Gurit EPOXY

PRODUCT DATASHEET

Gurit

AMPRO™ HANDIPACK

SIMPLE MULTIPURPOSE SYSTEM



AMPRO Handipack is a simple to use, all-purpose epoxy, designed for quick repair work and small-scale construction jobs.

With its high clarity, fast, low temperature curing AMPRO Handipack hardener and easy 3:1 mix ratio by volume, AMPRO Handipack provides a quick and convenient way of using one epoxy system for a very wide range of tasks.

- The medium to low viscosity of the material enables it to be used for small laminating tasks, using lightweight fabrics.
- Coating & Sheathing - The high clarity makes it a good sheathing system that can also be used as a coating to form a tough, clear film, with good moisture resistance. If the coating is to remain unpainted, the cured material should be overcoated with a UV-resistant varnish, since an unprotected epoxy coating will gradually yellow in sunlight.
- Bonding & Filling - By using the Gurit range of filler powders, a Handipack resin and hardener mix can also be turned into a very effective adhesive or filling compound.

The AMPRO Handipack is only available in one small pack size that contains:

- 290g AMPRO Handipack Resin
- 85g AMPRO Handipack Hardener
- 5ml Resin Pump
- 5ml Hardener Pump

- Ideal for repairs and other small tasks
- Improved health & safety
- No surface residue after cure even at +5°C
- Can also be used for bonding, laminating, coating & filling wood & GRP
- Mix ratio by weight 100:29
- Mix ratio by volume 3:1
  3 pumps of resin
  1 pump of hardener

INSTRUCTIONS FOR USE

APPLICATION

The product is optimized for use at temperatures between 15 and 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%.

METERING RESIN AND HARDENER IN THE CORRECT RATIO

Only one hardener is available. Use the hardener provided in the ratio:

RESIN	HARDENER
3 Pumps	1 Pump

Measure both the resin and hardener as accurately as possible since varying the amount of hardener will not change the cure speed but will greatly reduce the cured strength and water resistance properties of the material.

Use Scales, Gurit graduated cups, syringes or the Handipack pump dispensers provided. Handipack contains solvent-free epoxy so expect limited pot life.

HANDIPUMPS

These are plastic plunger-type pumps which are designed to screw directly onto the resin and hardener containers. Apart from the cap color (blue - resin; red - hardener) the pumps are identical. Both pumps will dispense the same volume (5 ml approx.) with each full stroke. Therefore correct mix ratio of resin to hardener is achieved by pressing the resin pump three times and the hardener pump once for each batch to be mixed. This is a convenient way of providing the essential accuracy required. It is therefore important to check that the pumps deliver the correct volumes prior to each use.

HOW TO FIT THE PUMPS

Unscrew the caps from both containers and remove the seals. Cut the dip tubes to the length specified below:
Resin 94mm
Hardener 55mm
Screw each pump into place. Now depress the plungers several times to expel all of the air and a small quantity of resin and hardener into a spare container. **Prime the pumps by depressing the plunger several times until spluttering stops and the material is dispensed as a steady stream**. In cold conditions the pumps will be more difficult to prime correctly and may dispense inaccurate volumes. It is therefore advisable to store the resin and hardener at 15° - 25°C for a while before actual use.

HOW TO USE THE PUMPS

- Always ensure that the pumps are primed before use.
- Place a mixing cup under the hardener spout & depress the pump for one complete stroke using a slow deliberate movement, delivering 5 ml of hardener.
- Then move the container under the resin spout and depress the resin pump three times with a slow, deliberate action (each pump delivers 5 ml) and allow the pump to return fully before depressing again to deliver the resin in the correct 3:1 volume ratio.
- For larger volumes, repeat (2) and (3), but do not dispense more than can be used within 10-20 minutes.
- Mix thoroughly for 2 minutes as described above.

