

Nuplex Specification:- Nuplex Wrap Fibre Reinforcing System

To bond resin impregnated carbon fibre cloth onto the surface of Concrete structures to increase strength.

To enable by the use of continuous carbon fibre sheets:-

**Load Increases,
Repair to Structural Parts,
A Change in the Structural System,
To Repair Design or Construction Defects**

Main Features

**Seamless
Low Weight System
Easily formed around difficult features
Versatile Applications
Minimal Disruption during Installation**

PREPARED FOR:

CONTRACT:

DATE: 11th February 2011

SCOPE:

1. General conditions of contract.
2. General assessment and scope of work.
3. Pre Start Execution
4. Substrate Requirements.
5. Application of Nuplex Fibre Wrap System
6. Installation of control joints/ sealants etc.
7. Quality Assurance
8. Protection of the Work
9. Nuplex 500 ARFR Fibre Cloth Technical Data

1.0 GENERAL CONDITIONS OF CONTRACT

- 1.1 All materials shall be installed using best trade practices and in accordance with the manufacturers recommendations or instructions. If any doubt exists please contact Nuplex Construction Products Limited for advice.
- 1.2 Materials may only be installed by approved and licensed contractor companies using staff skilled in the installation of all products covered by this specification.

Contractors are to make available senior skilled staff to supervise the work while in progress.

- 1.3 The contractor shall take reasonable steps to protect the general public, his work and adjacent surfaces during the time that his work is in progress.
- 1.4 Contractors are required to provide an acceptable Health and Safety programme which meets all the requirements of the current "Health & Safety in Employment" legislation. Contractors must also comply with any other relevant government legislation or local body laws, regulations or requirements.
- 1.5 The contractor is to provide samples showing colour and finish for final approval by the client or his consultant prior to commencing work on site.
- 1.6 This specification is to be read in conjunction with relevant product information and conditions of contract which may be issued by the client.
- 1.7 The contractor is to inspect all areas to be treated and must be satisfied that the surface is satisfactory to receive the proposed Nuplex fibre wrap system. If any doubt exists it is the responsibility of the contractor to seek advice from Nuplex Construction Products.
- 1.8 Any warrantee required will be supplied by the licensed Nuplex contractors and backed up by our agreement with them.
- 1.9 Nuplex Q.A. procedure and documentation is to be accurately recorded and kept on site during the contract. Nuplex Construction Products reserves the right to inspect this documentation at any time. A copy of all relevant Q.A. information is to be returned to Nuplex within one month of completion of the work on site.
- 1.10 Where materials are used, other than those available from Nuplex Construction, they are to be of premium quality and supplied by a reputable supplier/ manufacturer. These materials shall be warranted by the supplier/ manufacturer.

2.0 GENERAL ASSESSMENT & SCOPE OF WORK

- 2.1 This specification has been prepared to detail the requirements required and ensure client understanding as to the synthetic resin fibre wrap system being proposed for the afore-named project by Nuplex Construction Products.
- 2.2 Contractors will be required to work closely with project management staff to minimise disruption as a result of work undertaken during the renovation project. Specific time requirements and logistics are to be negotiated directly between the contractor and authorised personnel.
- 2.3 Any change required during the course of the contract must be in writing.
- 2.4 The project manager is to organise the removal of necessary equipment, obstructions, fittings, furniture etc from the work or adjacent areas as required prior to the commencement of the contract.

- 2.5 If for any reason the contractor is unable to carry out the Nuplex Fibre Wrap Systems in accordance with this specification, and relevant material data sheets, it is the responsibility of the contractor to bring it to the attention of the client and/or Nuplex Construction Products in writing prior to the commencement of the work.
- 2.6 Contractors are required to clean up all debris etc from the work area once their work is completed.
- 2.7 Technical Data
Refer to www.nuplexconstruction.co.nz for any data.
- 2.8 Materials
Nuplex Surecote 500ARFR Resin
Nuplex Surecote 500ARFR Hardener
Nuplex Flexiglaze
Nuplex K125
Nuplex Carbon Fibre Matt as Designed (See Engineers Details)
- 2.9 Other installation requirements
Nuplex specified mixing equipment
Nuplex specified application equipment
- 2.10 TRIMS AND EDGING
TBC
- 2.11 Material Shelf Life
Resin 12 months in unopened containers.
After this period suitability for use should be checked in consultation with Nuplex Construction Products.
Carbon Cloth – indefinite

3.0 PRE-START EXECUTION

- 3.1 STORAGE
Accept all materials and accessories undamaged and dry. Store drums, pails and aggregates upright with other material on level surfaces in non-traffic, non-work areas that are enclosed, clean and dry.
- 3.2 HANDLING
Avoid damage to drums and accessories.
- 3.3 PREPARATION
Record batches and stock numbers. Follow the Nuplex requirements for preparatory conditioning of materials working temperatures and conditions before, during and after application of the selected systems. Protect work from solar heat gain.
- 3.4 DO NOT START
Do not start work before the building is enclosed, all wet work is complete and good lighting is available.
For external applications protect the work area from adverse climatic conditions.

3.5 INSPECT

Inspect the substrate to ensure it complies with the requirements of the selected finish system.

3.6 PROTECTION

Protect adjoining work surfaces and finishes during the installation.

3.7 SITE SAFETY

Ensure a site meeting has been held to acquaint other site workers with the requirements for closed access to the work area. Ensure health and safety requirements are understood and agreed to prior to commencement of the contract.

