

Epoxy AMPRO Multi-Purpose Slow/ fast hars + verharder

PRODUCT INFORMATION

AVAILABILITY

The product is available in a number of formats please contact your local customer support representative for more information.

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). Adequate long term storage conditions will result in a shelf life of 2 years from the date of manufacture 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. 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.

COMPONENT	UNITS	10 – 25°C
AMPRO™ Resin	months	24
AMPRO™ Hardeners	months	24

INSTRUCTIONS FOR USE

The product is optimised for use at temperatures between 15 and 25°C. At lower temperatures the product thickens and may become unworkable, however is designed to cure if required at temperatures as low as +5°C. 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. 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. It is therefore advised that the material is used immediately or transferred to a shallow wide-bottomed container like a paint tray which will extend the working time.

FILLING AND FAIRING MIXES

All filler additions are approximate and can be adjusted by the user to achieve the desired consistency.

DESCRIPTION	FILLER TYPE	EASE OF SANDING	WATER RESISTANCE	FILLER QUANTITY*		AMPRO SILICA ADDITION*		APPROX. DENSITY	APPROX. VOLUME
				%	FOR 1KG	%	FOR 1KG		
Brown, Low Density	Microballons	Easy	Moderate	25 - 30	250 - 300 g	2 - 3	20 - 30	0.6 g/cm ³	2.2 Litres
White, Low Density	Glass Bubbles	Moderate	High	35 - 40	350 - 400 g	3 - 5	30 - 50	0.5 g/cm ³	3.0 Litres

*calculated by weight relative to the mixed system of resin and hardener

ADHESIVE MIXES

All filler additions are approximate and can be adjusted by the user to achieve the desired consistency.

DESCRIPTION	FILLER TYPE	FILLER QUANTITY*		AMPRO SILICA ADDITION*		APPROX. DENSITY	APPROX. VOLUME
		%	FOR 1KG	%	FOR 1KG		
Brown, Low Density	Microballons**	15 - 20	150 - 200 g	3 - 5	30 - 50 g	0.7 g/cm ³	1.8 Litres
White, Low Density	Glass Bubbles**	15 - 20	150 - 200 g	4 - 6	40 - 60 g	0.6 g/cm ³	2.0 Litres
Opaque, High Strength	Microfibres	7 - 10	70 - 100 g	2 - 4	20 - 40 g	0.9 g/cm ³	1.0 Litres

*calculated by weight relative to the mixed system of resin and hardener

**Microfibres are always preferred for load-carrying adhesive joints

COVERAGE

For further information please refer to the Gurit Filler Guide.

THICKNESS (PER COAT)	COVERAGE	COMMENT
Coating Coverage (at 250 microns)	Approximately 3 m ² /kg	Dependant on temperature, surface inclination, surface porosity and evenness
Adhesive Coverage	Approximately 1.5 - 2.0 m ² /kg	Dependant on temperature, surface inclination, surface porosity and evenness

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.

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.

AMPRO™ RESIN & AMPRO™ FAST HARDENER

MIXING AND HANDLING

PROPERTY	UNITS	AMPRO™ RESIN	FAST HARDENER	MIXED SYSTEM
Colour	-	Clear	Amber	Light Amber
Mix ratio by weight	Parts by weight	100	29	-
Mix ratio by volume	Parts by volume	3	1	-
Density at 21 °C (ISO 1183-1B)	g/cm ³	1.16	0.99	1.11

COMPONENT & MIXED SYSTEM PROPERTIES*

PROPERTY	UNITS	15 °C	25 °C	TEST METHOD
AMPRO™ Resin Viscosity	cP	1708	529	-
AMPRO™ Fast Hardener Viscosity	cP	1918	707	-
Initial Mixed System Viscosity	cP	-	1053	-

WORKING TIME PROPERTIES*

PROPERTY	UNITS	20 °C	TEST METHOD
Thin-Film Gel-time	hrs:min	01:44	-
Pot-life (150 g, mixed in water)	hrs:min	00:36	Tecam Gel Time
Tack-off Time	hrs:min	02:50	Internal Gurit Method
Earliest Sanding Time**	hrs:min	12:00	Internal Gurit Method

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

**it is not recommended to apply at low temperatures, but is possible to be sanded after 24 hours at cure temperatures as low as +5°C

AMBIENT CURE THERMAL PERFORMANCE PROGRESSION at 21°C

PROPERTY PROGRESSION AT 21°C	SYMBOL	UNITS	7 DAYS	14 DAYS	21 DAYS	28 DAYS	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	43	45	45	45	ISO 6721 (DMA)