PUMP MAINTENANCE

The pumps are designed to provide continuous service for up to 3 months without maintenance. However, care should be taken to ensure that the exposed parts of the plungers and spouts are kept clean by occasionally wiping with acetone, a suitable cleaning solvent or flush with clean water. Cover the ends of the spouts, when pumps are not in use, to help maintain the pumps in a primed condition and stop them dripping. This can be done by inserting a piece of rolled up masking tape or a suitably sized self-tapping screw.

To clean the pumps first allow each to drain completely. Warm air from a hairdryer or careful use of a hot air gun will help this process. Then use hot soapy water, followed by a suitable Cleaning Solvent and allow to dry completely. The pumps may then be used. While the cleaning process should remove all traces of the resin or hardener, it is recommended that a pump previously used for resin, is used for resin again. Poor maintenance can affect the accuracy of the pumps. We therefore recommend that if accuracy is in doubt the pump dispensed volumes should be checked using a calibrated measuring cylinder or cup. Gurit cannot accept liability for poor results following inaccurate pump performance.

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.

Mix no more than can be used within 10-20 minutes of the start of mixing - this will avoid excessive heat build up, early gelling and resin wastage.

COATING

Two coats of AMPRO Handipack will achieve a stable substrate. AMPRO Handipack has a number of benefits, including:

- Subsequent coats of AMPRO Handipack can be applied after just 5 hours at 20°C without sanding
- AMPRO Handipack is solvent-free and will be fully hardened overnight ready for over-coating or top-coating

The surface to be coated should be dry and clean, before sanding with 180 – 220 grit sandpaper to generate a key, the surface should then be wiped with solvent to remove the dust before the application of the AMPRO Handipack.

For best results, an initial thin coat of AMPRO Handipack should be applied to the substrate, using a rubber squeegee or brush to remove any excess. If the first coat of AMPRO Handipack is too thick, this can cause 'fisheyes' to form in the surface. Once the first coat has cured, subsequent coats of AMPRO Handipack can be applied. Due to the 4 day overcoating window of AMPRO Handipack (@ 20 degree C 50% RH), the surface does not require sanding between coats to ensure adhesion. If left for more than 4 days, the surface should be sanded with 120 grit sandpaper followed by a solvent wipe down to remove the dust before applying additional coats.

Note: In order to achieve the optimum surface finish, multiple thin layers of AMPRO Handipack should be applied.

AMPRO Handipack should be sanded before the application of the final paint system or varnish, please refer to the paint or varnish manufacturer's recommendations regarding sandpaper and solvent type to be used for this operation

LAMINATING

AMPRO Handipack can be used to laminate all common fiber types. Due to its low viscosity it wets out fibers with ease. Standard hand laminating and vacuum bag processes can be used predominantly with the slower hardeners.

ADHESIVE MIXES

AMPRO Handipack can be mixed with standard Gurit fillers to make filling / fairing or adhesive compounds as required

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

FILLER TYPE	DESCRIPTION	FILLER QUANTITY		SILICA ADDITION		APPROX. DENSITY	APPROX. VOLUME
		%	FOR 1KG	%	FOR 1KG		
Microballoons	Brown, low density	15 - 20	150 - 200 g	4 - 5	40 - 50 g	0.7 g/cm3	1.8 Ltrs
Glass Bubbles	White, low density	15 - 20	150 - 200 g	5 - 6	50 - 60 g	0.6 g/cm3	2.0 Ltr
Microfibres	Opaque, high strength	7 - 10	70 - 100 g	3 - 4	30 - 40 g	0.9 g/cm3	1.0 Ltr

FILLING AND FAIRING MIXES

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

FILLER TYPE	DESCRIPTION	EASE OF SANDING	WATER RESISTANCE	FILLER QUANTITY		SILICA ADDITION		APPROX. DENSITY	APPROX. VOLUME
				%	FOR 1KG	%	FOR 1KG		
Microballoons	Brown, low density	Easy	Moderate	25 - 30	250 - 300 g	2 - 3	20 - 30	0.6 g/cm3	2.2 Ltrs
Glass Bubbles	White, low density	Moderate	High	35 - 40	350 - 400 g	3 - 5	30 - 50	0.5 g/cm3	3.0 Ltrs

