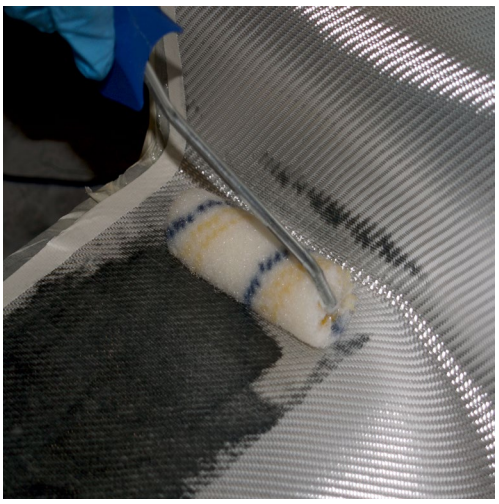
Gurit EPOXY

PRODUCT DATASHEET

Gurit



AMPREG™ 30

LOW VISCOSITY EPOXY WET LAMINATING SYSTEM

Ampreg 30 has been optimized for the manufacture of large composite structures using hand layup & vacuum bagging techniques whilst offering improved health & safety through the careful selection of low toxicity raw materials.

The relatively low initial mixed viscosity of Ampreg 30 allows easy wetout of heavyweight reinforcements. Ampreg 30 has been designed to give excellent mechanical and thermal properties from both ambient temperature cures, and moderate temperature postcures.

The unique formulation offers improved health & safety through the careful selection of low toxicity raw materials as well as Light Reflective Technology which in conjunction with a UV light-source can detect droplets as small as 1mm for easy identification of contamination to improve industrial hygiene.

Ampreg 30 contains BIO sourced materials as standard with a BIO content range from 8% to 34%.

This system is available with all Ampreg 3X Hardener speeds, as well as Ampreg 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.

- Uses Ampreg 3X low toxicity hardeners
- Up to 34% BIO carbon content in resin
- Low initial mixed viscosity & good cure progression from ambient only cures
- Tough resin matrix giving good laminate mechanical properties
- Formulated with Gurit LRT (Light Reflective Technology)
- Tested in high humidity environments
- Lloyds Register & DNV certified
- Speciality hardeners available
- Ampreg Fast, Standard, Slow, Extra-Slow Hardener
  Mix ratio by weight 100:26

BIO CONTENT AS STANDARD

DNV

Lloyd's Register

INSTRUCTIONS FOR USE

APPLICATION

The product is optimized for use between 18 - 25°C (64 – 77°F), mixing is recommended at minimum 15°C. The mixed system will cure at lower temperatures on substrates down to 5°C. Lower application temperatures will progressively increase the viscosity of the resin and hardeners making it difficult to mix and wet out the reinforcement. The preferred level of humidity for use is <70%, however the product can be used at higher levels, see appropriate section in this TDS.

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.

HARDENER	FAST	STANDARD	SLOW	EXTRA-SLOW
Ampreg 3X Fast	100%	67%	25%	0%
Ampreg 3X Extra-slow	0%	33%	75%	100%

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.

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

Ampreg 30 resin used with Ampreg 3X hardeners is usually applied by foam roller from a roller tray or brush. Accurate fiber volume fractions can be obtained by applying a known weight of mixed resin / hardener to each fabric / fiber layer. If the laminate is particularly thick, it is recommended that slower hardeners are used for laminating the first layers and faster hardeners in the later layers. In this way the whole thickness laid down remains workable for approximately the same time. For further advice, please contact Gurit Technical Support.

CURE SCHEDULE

The system has been developed to provide good mechanical properties after an ambient only cure. The minimum recommended cure temperature is 18°C (64°F). Excellent mechanical/thermal properties can be achieved after a slightly elevated temperature post-cure. An initial cure of at least 48 hours (with slow hardener) or 16 hours (with fast hardener) at 18°C (64°F) is recommended before demolding.
When using the Slow, Extra Slow or High Tg Hardeners exclusively, an elevated temperature postcure is strongly recommended

Post curing the laminate will greatly increase mechanical/thermal properties. The system will achieve similar properties with a cure of 5 hours at 70°C (158°F) or 16 hours at 50°C (122°F). The latter temperature is easily achievable with low cost heating and insulation techniques.

The post cure need not be carried out immediately after laminating. It is possible to assemble several composite components and post-cure the entire assembly together. It is recommended, however, that elevated temperature curing should be completed before any further painting / finishing operations. Furthermore, care should be taken to adequately support the laminate if it is to be post cured after demolding, and the laminate must be allowed to cool before the support is removed.

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.

