Condur ® CF Plate

CARBON FIBRE REINFORCEMENT PLATE SYSTEM

DESCRIPTION

Condur CF Plate is a carbon fibre reinforced polymer laminate used for strengthening structures bonded externally by **Condur CF Adhesive**.
Complies to EN1504 Part 9 and EN1504 Part 4
- Principle 4 : Structural Strengthening (SS).
  Method 4.3 – Plate Bonding.

USES & ADVANTAGES

Typical uses include strengthening of structures where there are load increases anticipated, structural repairs, modification of the structure or modifying errors in planning or construction.
The following concrete structures are typical areas of application: Bridges, Piers, Parking Structures, Tunnels, Silos, Chimneys, Dams, Tanks and Slabs, Beams and Columns in buildings. Applications may be grouped as follows:-

Load Increases
- Higher live load
- Increased wheel loads
- Installation of heavier machines
- Vibration
- Less deformation

Modification of structural system
- Elimination of walls / columns
- Openings cut into slabs

Improvements in suitability for use
- Limitation of deflections
- Reduction of stress in steel reinforcement
- Reduction of crack widths

Damage to structural parts
- Ageing of construction materials / damage caused by fire
- Corrosion of steel reinforcement
- Impact of vehicles

Errors in planning or construction
- Insufficient design dimensions
- Insufficient reinforcing steel section

Advantages include:
- High strength and high modulus.
- 10 times the tensile strength capacity of steel.
- Light weight. Minimal additional dead load.
- Does not corrode. High durability low maintenance.
- Minimal increase in member geometry.
- Easy to hide and overcoat.
- Flexible easy to install on difficult shapes.
- Easy to install minimal down time.
- Chemical resistance.
- Neutralizes the effect of cracks.
- Applied to cracks on concrete surface improves.
- Increased flexural strength.
- Significally fracture strength.
- Applied to lower tension surface of reinforced concrete beam provides substantial strength improvements.
- Improved lateral compression strength of cylindrical structures.
- Encasement of columns for seismic protection.
- Improves a structures ability to withstand lateral distortion and buckling.

APPLICATION METHOD

1. SURFACE PREPARATION

Ensure that the concrete surface is clean and sound. Remove all contaminates including coatings, grease, oil, dirt, excessive laitance, salts and unsound material by grinding, hammering, etc. Where necessary degrease with chemical degreaser.
Any structural cracks should be injected with **Condur SC** epoxy resin injection material.
Note:- *Unsound deteriorated concrete that occurred as a result of corrosion of rebars, needs to be removed to behind rebar. Corroded rebar to be cleaned with rust remover. Apply* ***Congard Zinc*** *or* ***Congard ST*** *on cleaned rebar as a corrosion protective coating. Apply* ***Condur EA2*** *as a bonding bridge on the prepared concrete surface. Apply* ***Conpatch 600MCI*** *over* ***Condur EA2*** *bonding bridge to bring back to the profile of the concrete.*
The recommended minimum concrete pull off test after surface preparation is 1.5 N/mm^2 and should be tested.

2. MIXING

Mix part A and B of **Condur CF Adhesive** together at the ratio 1:1 by weight for at least 3 minutes with a (300-400 r.p.m.) slow speed electric drill. Avoid entraining air. Use all material within its pot life. The greater the quantity mixed the shorter will be the pot life. The pot life is longer at lower temperatures & shorter at higher temperatures. The pot life of **Condur CF Adhesive** is typically 50 minutes @23ºC.

3. Condur CF Plate application

Apply **Condur CF Adhesive** to the substrate with a notched trowel or spatula/scraper at a thickness of ap-proximately 1 mm.
Clean the side of **Condur CF YC-CFRP(S) Plate** to be applied to the concrete and apply 1-2 mm thickness of **Condur CF Adhesive** to the plate using a spatula.
Within the open time of the **Condur CF Adhesive** place the **Condur CF YC-CFRP(S) Plate** on to the prepared substrate and press firmly into the Adhesive using a hard rubber roller. Ensure excess material is forced out of both sides of the plate.
In case of **Condur CF YC-CFRP(S) Plate** intersections allow the 1st application to harden before application of the 2nd plate and clean the over lapping plate's surface before application of **Condur CF Adhesive.**

Note :