COVERAGE

THICKNESS (PER COAT)	50 - 150 MICRONS	COMMENT
Coating coverage (at 250 microns)	Approximately 3 m2/kg	Dependant on temperature, surface inclination, surface porosity and evenness
Adhesive coverage	Approximately 1.5 - 2.0 m2/kg	Dependant on temperature, surface inclination, surface porosity and evenness

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
AMPRO Handipack Resin	Months	24
AMPRO Handipack 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°C and 25°C, 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.

AMPRO HANDIPACK

This product summary is intended for use in conjunction with further advice provided under the Instructions for Use section.

PROPERTY	UNITS	AMPRO HANDIPACK RESIN	AMPRO HANDIPACK HARDENER	MIXED SYSTEM
Color	-	Clear	Pale Amber	Clear
Mix ratio by volume	Parts by volume	3	1	-
Mix ratio by weight	Parts by weight	100	29	-
Density at 21°C (ISO 1183-1B)	g/cm3	1.16	1.04	1.13

COMPONENT PROPERTIES*

PROPERTY	UNITS	TEMPERATURE 15°C	TEMPERATURE 25°C	TEST METHOD
AMPRO Resin viscosity	cP	1708	529	CAP2000LT
AMPRO Handipack Hardener viscosity	cP	1680	620	CAP2000LT
Initial mixed system viscosity	cP	-	971	CAP2000LT

WORKING TIME PROPERTIES*

PROPERTY	UNITS	TEMPERATURE 20°C	TEST METHOD
Thin-film gel-time (0.5mm)	hrs:min	1.33	Gurit internal method
Pot-life (150 g, mixed in water)	hrs:min	0.28	Tecam gel time
Tack off time	hrs:min	2:50	Gurit internal method
Earliest sanding time	hrs:min	12:00	Gurit internal method

THERMAL PROPERTIES*

PROPERTY PROGRESSION AT 21°C	UNITS	7 DAYS	14 DAYS	21 DAYS	28 DAYS	TEST METHOD
Glass transition temperature (Tg1)	°C	43.9	44.8	47.0	46.6	ISO 6721 (DMA)

CURED RESIN PROPERTIES

PROPERTY	SYMBOL	UNITS	28 DAYS @ 21°C	16 HOURS @ 50°C**	TEST METHOD
Glass transition temperature	Tg1	°C	46.6	55.5	(DMA)
Ultimate glass transition temp.	UTg2	°C	55.5	55.5	(DSC)
Tensile strength	σ_T	MPa	50.6	56.2	ISO 527-2
Tensile modulus	E_T	GPa	3.05	3.08	ISO 527-2
Tensile elongation	ε_T	%	4.85	10.8	ISO 527-2
Flexural strength	σ_F	MPa	85.3	90.8	ISO 178
Flexural modulus	E_F	GPa	2.83	2.86	ISO 178
Flexural elongation	ε_F	%	12.0	11.9	ISO 178
7 day water uptake @ 50°C (coupon size 60x60x1mm)	-	%	58.7 (0.83%)	-	ISO 62
ILSS	X_{ILSS}	MPa	35.7	-	ISO 14130

ADHESIVE PERFORMANCE (AFTER 28 DAYS AT 21°C CURE)

PROPERTIES	SYMBOL	UNITS	PLYWOOD	STEEL	TEST STANDARD
Lapshear strength	τ	MPa	2.3 (Failed in wood)	16.4	BS 5350 Part C5

**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*

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:

   - 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:

Europe	+44 1273 289451
Americas	+1 646 844 7309
APAC	+65 3158 1412

All trademarks used or mentioned in this document are protected by law.