

Product Catalogue





DANBRO Advanced Technologies Pvt Ltd is a **Dandekar Brothers** group company having 35 years of strong experience in structural engineering and taking lead in making a system for structural strengthening industry, **DANBRO** strongly promotes 100% Testing of material before supplied for retrofitting work.

DANBRO is established its own world class manufacturing facility, including state of art of Technology for CFRP system, Resin testing, and updating it continuously testing Laboratory for testing of all material comes under CFRP system for structural strengthening, viz, carbon fibre, carbon fabric, epoxy resin system, finished material, casted beams reinforced by designed epoxy system and CFRP system.

DANBRO promises 100% tested quality of products which ensure quality of structural strengthening .

Product list in DAN-BRO product basket

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DanANCR	- Carbon fibre Anchoring	

DanWR

Carbon / hybrid fabrics
Reinforcement system



DanLM

Carbon fibre laminates
Reinforcement system



DanPS

Prestressed carbon fibre
Plates reinforced system



DanANCR



DanLCNR



ADHESIVES

DanPM

Epoxy primer for surface preparation, Used to help good adhesion to Carbon and concrete surface

DanSAT

This is epoxy adhesive to help Carbon fabric to wrap with Good adhesive bond to concrete

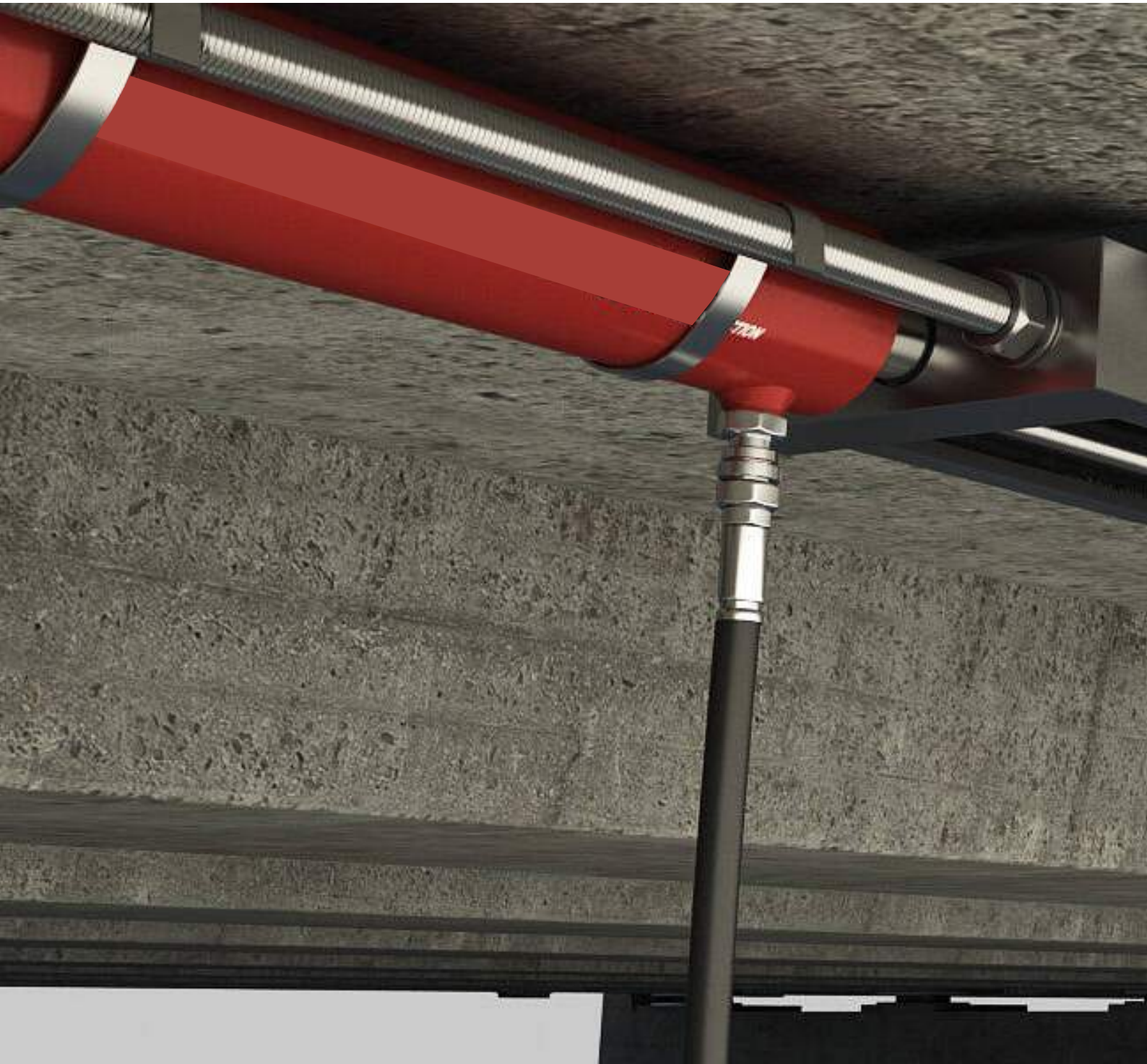
DanLMEP

This is epoxy adhesive designed For fixing laminate plates to Bond strongly with concrete

Danbro Established Lab follows ASTM quality standards for CFRP system as below

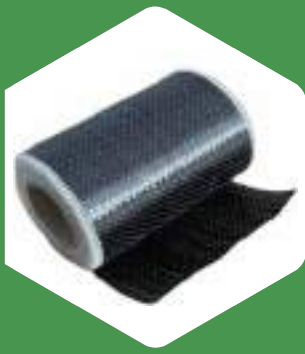
ASTM STANDARDS FOR CARBON FABRIC TESTING	ASTM STANDARD	UOM
Standard value of tensile strength	ASTM D3039	Mpa
Tensile Elastic modulus	ASTM D3039	Mpa
Elongation at break	ASTM D3039	%
Flexural strength	ASTM D7264	Mpa
FRP to fibre bonding strength	ASTM D4541	Mpa

ASTM STANDARDS FOR CARBON FIBRE ADHESIVE	ASTM STANDARD	UOM