HIGH HUMIDITY DURING LAMINATION

Although the recommended ambient relative humidity remains <70%, Gurit has successfully carried out testing at 90% relative humidity using the Fast Hardener which showed no significant drop in ILSS. For the testing carried out by Gurit, subsequent plies were applied within 5 mins of each other and vacuum & heat was applied directly following full lamination. As mechanical properties are highly dependent on the processing method, Gurit recommends that a test laminate is manufactured and evaluated in representative conditions in order to ensure that the required performance is achieved.

LIGHT REFLECTIVE TECHNOLOGY (LRT)

Ampreg 30 is formulated with Gurit's Light Reflective Technology included as standard, which causes the resin or mixed system to fluoresce under UV light and can assist in developing best practice post work. This ensures minimum exposure and no transfer of epoxy outside the workshop, significantly reducing the risks of sensitization and other conditions associated with contact with uncured resins. Contact Gurit Technical Support for further information.

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)
Ampreg 30 Resin	Months	36
Ampreg 3X Fast, Std. Slow, Extra Slow hardeners	Months	36
Ampreg 3X Ultra Slow hardener. Ampreg 3X 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 color change if very old and new hardeners are used on the same project.

AMPREG 30 RESIN & AMPREG 3X 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	AMPREG 30 RESIN	FAST HARDENER	MIXED SYSTEM	TEST METHOD
Color	-	Colorless	Dark Orange	Orange	-
Mix ratio by weight	Parts by weight	100	26	-	-
Mix ratio by volume	Parts by volume	100	31	-	-
Density at 21°C	g/cm3	1.00 - 1.20	0.90 - 1.10	1.09	ISO 1183-1B

COMPONENT & MIXED SYSTEM PROPERTIES

PROPERTY	UNITS	15°C	20°C	25°C	30°C	40°C	TEST METHOD
Ampreg 30 Resin viscosity	cP	5200 - 5600	2400 - 2800	1300 - 1700	600 - 1000	600 - 1000	-
Ampreg 3X Fast Hardener viscosity	cP	900 - 1000	500 - 600	300 - 500	150 - 250	90 - 130	-
Initial mixed system viscosity	cP	-	-	800 - 1000	-	-	-
Pot Life (150 g, mixed in water)*	hrs:min	-	-	00:30 – 00:40	-	-	Tecam Gel Time
Earliest time to apply vacuum	hrs:min	-	-	01:40	-	-	Theoretical, thin film
Latest time to apply vacuum	hrs:min	-	-	02:10	-	-	Theoretical, thin film
Earliest demold time	hrs:min	-	-	03:10	-	-	Theoretical, thin film

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Glass transition temp.	Tg_2	°C	59	77	85	ISO 11357 (DSC)
Ultimate glass transition temp.	UTg_2	°C	-	98	94	ISO 11357 (DSC)
Cured density	ρ_{CURED}	g/cm^3	-	1.164	-	ISO 1183-1A
Linear shrinkage	-	%	-	1.85	-	ISO 1183-1A
28 day water uptake (coupon size 60x60x1mm)	-	mg	-	32	-	ISO 62
Tensile strength	σ_T	MPa	48.7	80.4	79.5	ISO 527-2
Tensile modulus	E_T	GPa	3.59	3.49	3.26	ISO 527-2
Tensile strain	ε_T	%	1.80	4.40	7.55	ISO 527-2
Flexural strength	σ_F	N/mm^2	84.4	131	124	ISO 178
Flexural modulus	E_F	GPa	3.47	3.42	3.22	ISO 178
Flexural strain	ε_F	%	2.66	5.96	8.11	ISO 178

CURED LAMINATE MECHANICAL PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Fiber volume fraction	V_{FVF}	%	35	35	-	ASTM D 3171 Method II
ILSS***	X_{ILSS}	MPa	50.4	51.3	-	ISO 14130
ILSS (after 7 days in water)***	X_{ILSS}	MPa	-	49.5	-	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 ***normalized to 55% fiber volume fraction*

AMPREG 30 RESIN & AMPREG 3X STANDARD 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	AMPREG 30 RESIN	STANDARD HARDENER	MIXED SYSTEM	TEST METHOD
Color	-	Colorless	Very Dark Orange	Orange	-
Mix ratio by weight	Parts by weight	100	26	-	-
Mix ratio by volume	Parts by volume	100	31	-	-
Density at 21°C	g/cm3	1.00 - 1.20	0.95 - 1.15	1.10	ISO 1183-1B

