical, Thin Film |
| Demould Time                      | hrs:min | 21:50      | 15:51     | 11:52     | 08:40     | Theoretical, Thin Film |

### CURED RESIN MECHANICAL AND THERMAL PROPERTIES

| PROPERTIES                   | SYMBOL             | UNITS             | 16 HOURS AT 50°C** | TEST STANDARD  |
|------------------------------|--------------------|-------------------|--------------------|----------------|
| Glass Transition Temperature | T <sub>g</sub>     | °C                | 73.9               | ISO 6721 (DMA) |
| Cured Density                | ρ <sub>CURED</sub> | g/cm <sup>3</sup> | 1.160              | ISO 1183-1A    |
| Barcol Hardness              | -                  | mg                | 25.5               | ISO 62         |
| Tensile Strength             | σ <sub>T</sub>     | MPa               | 72.5               | ISO 527-2      |
| Tensile Modulus              | E <sub>T</sub>     | GPa               | 3.21               | ISO 527-2      |
| Flexural Strength            | σ <sub>F</sub>     | MPa               | 113                | ISO 178        |
| Flexural Modulus             | E <sub>F</sub>     | GPa               | 3.01               | 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. Conditioning: as stated in column heading.

| PROPERTIES              | SYMBOL            | UNITS | 16 HOURS AT 50°C** | TEST STANDARD         |
|-------------------------|-------------------|-------|--------------------|-----------------------|
| Fibre Volume Fraction   | V <sub>FVF</sub>  | %     | 51                 | ASTM D 3171 Method II |
| Tensile Strength***     | σ <sub>T</sub>    | MPa   | 537                | ISO 527-4             |
| Tensile Modulus***      | E <sub>T</sub>    | GPa   | 28.4               | ISO 527-4             |
| Compressive Strength*** | σ <sub>C</sub>    | MPa   | 547                | SACMA SRM1-94         |
| Compressive Modulus***  | E <sub>C</sub>    | GPa   | 28.4               | SACMA SRM1-94         |
| Flexural Strength       | σ <sub>F</sub>    | MPa   | 664                | ISO 14125             |
| Flexural Modulus        | E <sub>F</sub>    | GPa   | 16.2               | ISO 14125             |
| ILSS                    | X <sub>ILSS</sub> | MPa   | 44.9               | ISO 14130             |

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

\*\*initial cure of 24 hours at 21°C

\*\*\*normalised to 55% fibre volume fraction

## PRIME™ 37 RESIN & AMPREG 3X EXTRA-SLOW 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             | PRIME™ 37 RESIN | A3X EXTRA SLOW HARDENER | MIXED SYSTEM | TEST METHOD |
|---------------------|-------------------|-----------------|-------------------------|--------------|-------------|
| Mix ratio by weight | Parts by weight   | 100             | 29                      | -            | -           |
| Mix ratio by volume | Parts by volume   | 100             | 35                      | -            | ISO 1183-1B |
| Density at 21 °C    | g/cm <sup>3</sup> | 1.13            | 0.85 – 1.05             | 1.09         | -           |

### COMPONENT & MIXED SYSTEM PROPERTIES

| PROPERTY                                | UNITS   | 15°C       | 20°C      | 25°C      | 30°C      | TEST METHOD            |
|---|---|------------|-----------|-----------|-----------|------------------------|
| PRIME™ 37 Resin Viscosity               | cP  | 956 - 1130 | 675 - 731 | 415 - 515 | 270 - 395 | -                      |
| Ampreg 3X Extra Slow Hardener Viscosity | cP  | 17         | 14        | 12        | -         | -                      |
| Initial Mixed System Viscosity          | cP  | -          | 217       | 150       | 97        | -                      |
| Pot-life (150 g, mixed in water)*       | hrs:min   | -          | -         | 10:30     | -         | Tecam Gel Time         |
| Latest flow under vacuum                | hrs:min   | 13:02      | 11:07     | 07:59     | 06:34     | Theoretical, thin film |
| Earliest vacuum off time                | hrs:min   | 21:35      | 17:47     | 12:26     | 09:43     | Theoretical, thin film |
| Demould Time                            | This hardener requires an elevated temperature cure – demould times at temperatures of 15-30°C are not recommended. |            |           |           |           | Theoretical, thin film |