Tensile Strength	ASTM D638	Mpa
Tensile Modulus	ASTM D638	Gpa
Flexural Strength	ASTM D790	Mpa
Flexural Modulus	ASTM D790	Gpa
Compression Strength	ASTM D695	Mpa
Bonding strength with concrete	ASTM D4541	Mpa
Elongation at break	ASTM D638	%



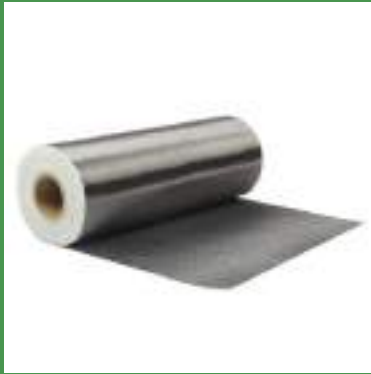
OUR PRODUCTS





DanWR

- It is a reinforcement material made of carbon fiber, aramid & glass combination as per requirement.
- It is used to give strength to existing structure and it also rehabilitates the existing structure with external support



Uses

Shear wall | Masonary walls of load bearing structures beams | Girders
Slabs | Columns | Piers | Chimneys | Silos & Tanks | Pipes and Tunnels

Advantages

- Flexural
- Shear and overall strength enhancement
- Blast resistant
- Fatigue enhancement
- Lightweight and durable
- Control of crack propogation
- High strength to weight ratio



Sr	WRAP200	WRAP300	WRAP400	WRAP600
Reinforcement carbon WRAP	DanWR200C	DanWR300C	DanWR400C	DanWR600C
gsm +10-0	200	300	400	600
width +10-0	300/500 mm	300/500 mm	300/500 mm	500/600 mm
0 deg density +1-0 / inch	6.3	9.3	6.3	9.3
90 deg density +1-0/inch	4	4	4	4
Thickness mm	0.18-0.2	0.3	0.38/ 0.4	0.6
Tensile strength of original fibre Mpa	4500/5500	4500/5500	4500/5500	4500/5500
Tensile modulus of original fibre Gpa	242	242	242	242
Density of fibre gm/cc	1.8	1.8	1.8	1.8
Elongation %	2.5	2.5	2.5	2.5



DanLM

It is a pure Unidirectional pultruded carbon fibre laminate plate material designed to use in reinforcement application.



Uses

DanLM is used to reinforce the structures with strong elements in tension, it is replacing the traditional method of applying steel plates for reinforcement, with a very thin plate of carbon composite strong material.

Increase the load bearing capacity and fatigue resistance.

Reduce deformation by increasing rigidity of working loads.

It limits or cover the cracking states.