COMPONENT & MIXED SYSTEM PROPERTIES

PROPERTY	UNITS	15°C	20°C	25°C	30°C	40°C	TEST METHOD
Ampreg 30 Resin viscosity	cP	5200 - 5600	2400 - 2800	1300 - 1700	600 - 1000	600 - 1000	-
Ampreg 3X Standard Hardener viscosity	cP	200 - 300	150 - 200	100 – 150	50 – 100	30 - 60	-
Initial mixed system viscosity	cP	-	-	650 - 850	-	-	-
Pot life (150 g, mixed in water)*	hrs:min	-	-	01:10 – 01:30	-	-	Tecam Gel Time
Earliest time to apply vacuum	hrs:min	-	-	02:20	-	-	Theoretical, thin film
Latest time to apply vacuum	hrs:min	-	-	03:05	-	-	Theoretical, thin film
Earliest demold time	hrs:min	-	-	06:35	-	-	Theoretical, thin film

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Glass transition temp.	Tg_2	°C	60	77	89	ISO 11357 (DSC)
Ultimate glass transition temp.	UTg_2	°C	-	99	98	ISO 11357 (DSC)
Cured density	ρ_{CURED}	g/cm^3	-	1.16	-	ISO 1183-1A
Linear shrinkage	-	%	-	1.72	-	ISO 1183-1A
28 day water uptake (coupon size 60x60x1mm)	-	mg	-	32	-	ISO 62
Tensile strength	σ_T	MPa	50.8	77.3	72.5	ISO 527-2
Tensile modulus	E_T	GPa	3.64	3.38	3.40	ISO 527-2
Tensile strain	ε_T	%	2.75	5.50	5.70	ISO 527-2
Flexural strength	σ_F	N/mm^2	99.9	125	126	ISO 178
Flexural modulus	E_F	GPa	3.50	3.42	3.45	ISO 178
Flexural strain	ε_F	%	4.04	8.51	9.24	ISO 178

CURED LAMINATE MECHANICAL PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Fiber volume fraction	V_{FVF}	%	35	35	-	ASTM D 3171 Method II
ILSS***	X_{ILSS}	MPa	42.8	48.9	-	ISO 14130
ILSS (after 7 days in water)***	X_{ILSS}	MPa	-	48.8	-	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 ***normalized to 55% fiber volume fraction*

AMPREG 30 RESIN & AMPREG 3X SLOW 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	AMPREG 30 RESIN	SLOW HARDENER	MIXED SYSTEM	TEST METHOD
Color	-	Colorless	Burnt Orange	Yellow	-
Mix ratio by weight	Parts by weight	100	26	-	-
Mix ratio by volume	Parts by volume	100	32	-	-
Density at 21°C	g/cm3	1.00 - 1.20	0.90 - 1.10	1.10	ISO 1183-1B

COMPONENT & MIXED SYSTEM PROPERTIES

PROPERTY	UNITS	15°C	20°C	25°C	30°C	40°C	TEST METHOD
Ampreg 30 Resin viscosity	cP	5200 – 5600	2400 - 2800	1300 - 1700	600 - 1000	600 - 1000	-
Ampreg 3X Slow Hardener viscosity	cP	34 – 42	24 - 34	20 - 30	14 - 20	8 - 16	-
Initial mixed system viscosity	cP	-	-	250 – 450	-	-	-
Pot Life (150 g, mixed in water)*	hrs:min	-	-	03:40 – 04:20	-	-	Tecam Gel Time
Earliest time to apply vacuum	hrs:min	-	-	04:00	-	-	Theoretical, thin film
Latest time to apply vacuum	hrs:min	-	-	05:00	-	-	Theoretical, thin film
Earliest demold time	hrs:min	-	-	16:00	-	-	Theoretical, thin film

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Glass transition temp.	Tg_2	°C	57	74	81	ISO 11357 (DSC)
Ultimate glass transition temp.	UTg_2	°C	-	95	90	ISO 11357 (DSC)
Cured density	ρ_{CURED}	g/cm^3	-	1.151	-	ISO 1183-1A
Linear shrinkage	-	%	-	1.64	-	ISO 1183-1A
28 day water uptake (coupon size 60x60x1mm)	-	Mg	-	27	-	ISO 62
Tensile strength	σ_T	MPa	48.7	76.0	74.0	ISO 527-2
Tensile modulus	E_T	GPa	3.62	3.44	3.24	ISO 527-2
Tensile strain	ε_T	%	3.86	4.94	7.71	ISO 527-2
Flexural strength	σ_F	N/mm^2	82.6	122	117	ISO 178
Flexural modulus	E_F	GPa	3.58	3.19	3.17	ISO 178
Flexural strain	ε_F	%	2.62	10.2	9.08	ISO 178