### CURED RESIN MECHANICAL AND THERMAL PROPERTIES

| PROPERTIES                   | SYMBOL             | UNITS             | 16 HOURS AT 50°C** | TEST STANDARD  |
|------------------------------|--------------------|-------------------|--------------------|----------------|
| Glass Transition Temperature | T <sub>g</sub>     | °C                | 64.2               | ISO 6721 (DMA) |
| Cured Density                | ρ <sub>CURED</sub> | g/cm <sup>3</sup> | 1.153              | ISO 1183-1A    |
| Barcol Hardness              | -                  | mg                | 22.5               | ISO 62         |
| Tensile Strength             | σ <sub>T</sub>     | MPa               | 64.7               | ISO 527-2      |
| Tensile Modulus              | E <sub>T</sub>     | GPa               | 3.21               | ISO 527-2      |
| Flexural Strength            | σ <sub>F</sub>     | MPa               | 112                | ISO 178        |
| Flexural Modulus             | E <sub>F</sub>     | GPa               | 3.03               | 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. Conditioning: as stated in column heading.

| PROPERTIES              | SYMBOL            | UNITS | 16 HOURS AT 50°C** | TEST STANDARD         |
|-------------------------|-------------------|-------|--------------------|-----------------------|
| Fibre Volume Fraction   | V <sub>FVF</sub>  | %     | 52.2               | ASTM D 3171 Method II |
| Tensile Strength***     | σ <sub>T</sub>    | MPa   | 492                | ISO 527-4             |
| Tensile Modulus***      | E <sub>T</sub>    | GPa   | 27.9               | ISO 527-4             |
| Compressive Strength*** | σ <sub>C</sub>    | MPa   | 516                | SACMA SRM1-94         |
| Compressive Modulus***  | E <sub>C</sub>    | GPa   | 28.6               | SACMA SRM1-94         |
| Flexural Strength       | σ <sub>F</sub>    | MPa   | 738                | ISO 14125             |
| Flexural Modulus        | E <sub>F</sub>    | GPa   | 20.7               | ISO 14125             |
| ILSS                    | X <sub>ILSS</sub> | MPa   | 49                 | ISO 14130             |

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

\*\*initial cure of 24 hours at 21°C

\*\*\*normalised to 55% fibre volume fraction

## PRIME™ 37 RESIN & PRIME™ HIGH TG 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             | PRIME™ 37 RESIN | HIGH TG HARDENER | MIXED SYSTEM | TEST METHOD |
|---------------------|-------------------|-----------------|------------------|--------------|-------------|
| Mix ratio by weight | Parts by weight   | 100             | 25               | -            | -           |
| Mix ratio by volume | Parts by volume   | 100             | 31               | -            | -           |
| Density at 21 °C    | g/cm <sup>3</sup> | 1.13            | 0.92             | 1.08         | ISO 1183-1B |

### COMPONENT & MIXED SYSTEM PROPERTIES

| PROPERTY                          | UNITS   | 15°C        | 20°C      | 25°C      | 30°C      | TEST METHOD            |
|-----------------------------------|---|-------------|-----------|-----------|-----------|------------------------|
| PRIME™ 37 Resin Viscosity         | cP  | 1650 - 1670 | 815 - 865 | 415 - 515 | 310 - 330 | -                      |
| PRIME™ High Tg Hardener Viscosity | cP  | -           | 29 - 31   | 25 - 27   | 21 - 23   | -                      |
| Initial Mixed System Viscosity    | cP  | 580 - 600   | 500 - 520 | 245       | 210 - 230 | -                      |
| Geltime (150 g, mixed in water)*  | hrs:min   | -           | 05:00     | -         | -         | -                      |
| Latest flow under vacuum          | hrs:min   | -           | -         | -         | -         | Theoretical, thin film |
| Earliest vacuum off time          | hrs:min   | -           | -         | -         | -         | Theoretical, thin film |
| Demould Time                      | This hardener requires an elevated temperature cure – demould times at temperatures of 15-30°C are not recommended. |             |           |           |           | Theoretical, thin film |

