Gurit

PRODUCT INFORMATION :

LAMINATING AND INFUSION SYSTEMS



DELIVERING THE FUTURE OF COMPOSITE SOLUTIONS

LAMINATING AND INFUSION SYSTEMS

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INTRODUCTION

Gurit pioneered the use of epoxy resin in the manufacture of large light weight, high stress composite structures, by formulating low viscosity systems with long working times before gelation. These systems allowed the use of vacuum bagging techniques to be used which, in turn, improved the mechanical properties of the finished item by obtaining highly favourable fibre to resin ratios. This reduced void numbers and sizes and improved the interface between resin matrix and the fibres by ensuring they are in intimate contact before and during curing. These epoxy systems also used lower temperature post cures to more fully polymerise the epoxy matrix than had been experienced in the composites industry before this time.

This legacy of generating formulations which generate the highest possible properties from the simplest and most robust production processes have allowed the use of Gurit Laminating and Infusion products for both new build and repair on small items and huge structures the world over.

AMPREG WET LAMINATING RESIN SYSTEMS

The Ampreg range of wet laminating systems allows the selection of the appropriate product for a given application giving the required mechanical properties, thermal and chemical resistance. Each system in the range has a number of hardeners which allow for rapid gelation for small repair to exceptionally long for the manufacture of large sandwich structures, even in high ambient temperatures.

In addition to this are a range of hardeners and modifiers which increase the thermal properties of the finished item or increase the thixotropy (resistance to sag and drain) which aids application onto vertical surfaces or over reinforcements.

PRIME INFUSION RESIN SYSTEMS

The PRIME[™] range of products, and their respective hardeners, combines low viscosity and flexible gel times to allow the manufacture of a huge range of items in a wide range of working environments. These times range in shape and complexity from huge domes, highly stressed carbon masts, wind turbine blades up to 40m (130ft), boat hulls for racing and long distance cruising with the clock tower at mecca being a high point.

The PRIME™ products are suitable for all "under the bag" infusion processes including:-

SCRIMP – Seemans Composites Infusion Moulding Process RIFT – Resin Infusion under Flexible tooling VARTM – Vacuum Assisted Resin Transfer Moulding And also

RTM – Resin Transfer moulding

GURIT'S RANGE OF LAMINATING AND INFUSION SYSTEMS

SYSTEM	DESCRIPTION	HARDENER	SPEED	MIX RATIO	INTENDED APPLICATION	PAGE
Laminating						
SP 115	Low viscosity, UV stable high clarity laminating system	115	30 mins	100:33 (parts by weight)	Surfboards, Clear parts	4
Ampreg 21	Good wet out; low bi-product and good through thickness cure	Fast	1-2 hrs	100:33 (parts by weight)	General Purpose	
		Standard	2-3 hrs			4
		Slow	6-7 hrs			
		Extra Slow	7-10 hrs			
		High Tg	14 hrs			
Ampreg 22	Good wet out; low bi-product; good Tg generation	Fast	1-2 hrs	100 : 28 (parts by weight)	Medium to large mouldings	5
		Standard	2-3 hrs			
		Slow	6-7 hrs			
		Extra Slow	7-10 hrs			
		14 hour	14 hrs			
	Premium laminating system with high mechanical properties and high Tg	Fast	1-2 hrs	100:33 (parts by weight) High p	High performance large mouldings	5
Ampreg 26		Slow	7 hrs			
		Ultra Slow	8-10 hrs			
	3 component expanding epoxy system good for gap filling with consistent foam density	Slow	Fully foamed less than 1	100:23 (parts by weight)	Rudder foils, crash bars	6
Ampreg F230-1		Extra Slow	hr, Cure time varies with geometry			
Ampreg Thixotropic Pregel	Resin additive with a grease-like consistency, used primarily as a thixotrope - to be added to low viscosity laminating resins for applications where resin drainage is a concern.	Refer to pro	duct datasheet	Compatible systems: ¬ Ampreg 21 ¬ Ampreg 22 ¬ Ampreg 26	Vertical and overhead laminating situations, particularly where heavy, open weave fabrics are being used	
Ampreg Adhesion Promoter	A unique resin system formulated to promote the adhesion between epoxy and vinylester resin	Ampreg Adh	esion Promoter	100:28 (parts by weight)	Vertical and overhead laminating situations, particularly where heavy, open weave fabrics are being used	-
Infusion						
		Fast	28 mins	100:26		
		time vacuum infusion system Slow 1 hr 15 mins (parts by weight) Extra Slow 6 hrs 100:24	(parts by weight)			
PRIME™ 20LV	Low fume, long working time vacuum infusion system		eries build glass components - large size	7		
		Hgh Tg	3 hrs 20 mins	(parts by weight)		
PRIME™ 27	Low viscosity, good mechanical properties, very low exotherm in thick sections	Fast	20 mins	100.28	Suitable for the female moulding of large complex components	
		Slow	1 hr	(parts by weight)		7
		Extra Slow	4 hrs	100:25 (parts by weight)		
		Hgh Tg	3 hrs 20 mins			
Multi-purpose						
	Clear, multi-purpose epoxy that can be modified for a range of applications	Fast	10-60 mins	100:18 (parts by weight)		8
SP 106		Slow	1 - 2 hrs		All purpose epoxy for gluing, coating, laminating or filling	
		Extra Slow	2 - 4 hrs			