Erect no smoking signs, no welding or naked flames permitted during installation. Have fire extinguishers readily available.

3.8 TECHNIQUE

Before beginning the installation confirm the proposed layout of material, location of control joints and other visual considerations of the finished work.

Force Mix, stir all resin prior to use.

4 SUBSTRATE REQUIREMENTS**4.1 Concrete Substrate**

4.1 Ensure the concrete substrate has a minimum compressive strength of 25 MPA.

4.2 Ensure the substrate has a moisture content less than 75% RH or 18% WME (exceptions seek further advice Nuplex Construction Products)

4.3 Ensure the surface is smooth with no sharp protrusions.

4.4 Ensure the substrate surface has No traces of cure membranes.

4.5 Non movement cracks in the concrete are to be bandaged using Nuplex 450 gsm fibreglass tape bandage or treated as a control joint as appropriate.

4.6 Deep depressions, impact damage, hollow etc to be repaired or filled as appropriate using Nuplex K125.

4.7 Chamfer, Bull Nose/Radius all external corners.

5.0 APPLICATION OF NUPLEX FIBRE WRAP

- Colour, the Resin is clear with an amber hue, the carbon fibre cloths are black the optional Flexiglaze can be coloured to any BS Standard chosen.
- Finish smooth.

- 5.1 Degrease and mechanically abrade the concrete surface to provide a surface profile free of cement laitance or other contaminants.
Care with surface preparation is important when using Surecote 500ARFR, methods used must remove all previous surface seals and produce sufficient profile to gain maximum adhesion.
- 5.2 Priming, apply 1 coat of Surecote 500ARFR at a spread rate not exceeding 5m²/litre/coat.
Accurately weigh and thoroughly mix the Surecote 500ARFR Resin and Hardener in the correct proportions in a separate container, roller apply to the prepared substrate.
- 5.3 Allow to become Tack Free
- 5.4 Body Coat, apply base body coat of Surecote 500ARFR at a spread rate not exceeding 1m²/litre/coat, and commence placement of Carbon Fibre Cloth.
Take great care not to crease, break or leave bubbles in the cloth, roll vigorously to fully embed the cloth into the wet resin base, maintain a wet edge across the work face to allow the next section of resin & cloth to be worked in seamlessly.
DO NOT USE CLOTH GREATER THAN 450gsm.

- 5.5 Allow to become Tack Free

- 5.6 Body Coat, apply a further coat of Surecote 500ARFR at a spread rate not exceeding 1m²/litre/coat, to fully laminate, seal the Carbon Fibre Cloth into the resin binder.
ALL FURTHER LAYERS AND RESIN COATS MUST BE APPLIED WITH THE SAME DAY PERIOD (12HRS) OTHERWISE SANDING AND SOLVENT WIPE CLEANING MUST OCCUR. THE LATTER MUST OCCUR WHENEVER OVERLAPPING OR RECOATING PREVIOUSLY LAMINATED AREAS THAT HAVE BEEN CURING FOR MORE THAN 24HRS.

- 5.7 When Cured apply Flexiglaze coloured top coat if required.

Note

Additional Topcoats may be required if a light colour has been chosen.
Observe minimum/maximum recoat recommendations.

6.0 INSTALLATION OF CONTROL JOINTS/SEALANTS ETC

- 6.1 Seek Design Instruction from the Structural Engineers

7.0. QUALITY ASSURANCE

7.1 A log shall be kept by the licensed Nuplex Sureshield contractor and available to Nuplex at their request. Information to be record daily is

- a) Material Batch Numbers
- b) Sequence of Mixing ratios and quantities and formula
- c) Substrate Moisture Content
- d) Substrate Temperature
- e) Ambient Temperature
- f) Ambient Relative Humidity

8.0 PROTECTION OF WORK

The installation contractor shall take reasonable steps to protect his work and the work of others trades during the time that his work is in progress. The General Contractor during the same time shall keep the wet areas free and clear of traffic. Thereafter, until the building is completed , it shall be the responsibility of the general Contractors to protect the Nuplex Wrap Finish from damage, paint droppings, or other contamination that may prove difficult to remove or detrimental to the finish characteristics and performance.

9.0 Nuplex 500 ARFR Fibre Reinforcing Technical Data

Nuplex Carbon Fibre Matting

Product	Type	CF Weight (g/m ²)	Thickness (mm) single layer	Density (g/cm ³)	Tensile Strength		Tensile E-Modulus		Width (cm)	Elongation At Break
Nuplex FCFU200 Toray UT70-20	Uni-Directional High Strength Carbon Fibre	200	0.111	1.80	4400MPa		245,000		100cm	1.8%
Nuplex FCFU300 Toray UT70-30	Uni-Directional High Strength Carbon Fibre	300	0.167	1.80	4400MPa		245,000		100cm	1.8%
Nuplex FCFU450 Toray UT70-40	Uni-Directional High Strength Carbon Fibre	450	0.222	1.80	4400MPa		245,000		100cm	1.8%
Nuplex FCF198	Bi-Directional High Strength Carbon Fibre	Warp 100	Warp 0.056	1.80	Warp 3.8	Warp 39,000	245	2.5 x 10 ⁶	100 cm	1.8%
		Fill 100	Fill 0.056		Fill 3.8	Fill 39,000				

Other Grade Carbon Fibre Available Upon Request

The above properties do not constitute any warranty or guarantee of values.

These values are for material selection purposes only