- Condur CF system *should only be applied by specialist applicators who have had training in the installation of this system. Cormix International can provide such training & a list of approved applicators.*

Condur ® CF Plate

CARBON FIBRE REINFORCEMENT PLATE SYSTEM

PROPERTIES

TYPE	WIDTH	THICKNESS	CROSS SECTIONAL AREA
Condur CF YC- CFRP(S)Plate	100 mm	1.2 mm	120 mm^2
	50 mm	1.2 mm	60 mm^2
	50 mm	1.4 mm	70 mm^2
Properties	**Result**	**Test Method**	
Appearance	Black Colour	-	
Fibre Volumetric Content	> 68 %	-	
Tensile Strength	2511 Mpa	ASTM D 3039	
E Modulus	170 GPa	ASTM D 3039	
Elongation Strain at Break	1.71 %	ASTM D 3039	
Density	1.5 gm/cm^3	-	

TYPE	WIDTH	THICKNESS	CROSS SECTIONAL AREA
Condur CF YC- CFRP(S) (HP) Plate	100 mm	1.2 mm	120 mm^2
	100 mm	1.4 mm	140 mm^2
Properties	**Result**	**Test Method**	
Appearance	Black Colour	-	
Fibre Volumetric Content	> 68 %	-	
Tensile Strength	>2800 Mpa	ASTM D 3039	
E Modulus	160-170 GPa	ASTM D 3039	
Elongation Strain at Break	> 1.50 %	ASTM D 3039	
Density	1.5-1.6 gm/cm^3	-	

Notes on Applications and Limitations

Samples: - Witness samples should be made at site and tested in a laboratory to ensure the material meets the responsible designer's requirement.

Dew Point: Substrate temperature should be at least 3ºC above the dew point.
The ambient temperature should be above 8ºC.

The product should only be used by experienced professionals. In hot or cold conditions precondition the product 24 hours before use.

Protect from rain for 24 hours after application.
Consult a structural engineer for load calculations & design.
A qualified structural engineer must be responsible for designing the works. Care must be taken is selecting suitably experienced and trained contractors
Protect from permanent exposure to direct sunlight moisture & or water.

CONSUMPTION of Condur CF Adhesive

Approx. 1.5 kg/m^2 @1 mm thickness.

PACKAGING

Condur CF Plate YC-CFRP(S) = 1.2 mm x 50mm x 100 m (10 m^2) per roll.
Condur CF Plate YC-CFRP(S) = 1.2 mm x 100mm x 100 m (10 m^2) per roll.
Condur CF Plate YC-CFRP(S) = 1.4 mm x 50mm x 100 m (10 m^2) per roll.
Condur CF Plate YC-CFRP(S) = 1.4 mm x 100mm x 100 m (10 m^2) per roll.

Other sizes available on request.

STORAGE & SHELF LIFE

Unlimited providing not exposed to direct sunlight stored in dry conditions in original packaging at temperatures less than 50ºC.

Condur ® CF Plate

CARBON FIBRE REINFORCEMENT PLATE SYSTEM

HEALTH & SAFETY

Refer to advise on the safe handling, storage & disposed of the material in the MSDS available from Cormix International Ltd.

TECHNICAL SERVICE

The Cormix International Technical Service Department is available to assist you in the correct use of our products and its resources are at your disposal entirely without obligation.

QUALITY ASSURANCE

ISO 9001: 2015 verified by TUV Nord.
ISO 14001 : 2015 verified by Lloyd's Register International.

DISCLAIMER

Performance data is achieved testing in accordance with International Standards. Testing by others may result in different results from those published as a result of external factors such as poor sampling, incorrect mixing, varying temperatures, curing, crushing procedures etc.
Cormix does not take responsibility nor need to defend others testing that does not achieve the published data.
The user must test the products suitability for the intended application and purpose. Cormix reserves the right to change the properties of the product.
Site conditions and differences in materials are such that no warranty or fitness for a particular purpose, nor liability can be inferred from the published data sheet, written recommendations or from other advise offered.

CONTACT DETAILS

Cormix International Limited
89 Romklao Rd., Sansab, Minburi, Bangkok 10510
Tel. (66 2) 917 3955-8, 117 3396
Fax. (66 2) 917 3959
http://www.cormix.com
E-mail: info@cormix.com