CURED RESIN PROPERTIES

PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HRS AT 50°C***	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	45	50	ISO 6721 (DMA)
Ultimate Glass Transition Temp.	UT _{g1}	°C	49	-	ISO 6721 (DMA)
Tensile Strength	σ _T	MPa	48.1	51.5	ISO 527-2
Tensile Modulus	E _T	GPa	2.7	2.8	ISO 527-2
Tensile Elongation	ε _T	%	6.3	11.3	ISO 527-2
Flexural Strength	σ _F	MPa	81.4	86.0	ISO 178
Flexural Modulus	E _F	GPa	2.7	2.8	ISO 178
Flexural Elongation	ε _F	%	>12.0	>12.0	ISO 178
28 Day Water Uptake (coupon size 60x60x1mm)	-	mg (%)	-	67 (0.9)	ISO 62
ILSS (8 x RE301H8, 50% resin content)	X _{ILSS}	MPa	-	38	ISO 14130

***initial cure of 24 hours at 21°C

ADHESIVE PERFORMANCE (AFTER 16 HRS AT 50°C CURE)

PROPERTIES	SYMBOL	UNITS	PLYWOOD	TEAK	STEEL	TEST STANDARD
Lapshear Strength	τ	MPa	2.5 (failed in wood)	6.3 (failed in wood)	18.5	BS 5350 Part C5
Lapshear Strength Wet Retention (saturated for 28 days at 23°C in water)	τ _{wet}	MPa	-	-	16.1	BS 5350 Part C5

AMPRO™ RESIN & AMPRO™ SLOW HARDENER

MIXING AND HANDLING

PROPERTY	UNITS	AMPRO™ RESIN	SLOW HARDENER	MIXED SYSTEM
Colour	-	Clear	Amber	Light Amber
Mix ratio by weight	Parts by weight	100	29	-
Mix ratio by volume	Parts by volume	3	1	-
Density at 21 °C (ISO 1183-1B)	g/cm ³	1.16	1.00	1.12

COMPONENT & MIXED SYSTEM PROPERTIES*

PROPERTY	UNITS	15 °C	25 °C	TEST METHOD
AMPRO™ Resin Viscosity	cP	1708	529	-
AMPRO™ Slow Hardener Viscosity	cP	570	250	-
Initial Mixed System Viscosity	cP	-	760	-

WORKING TIME PROPERTIES*

PROPERTY	UNITS	20 °C	TEST METHOD
Thin-Film Gel-time	hrs:min	02:25	-
Pot-life (150 g, mixed in water)	hrs:min	01:20	Tecam Gel Time
Tack-off Time	hrs:min	04:00	Internal Gurit Method
Earliest Sanding Time**	hrs:min	16:00	Internal Gurit Method

*working time properties are highly subjective to ambient conditions and should be used as an approximate guideline for all AMPRO™ systems
 **it is not recommended to apply at low temperatures, but a cure temperature as low as +5°C is possible

AMBIENT CURE THERMAL PERFORMANCE PROGRESSION at 21°C

PROPERTY PROGRESSION AT 21°C	SYMBOL	UNITS	7 DAYS	14 DAYS	21 DAYS	28 DAYS	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	39	40	41	42	ISO 6721 (DMA)

CURED RESIN PROPERTIES

PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	16 HRS AT 50°C***	TEST STANDARD
Glass Transition Temperature	T _{g1}	°C	42	48	ISO 6721 (DMA)
Ultimate Glass Transition Temp.	UT _{g1}	°C	47	-	ISO 6721 (DMA)
Tensile Strength	σ _T	MPa	41.3	49.8	ISO 527-2
Tensile Modulus	E _T	GPa	2.5	2.9	ISO 527-2
Tensile Elongation	ε _T	%	9.8	7.6	ISO 527-2
Flexural Strength	σ _F	MPa	71.2	79.3	ISO 178
Flexural Modulus	E _F	GPa	2.4	2.6	ISO 178
Flexural Elongation	ε _F	%	>12.0	>12.0	ISO 178
28 Day Water Uptake (coupon size 60x60x1mm)	-	mg (%)	-	41.5 (0.8)	ISO 62
ILSS (8 x RE301H8, 50% resin content)	X _{ILSS}	MPa	-	37.8	ISO 14130

***initial cure of 24 hours at 21°C

ADHESIVE PERFORMANCE (AFTER 16 HRS AT 50°C CURE)

PROPERTIES	SYMBOL	UNITS	PLYWOOD	TEAK	STEEL	TEST STANDARD
Lapshear Strength	τ	MPa	2.3 (failed in wood)	-	15.7	BS 5350 Part C5
Lapshear Strength Wet Retention (saturated for 28 days at 23°C in water)	τ _{wet}	MPa	-	-	15.6	BS 5350 Part C5