- ¬ Excellent clarity
- ¬ Good ultra-violet resistance
- ¬ Rapid fibre wet-out

INTRODUCTION

SP 115 is a low viscosity, ultra-clear epoxy laminating system. It has been designed for the manufacture of laminates such as those used in sail and surfboards which are to remain unpainted, and where a very clear finish is required. In this way colourful embedded graphics and attractive fabric weave styles can be kept visible. The material also contains UV filters which give the product its characteristic transparent pale violet/blue colour. These filters both enhance the sharpness of graphics, and, when overcoated with a suitable UV-screening PU varnish, will reduce the tendency of clear laminates to yellow after prolonged exposure to sunlight. The product is particularly suitable for use with glass fibre reinforcements which use fibre sizings optimised for wet-out and laminate clarity, such as RE210D.

SP 115 also exhibits a high degree of toughness and water resistance, enhancing the strength and damage tolerance of the thin laminates typically used in sail and surfboard manufacture. Being completely solvent and styrene-free, polystyrene foam blanks can be safely used to produce boards of the lightest possible weight.

TYPICAL APPLICATIONS

Surfboards, Clear parts.

PACK SIZES & AVAILABILITY

SP 115 is available in 1kg - 5kg packs or up to 198/20 resin/hardener quantities.



- ¬ Low initial mixed viscosity
- ¬ Good cure progression from ambient only cures
- Non Pigmented Resin and Hardeners
- Improved Health and Safety

INTRODUCTION

Ampreg 21 is the latest generation of laminating systems offered by Gurit. The low initial mixed viscosity makes this product ideal for wetting out heavyweight fibres/fabrics. It has been designed to give excellent mechanical and thermal properties from both ambient temperature cures and moderate temperature post-cures (50°C / 120°F).

Ampreg 21 is available with a range of hardener speeds from Fast to Extra Slow and has been formulated to give significant improvements to Health and Safety. Ampreg 21 is Germanischer Lloyds approved for certified applications.

TYPICAL APPLICATIONS

General purpose applications as well as medium to large structures such as boat hulls, buildings and wind turbine blades.

PACK SIZES & AVAILABILITY

Ampreg 21 is available in a range of pack sizes 1.33 - 13.33kg and up to 1000/165 resin/hardener quantities.



AMPREG 22

Epoxy Wet Laminating System

- ¬ Optimised for open-mould laminating of large structures
- ¬ Germanischer Lloyd & Lloyds approved
- ¬ Mix ratio of 100:28 (by weight)

INTRODUCTION

Ampreg 22 is an established and widely used laminating system. It is intended for both wet lay-up and vacuum bagging processes. The long working time and low exotherm of Ampreg 22 make it ideal for manufacturing large, high performance composite structures. Ampreg 22 is both Germanischer Lloyds and Lloyds approved for certified applications

The Ampreg 22 system consists of a resin and a choice of five hardeners to provide a complete range of working properties. With its Extra Slow Hardener, Ampreg 22 can provide laminate working times of over 9 hours at 20°C / 70°F whilst having low exothermic reactions even when used in thick sections. The Fast hardener has such rapid through-cure at 25-30°C / 75-85°F that it can be used to produce small mouldings that are de-mouldable in just a few hours.

TYPICAL APPLICATIONS

Ideally suited to large structures such as boat hulls, buildings and wind turbine blades.

PACK SIZES & AVAILABILITY

Ampreg 22 is available in 1kg - 4.23kg packs up to 1000/180 kg resin/hardener quantities for machine mixing/dispense.

AMPREG 26

Epoxy Laminating System

- ¬ Optimum mechanical properties
- ¬ High Tg's from elevated temperature cures

INTRODUCTION

Ampreg 26 is Gurit's premium epoxy laminating system, and is particularly suitable for the manufacture of large, high performance composite structures. The product's high laminate mechanical properties and high Tg's achievable from modest postcures, make it well suited for heavily loaded applications, particularly those where a little extra thermal performance is required. Ampreg 26 is optimised for use in hand-lay up and vacuum bagging processes, but can also be used in other processes such as RTM, vacuum infusion, pultrusion and filament winding.

Ampreg 26 may also be used with the separate Ampreg Ultra Slow hardener to provide flow times under vacuum of up to 9 hours at 20°C.

TYPICAL APPLICATIONS

High performance large mouldings

PACK SIZES & AVAILABILITY

Ampreg 26 is available in packs of 6.67kg or up to 18/6.66kg resin/hardener quantities.