Advantages

Reinforcement can be calculated against performance.

Reduced maintenance cost

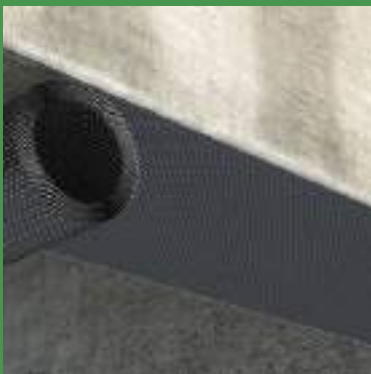
Increase durability of structures by protecting against aggressive chlorides.



Packaging

DanLM is supplied in 50 /100 mtr length as per customer requirement with different widths

50 mm x 1.4mm / 100mm x 1.4mm / 100mm x 3 mm / 100mm x 5 mm thick and customized size.



Typical Tensile properties of both Standard & Higher modulus Laminates.

Tensile Modulus – >170 Gpa / > 145 GPa

Tensile Strength – >2500 Mpa / >3000 Mpa

Basic Parameters

SPECIFICATIONS	SIZE	
DanLM1014	Thickness Width Length	1.4 mm 100 mm 100 mtr / roll
DanLM0514	Thickness Width Length	1.4 mm 50 mm 100 mtr / roll
DanLM1030L50	Thickness Width Length	3 mm 100 mm 50 mtr / roll
DanLM1050L10	Thickness Width Length	5 mm 100 mm 10 mtr / roll
DanLM1050L25	Thickness Width Length	5 mm 100 mm 25 mtr / roll

Technical Parameters

SPECIFICATIONS	TECHNICAL PROPERTIES
Tensile strength (ASTM D3039) Mpa	2600/3200
Tensile elastic modulus (ASTM D3039) Gpa	150
Elongation at break % (ASTM D3039)	1.6/1.8
Bond strength with concrete Mpa	For concrete > 2.5
Fibre Volume %	> 65

Surface Preparation

The surface of structure element that are still in good condition or restored should be profiled. With degraded structures the whole layer should be removed by scarifying, hydro demolition, then structural restoration carried out using suitable structural grade repair mortar. Oil, grease, dust or any other loose material from the surface. Clean up the Laminate surface.

Application

Apply one layer of DanLM^{EP} about 3mm thick on the surface of laminate, and a thin layer on substrate. Apply DanLM and using a roller apply uniform pressure by moving the tool both ways in the direction of fibres.

Finishing

Surface should be top coated within two days to assure proper adhesion to laminate. Surface should be properly protected against plastering or mortar.

Storage & Shelf Life

DanLM is to be stored under cover, out of direct sunlight and protect from extreme temperature.

Safety Precautions

As like all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin, and foodstuffs. Use safety goggles on site if sometimes to protect during releasing the laminate roll, as it may tightly wound in roll form during manufacturing with reverse spring action.

Application of DanPM is recommended for room temperature curing system, used for retrofitting. DanPM is used in old and new structures. It has excellent bonding strength, excellent water resistance & Excellent covering of substrate surface.

Surface Preparation

The application surface should be free of dust, grease, loose particles, residual moisture, residual oil. Any protrusions should be removed and clear it till flat even surface suitable for application. Fill the cavities, holes, cracks with DanPM system. Ensure that application surface must be within level, the difference should not be more than 1 mm. Concrete shot blasting can be used to make the surface clean, but repair more damage area with suitable concrete mortar. Surface irregularities like cracks, concrete joints should be treated using Danbro122 system.

Batch Preparation

Stir (Base) Part A Resin, and Part B Hardner with a slow speed mixer for at least 3 - 4 mins before use.

Application

Worksite should be thoroughly ventilated. Do not apply DanPM if the ambient temp is $< 5^{\circ}\text{C}$. Mixed DanPM should apply on surface with help of roller or brush. Apply 2nd coat if necessary, when surface is very porous.

Storage & Shelf Life

DanPM is to be stored under cover, out of direct sunlight and protect from extreme temperature.

Safety Precautions

As like all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin, and foodstuffs. Use safety goggles on site to protect during releasing the laminate roll, as it may tightly wound in roll form during manufacturing with reverse spring action.