### 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     |
|------------------------|-------|------------------|--------------------|------------------|-----------------------|-------------------|------------------------|-----------------|-----------------|
| T <sub>g1</sub> by DMA | °C    | 75               | 93                 | 109              | 108                   | 120               | 114                    | 120             | ISO 6721 (DMA)  |
| T <sub>g2</sub> by DSC | °C    | 74               | 83                 | 105              | 101                   | 110               | 108                    | 117             | ISO 11357 (DSC) |

### CURED RESIN MECHANICAL AND THERMAL PROPERTIES

| PROPERTIES                   | SYMBOL             | UNITS             | 16 HOURS AT 50°C** | TEST STANDARD  |
|------------------------------|--------------------|-------------------|--------------------|----------------|
| Heat Deflection Temperature  | T <sub>HDT</sub>   | °C                | 75.0               | ISO 75         |
| Glass Transition Temperature | T <sub>g1</sub>    | °C                | 75.0               | ISO 6721 (DMA) |
| Cured Density                | ρ <sub>CURED</sub> | g/cm <sup>3</sup> | 1.1                | ISO 1183-1A    |
| Linear Shrinkage             | -                  | %                 | 1.8                | ISO 1183-1A    |
| Barcol Hardness              | -                  | mg                | 34                 | ISO 62         |
| Tensile Strength             | σ <sub>T</sub>     | MPa               | 70.4               | ISO 527-2      |
| Tensile Modulus              | E <sub>T</sub>     | GPa               | 3.5                | ISO 527-2      |
| Flexural Strength            | σ <sub>F</sub>     | MPa               | 105.3              | ISO 178        |
| Flexural Modulus             | E <sub>F</sub>     | 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. Conditioning: as stated in column heading.

| PROPERTIES              | SYMBOL            | UNITS | NO CONDITIONING | 28 DAYS AT 35°C (DISTILLED WATER) | TEST STANDARD         |
|-------------------------|-------------------|-------|-----------------|-----------------------------------|-----------------------|
| Fibre Volume Fraction   | V <sub>FVF</sub>  | %     | 51 – 53         |                                   | ASTM D 3171 Method II |
| Tensile Strength***     | σ <sub>T</sub>    | MPa   | 607.7           | 459.1                             | ISO 527-4             |
| Tensile Modulus***      | E <sub>T</sub>    | GPa   | 30.0            | 28.7                              | ISO 527-4             |
| Compressive Strength*** | σ <sub>C</sub>    | MPa   | 592.0           | -                                 | SACMA SRM1-94         |
| Compressive Modulus***  | E <sub>C</sub>    | GPa   | 29.8            | -                                 | SACMA SRM1-94         |
| Flexural Strength       | σ <sub>F</sub>    | MPa   | 692.2           | 564.8                             | ISO 14125             |
| Flexural Modulus        | E <sub>F</sub>    | GPa   | 17.9            | 15.7                              | ISO 14125             |
| ILSS                    | X <sub>ILSS</sub> | MPa   | -               | -                                 | ISO 14130             |

\*working time properties are highly subjective to ambient conditions and should be used as an approximate guideline for all PRIME™37 systems

\*\*initial cure of 24 hours at 21°C

\*\*\*normalised to 55% fibre volume fraction



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## CONTACT INFORMATION

Telephone + 44 1983 828000 (08:30 – 17:00 GMT)

## 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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