CURED LAMINATE MECHANICAL PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Fiber volume fraction	V_{FVF}	%	36	36	36	ASTM D 3171 Method II
ILSS***	X_{ILSS}	MPa	47.1	49.5	54.1	ISO 14130
ILSS (after 7 days in water)***	X_{ILSS}	MPa	-	49.4	-	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 ***normalized to 55% fiber volume fraction*

AMPREG 30 RESIN & AMPREG 3X EXTRA-SLOW 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	AMPREG 30 RESIN	EXTRA-SLOW HARDENER	MIXED SYSTEM	TEST METHOD
Color	-	Colorless	Colorless / Very Pale Yellow	Colorless / Very Pale Yellow	-
Mix ratio by weight	Parts by weight	100	26	-	-
Mix ratio by volume	Parts by volume	100	32	-	-
Density at 21°C	g/cm^3	1.00 - 1.20	0.85 - 1.05	1.09	ISO 1183-1B

COMPONENT & MIXED SYSTEM PROPERTIES

PROPERTY	UNITS	15°C	20°C	25°C	30°C	40°C	TEST METHOD
Ampreg 30 Resin viscosity	cP	5200 - 5600	2400 - 2800	1300 - 1700	600 - 1000	600 - 1000	-
Ampreg 3X Extra-Slow Hardener viscosity	cP	18 - 28	15 - 20	5 - 15	5 – 10	4 - 8	-
Initial mixed system viscosity	cP	-	-	200 - 400	-	-	-
Pot life (150 g, mixed in water)*	hrs:min	-	-	07:00 – 07:40	-	-	Tecam Gel Time
Earliest time to apply vacuum	hrs:min	-	-	06:20	-	-	Theoretical, thin film
Latest time to apply vacuum	hrs:min	-	-	07:45	-	-	Theoretical, thin film
Earliest demold time	hrs:min	-	-	41:00	-	-	Theoretical, thin film

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Glass transition temp.	Tg_2	°C	54	73	78	ISO 11357 (DSC)
Ultimate glass transition temp.	UTg_2	°C	-	97	88	ISO 11357 (DSC)
Cured density	ρ_{CURED}	g/cm^3	-	1.147	-	ISO 1183-1A
Linear shrinkage	-	%	-	1.70	-	ISO 1183-1A
28 day water uptake (coupon size 60x60x1mm)	-	mg	-	26	-	ISO 62
Tensile strength	σ_T	MPa	45.4	70.9	71.8	ISO 527-2
Tensile modulus	E_T	GPa	3.54	3.41	3.20	ISO 527-2
Tensile strain	ε_T	%	3.57	4.02	7.27	ISO 527-2
Flexural strength	σ_F	N/mm^2	83.5	118	115	ISO 178
Flexural modulus	E_F	GPa	3.38	3.17	3.13	ISO 178
Flexural strain	ε_F	%	3.11	10.8	9.41	ISO 178

CURED LAMINATE MECHANICAL PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	5 HOURS @ 70°C**	TEST METHOD
Fiber volume fraction	V_{FVF}	%	36	36	-	ASTM D 3171 Method II
ILSS***	X_{ILSS}	MPa	44.0	46.0	-	ISO 14130
ILSS (after 7 days in water)***	X_{ILSS}	MPa	-	47.6	-	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 ***normalized to 55% fiber volume fraction*

AMPREG 30 RESIN & AMPREG 3X ULTRA-SLOW HARDENER

SPECIALITY HARDENER

This hardener does not fall within our low toxicity and common mix ratio range of the standard 3X range of hardeners, see SDS for details. 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	AMPREG 30 RESIN	ULTRA-SLOW HARDENER	MIXED SYSTEM	TEST METHOD
Color	-	Colorless	Blue	Pale Blue	-
Mix ratio by weight	Parts by weight	100	29	-	-
Mix ratio by volume	Parts by volume	100	35	-	-
Density at 21°C	g/cm3	1.15	0.94	1.10	ISO 1183-1B

COMPONENT & MIXED SYSTEM PROPERTIES

PROPERTY	UNITS	20°C	25°C	30°C	TEST METHOD
Ampreg 30 Resin viscosity	cP	2400 - 2800	1300 - 1700	600 - 1000	-
Ampreg 3X Ultra-Slow Hardener viscosity	cP	22	14	9	-
Initial mixed system viscosity	cP	451	287	-	-
Pot Life (150 g, mixed in water)*	hrs:min	12:30	09:40	-	Tecam Gel Time
Earliest time to apply vacuum	hrs:min	8:45	7:45	-	Theoretical, thin film
Latest time to apply vacuum	hrs:min	11:20	9:15	-	Theoretical, thin film
Earliest demold time	hrs:min	-	50:00	-	Theoretical, thin film