Usage Parameters

CONDITION	DESCRIPTION
Shelf Life	12 month if stored in cover out of sunlite
Handling	Use hand gloves and protective glasses
Disposal	Dispose by incirineration or local regulation

Safety Information

FLASH POINT	>150°C
Special care	In case of skin contact , wash skin thoroughly with soap and ample of water. In case of eye irritation, clean the eye with running water for 10-15 min, if required get immediate medical attention.
Precautions	Apply in small batches to avoid exothermic reaction , apply it on surface as soon as it prepared.

SATURANT is a two component 100 % solid, grey pigment **impregnating resin** for structural strengthening application using **FRP composites / fabric**

Application

DanSAT is used in impregnation resin for wet method of DanWR on the application area.

Advantages

- Easy for manual and mechanical impregnation methods.
- Superior mechanical properties
- Excellent adhesion to many substrate
- Extended pot life
- Easy to mix and apply with trowel and roller

Packaging

DanSAT is supplied in 5kg two component pack.

Coverage Area

- 200 to 300 gsm fabric 0.6 to 0.8 kg /m²
- 300 to 450 gsm fabric sheet 0.8 to 1.0 kg/m²
- 500 and 600 gsm fabric sheet 1.2 to 1.4 kg/m²

Safety Precautions

As like all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin, and foodstuffs. Use safety goggles on site to protect during releasing the laminate roll, as it may tightly wound in roll form during manufacturing with reverse spring action.

Technical Properties

Appearance	Grey viscous liquid
Mixed density	1.35 kg/ ltr
Mixing ratio Part A : Part B	2 : 1 form
Pot life	25 min at 25 deg C
Volume solids	100%
Setting time	8 hours at 25deg c
Mixed viscosity at 25deg C	3000+- 500
Full cure	7 days
Compressive strength ASTMD695	>40 Mpa in 1 day >60 Mpa in 7 day
Tensile strength ASTMD638	>50 Mpa
Tensile modulus ASTMD638	>2 Gpa

PRIME - A low viscous epoxy based adhesive (PRIMER) used for improving the properties of concrete Structure, this primer is in direct contact with the carbon fiber system. This is used as levelling adhesive, used for levelling and repairing physical defect on the concrete surface of the existing structure. It is a two component comprises of low viscous DanPM Resin and **Hardener**, Resin is a Bisphenol A based liquid epoxy resin, whereas hardener is a moderate viscosity, modified amine hardener.

DanPM system technical properties

Appearance	Free flowing liquid
Mixed density	1.1 kg/ ltr
Mixed ratio by weight base : Hardner	Epoxy PRIMER PART A : PART B in 2 : 1 form
Volume solids	100 % with viscosity about <600 mPa.s
Pot life	40 min at 30 deg C
Tack free time/ touch dry time	1-2 hours at 25deg c
Adhesive bond strength with concrete as per ASTM D4541	>2.5Mpa
Shelf life (months)	12

DanPM system technical properties

PRIME PERFORMANCE

Tensile strength Mpa	ASTM D638	45
compressieve strength Mpa	ASTM D695	>50
Bonding strength with concrete Mpa	ASTM D4541	>2

Laminate Adhesive

TEST	TEST GUIDELINE	UOM	VALUE
Tensile strength	ASTMD638	Mpa	>25
Tensile Modulus	ASTMD638	Gpa	>8
Elongation	ASTMD638	%	0.39
Flexural Strength	ASTMD790	Mpa	43
Flexural Modulus	ASTMD790	Gpa	6.85
Compression	ASTMD695	Mpa	60
Pull of adhesion test	ASTMD4541	Mpa	Upto >2.0 concrete fail

Self-Lock Pre Stress Strengthening System

Anchor blocks and pull jack system for prestressed technology in below photos



DanPS

Prestressed CFRP plate system for slab, beam strengthening to increase stiffness, reduce distortion and deflection of members, reduce the cracks and stop cracking.

The CFRP pre stressing system includes carbon fibre plate, rigid anchorage and adhesive
Self-Lock Pre Stress Strengthening System :

PRODUCT DESCRIPTION	SPECIFICATION	SIZE	
Prestressed Carbon Fibre Plates	DanLM1.4P	Thickness	1.4MM
		Width	100MM
		Length	100M / ROLL
		Thickness	2.4MM
	DanLM2.4P	Width	100 MM
		Length	50/100 M / ROLL
		Thickness	3.0MM
	DanLM3.0P	Width	100MM
		Length	50M / ROLL
		Thickness	3.0MM
	Customized made DanbroLM5.0P	Width	100MM
		Length	6M/ ROLL





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