

CR 3400

IN-MOULD EPOXY GELCOAT / SURFACING SYSTEM

- Easy to sand
- May also be used with some Gurit prepregs

INTRODUCTION

CR 3400 is an in-mould epoxy surfacing system for epoxy laminates, and is designed to be used as the base for the subsequent application of a paint scheme. CR 3400 is therefore formulated to be easily sandable so that once released, the CR 3400 surface can be readily keyed prior to the application of the paint system. This feature gives additional benefits in that any minor surface defects caused by laminate print-through or mould imperfections can easily be sanded away.

CR 3400 is applied into a mould in the same way as other epoxy gelcoats, and has similar handling characteristics. However, the product has a considerably longer overcoating window than other gelcoats - up to one day with Standard Hardener at 20°C. This means that the system can also be used in a very flexible manufacturing environment.

CR 3400 is designed to be backed up with Ampreg 22 and Ampreg 26 epoxy laminating systems. Under certain conditions it may also be used in conjunction with SP SE70, SE84 prepregs, ST70 and ST 95 SPRINT® systems.

CR3400 must be painted prior to water immersion.

PRODUCT INFORMATION

AVAILABILITY

The product is available in a number of formats please contact your local customer support or download the latest product catalogue available on www.gurit.com.

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
CR 3400 Resin	months	12
CR 3400 Hardener	months	12

Adequate long term storage conditions will result in a shelf life of 1 year 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.

For more information on crystallization please refer to the Adhesives section on the Gurit website (www.gurit.com).

INSTRUCTIONS FOR USE

The product is optimised for use at 15 - 25°C. At lower temperatures the components thicken and may eventually become unworkable. To ensure accurate mixing and good workability pre-warm the resin & hardener as well as the surfaces to be bonded before use.

MIXING & HANDLING

Accurate measurement and thorough mixing are essential when using this system and any deviation from the prescribed mixing ratios will seriously degrade the physical and mechanical properties of the cured system. The resin and hardener must be well stirred for a minute 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 speed the reaction. If the mixed material is left in a confined mixing cup the heat cannot disperse and the reaction will become uncontrollable. It is important, therefore that any volume of material above 500 ml should either be used immediately or placed in a plastic roller tray to increase the surface area to dissipate the heat. As a general rule mix quantities should be limited to amounts which can be applied within 20-30 minutes at 20°C.

APPLICATION

The mixed system can be applied either by brush or roller. The working temperature required is between 15°C and 25°C with the humidity less than 70%. The recommended application thickness is 300 - 500 microns, which it is possible to achieve in one coat (500µ on a flat surface and 300µ on a vertical surface). However, the optimum thickness is the minimum required to achieve opacity and coherence without splitting or sagging. After application the surface should be allowed to cure until it is almost tack free (i.e. when touched, it leaves a slight finger print but is not 'sticky'). The laminate should then be laid up onto the CR 3400 as soon as possible after this stage, but in any case within a limit of 24 hours from application. Temperature should be maintained between 20°C and 25°C throughout this period, with humidity less than 70%. As a guide, at 20°C the CR 3400 can be laminated onto after approximately 5 hours.

For applications below the waterline (or where the component will be immersed in water) users must contact Technical Services for advice, prior to application of the product.

CURE SCHEDULE

The minimum time before demoulding will depend on the cure schedule of the associated laminate. However, regardless of laminating system, it is recommended that demoulding does not occur before 16 hours. CR 3400 should be allowed a minimum of 7 days if left solely at ambient temperature before it can be considered to be adequately cured. An elevated temperature post-cure of the associated laminate will reduce the cure time of the CR 3400 system.

RELEASE AGENTS

Due to the excellent adhesive qualities of epoxy resins, care must be taken with regard to mould preparation. The mould release systems which have been used successfully with CR 3400 and are recommended for mould release are Freekote FRP and Freekote 44.

These are high gloss finish mould releases and provide excellent results if the manufacturers instructions are followed. They are also particularly easy to use and quick to set up. The following mould releases may also be suitable, but users should evaluate them carefully on their particular mould surfaces:

1. 4 coats of hard wax (bees wax or Simonize original wax) allowing time for each coat to dry and be polished before application of the next coat. This should be followed by two coats of PVA release agent.
2. 6 to 12 coats of Polywax liquid wax, allowing time for each coat to dry and be polished before application of the next coat.

SURFACE AGENTS

CR 3400 is designed to provide a smooth, base for the application of various paint schemes. It is not recommended that the CR 3400 is left unpainted since it will yellow quickly on exposure to UV light. On demoulding, the CR 3400 surface should be wiped with a fast evaporating solvent (e.g. Gurit Solvent A) to remove any traces of mould release, sanded to key the surface, and then painted as per the paint manufacturer's recommendations.

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. 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.

CR 3400 / STANDARD HARDENER

This 1 page product summary is intended for use in conjunction with further advice provided under the Instructions for Use section.

MIXING AND HANDLING

PROPERTY	UNITS	CR 3400 RESIN	STD HARDENER	MIXED SYSTEM	TEST METHOD
Appearance - colour	Description	white	7 (Gardner)	off-white	-
Appearance - form	Description				-
Mix ratio by weight	Parts by weight	100	30	-	-
Mix ratio by volume	Parts by volume				-
Density at 21 °C	g/cm ³	1.698	1.055	1.550	Archimedes

COMPONENT & MIXED SYSTEM VISCOSITY*

PROPERTY	UNITS	15 °C	20 °C	25 °C	30 °C	TEST METHOD
CR 3400 Resin Viscosity	P	102.3	67.3	43.4	27.9	-
CR 3400 Standard Hardener Viscosity	P	16.5	10.5	6.6	4.1	-
Initial Mixed System Viscosity	P	76.6	47.8	29.3	18.3	-
Pot-life (500g, mixed in air)**	hrs:min	-	1:00	-	0:45	-
Tack-off Time**	hrs:min	5:50	5:00	4:20	3:40	-
Latest Overcoating Time**	hrs	-	24	16	12	
Minimum Recommended Thickness	µm	300	300	300	300	
Sag resistance	µm	550	400	280	200	-

CURED MECHANICAL AND THERMAL PROPERTIES

MECHANICAL PROPERTIES	SYMBOL	UNITS	28 DAYS AT 21°C	TEST STANDARD
Glass Transition Temperature	T _g	°C	52	ISO 6721 (DMA)
Cured Density	ρ _{ply}	g/cm ³	1.54	Archimedes
Volumetric Shrinkage		%		Archimedes
Barcol Hardness		-	38	-
Yellowing Index	ΔYI	-	34	-
Coverage at 200µm	-	m ² /kg	3.2	-
Coverage at 300µm	-	m ² /kg	2.2	-
Coverage at 300µm	-	g/m ²	465	-
Strain to Failure on Laminate	-	%	1.3	-
Water Soak Blister Rating	-	-	15	-

*All figures quoted are indicative of the properties of the product concerned. Some batch to batch variation may occur.

**All times are measured from when resin and hardener are first mixed together.

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.

TECHNICAL CONTACT INFORMATION

For all other enquiries such as technical queries:

Telephone + 44 1983 828000 (08:30 – 17:00 GMT)
Email technical.support@gurit.com

24-HOUR CHEMICAL EMERGENCY NUMBER

For advice on chemical emergencies, spillages, fires or exposures:

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