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	TEST METHOD
Glass transition temp.	Tg_2	°C	52	67	ISO 11357 (DSC)
Ultimate glass transition temp.	UTg_2	°C	85	86	ISO 11357 (DSC)
Glass transition temp.	Tg_1	°C	48	66	ISO 6721 (DMA)
Cured density	ρ_{CURED}	g/cm^3	1.14	1.14	ISO 1183-1A
28 day water uptake (coupon size 60x60x1mm)	-	mg	0.86	1.05	ISO 62
Tensile strength	σ_T	MPa	38	72	ISO 527-2
Tensile modulus	E_T	GPa	3.4	3.4	ISO 527-2
Tensile strain	ε_T	%	1.16	4.1	ISO 527-2
Flexural strength	σ_F	N/mm^2	74	121	ISO 178
Flexural modulus	E_F	GPa	3.6	3.4	ISO 178
Flexural strain	ε_F	%	2.43	5.14	ISO 178

CURED LAMINATE MECHANICAL PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	TEST METHOD
Fiber volume fraction	V_{FVF}	%	55.3	55.3	ASTM D 3171 Method II
ILSS***	X_{ILSS}	MPa	41	45	ISO 14130
ILSS (after 7 days in water)***	X_{ILSS}	MPa	41	48	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 ***laminate construction: 8 plies of RE301H8, 50% resin content by weight*

AMPREG 30 RESIN & AMPREG 3X HIGH Tg HARDENER

SPECIALITY HARDENER

This hardener does not fall within our low toxicity and common mix ratio range of the standard 3X range of hardeners, see SDS for details. 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	AMPREG 30 RESIN	HIGH Tg HARDENER	MIXED SYSTEM	TEST METHOD
Color	-	Colorless	Colorless	Colorless	-
Mix ratio by weight	Parts by weight	100	29	-	-
Mix ratio by volume	Parts by volume	100	34	-	-
Density at 21°C	g/cm^3	1.14	0.96	1.09	ISO 1183-1B

COMPONENT & MIXED SYSTEM PROPERTIES

PROPERTY	UNITS	15°C	20°C	25°C	30°C	TEST METHOD
Ampreg 30 Resin viscosity	cP	5200 - 5600	2400 - 2800	1300 - 1700	600 - 1000	-
Ampreg 3X High Tg Hardener viscosity	cP	110	80	60	40	-
Initial mixed system viscosity	cP	-	820	-	-	-
Pot life (150 g, mixed in water)*	hrs:min	-	08:30	-	-	Tecam Gel Time
Earliest time to apply vacuum	hrs:min	-	07:10	-	-	Theoretical, thin film
Latest time to apply vacuum	hrs:min	-	09:10	-	-	Theoretical, thin film
Earliest demold time	hrs:min	-	60:00	-	-	Theoretical, thin film

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	16 HOURS @ 50°C**	5 HOURS @ 85°C**	TEST METHOD
Glass transition temp.	Tg_2	°C	72	107	ISO 11357 (DSC)
Ultimate glass transition temp.	UTg_2	°C	112	-	ISO 11357 (DSC)
Glass transition temp.	Tg_1	°C	76	-	ISO 6721 (DMA)
Cured density	ρ_{CURED}	g/cm^3	1.14	-	ISO 1183-1A
Linear shrinkage	-	mg	1.37	-	ISO 62
Tensile strength	σ_T	MPa	72.9	-	ISO 527-2
Tensile modulus	E_T	GPa	3.18	-	ISO 527-2
Tensile strain	ε_T	%	3.00	-	ISO 527-2

CURED LAMINATE*** MECHANICAL PROPERTIES

PROPERTY	SYMBOL	UNITS	16 HOURS @ 50°C**	TEST METHOD
Cured ply thickness	-	mm	0.28	ASTM D792
Fiber volume fraction	V_{FVF}	%	40-41	ASTM D 3171 Method II
0° Tensile strength****	X_T	MPa	418	ISO 527-4
0° Tensile modulus****	E_t	GPa	21.3	ISO 527-4
0° Compressive strength****	X_C	MPa	424	SACMA SRM1-94
0° Compressive modulus****	E_c	GPa	22.6	SACMA SRM1-94
ILSS	X_{ILSS}	MPa	54.2	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 ***laminate construction: 8 plies of RE301H8, 50% resin content by weight ****normalized to 40% fiber 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 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:

   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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