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¬ Excellent Fibre Wetting

Germanischer Lloyd approved

¬ Mix ratio of 100:33.3 (by weight)











Foaming Epoxy System







Expanding Epoxy System

- ¬ Uses Ampreg 21 hardeners
- ¬ Excellent adhesion to substrates
- ¬ Three components for flexibility and storage stability

INTRODUCTION

Three part foaming epoxy system using Ampreg 21 hardeners. The final density of the cured product can be controlled by the careful addition of the Foaming Agent, although the product is optimised to the 150 - 300kg/m³ range.

TYPICAL APPLICATIONS

Rudder foils, crash bars.

PACK SIZES & AVAILABILITY

Ampreg F230-1 is available in a 14.5/3.53kg resin/hardener quantities.

¬ Density 150 – 300kg/m³

¬ Good mechanical and thermal properties

PRIME[™] 20LV

Epoxy Infusion System

- ¬ Very low viscosity
- ¬ Very low exotherm even in thick sections

INTRODUCTION

NFUSION

PRIME™ 20LV is the next generation of PRIME™ 20 epoxy infusion resin, specifically designed for use in a variety of resin infusion processes including RTM, SCRIMP™ and RIFT. It has a very low mixed viscosity and long working time, allowing large parts with complex reinforcements to be infused successfully in one operation. It has an exceptionally low exotherm characteristic, which allows thick sections to be manufactured without risk of premature gelation due to exothermic temperature rises. PRIME™ 20LV is both Germanischer Lloyds and Lloyds approved for certified applications.

TYPICAL APPLICATIONS

PRIME[™] 20LV has been used successfully for the single-operation moulding of components ranging from narrow carbon yacht masts, up to 80' yacht hulls and wind turbine blades.

PACK SIZES & AVAILABILITY

PRIME[™] 20LV is available in 3.9kg packs or up to 1000/180 kg resin/hardener quantities for machine mixing/dispense.

PRIME[™] 27

Premium Epoxy Infusion System

- ¬ The lowest viscosity PRIME[™] infusion resin
- ¬ Very low exotherm in thick sections
- Suitable for infusing structures that utilise carbon, aramid and glass fibres

INTRODUCTION

PRIMETM 27 offers outstanding performance in a variety of liquid infusion processes. It is Gurit's premium infusion system, offering high mechanical and thermal properties, lower viscosity, improved wetting out and longer working time than PRIME™ 20LV. It achieves excellent mechanical and physical properties, including a high Tg from a moderate (50°C / 120°F) post-cure.

PRIME™ 27 resin uses PRIME™ 20 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. The system has an exceptionally low exotherm characteristic, which allows thick sections to be manufactured without risk of premature gelation due to exothermic heat build-up. This low exotherm will also extend the life of mould tools.

TYPICAL APPLICATIONS

PRIME[™] 27 is suitable for the female moulding of large, complex components including spars, hulls and reinforcing structures.

PACK SIZES & AVAILABILITY

PRIME[™] 27 is available in up to 1000/180 kg resin/hardener guantities for machine mixing/dispense.







- ¬ Variable infusion times
- ¬ Germanischer Lloyd & Lloyds approved













- Use for gluing, coatings, laminating and filling
- ¬ Rapid curing, even at low temperatures
- ¬ Simple to use

INTRODUCTION

SP 106 is a simple to use, all-purpose epoxy which can be used for gluing, coating, laminating and filling. With its range of hardeners, and easy 5:1 mix ratio by volume, SP 106 provides a quick and convenient way of using one epoxy system for a very wide range of tasks. SP 106 has been established for over 20 years as the primary epoxy system for the manufacture and repair of wooden boats, and it is now widely used in many other woodworking applications from cabinet making to the manufacture of large wooden moulds.

With its Extra Slow Hardener SP 106 can be used for jobs requiring a long working time, or in 'tropical' conditions of high ambient temperatures.

In its unmodified form, SP 106 can be used as a clear coating for wood and other substrates, or for laminating lightweight glassfibre fabrics such as those used for reinforcing joints. By using the Gurit range of filler powders, an SP 106 resin and hardener mix can also be turned into a very effective adhesive or filling compound.

TYPICAL APPLICATIONS

General purpose applications.

PACK SIZES & AVAILABILITY

SP 106 is available in 1kg - 3kg packs or up to 1000/180 resin/hardener quantities.

TECHNICAL INFORMATION AND PRICING

For more detailed information on Laminating Systems, as well as the complete Gurit product portfolio, please visit: www.gurit.com to view the following:

- Product Data Sheets
- ¬ News / Case Studies
- Events Schedules
- Product Brochures

For pricing or other enquiries, please contact guritt@gurit.com



www.gurit.com



- ¬ Corporate Videos
- **¬** Composite Guides
- Representatives Contact Details



Product Datasheets

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Case Studies



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