

Do it right the first time around !

FIBRE PLASTICON

Proudly developed by Eco Ace



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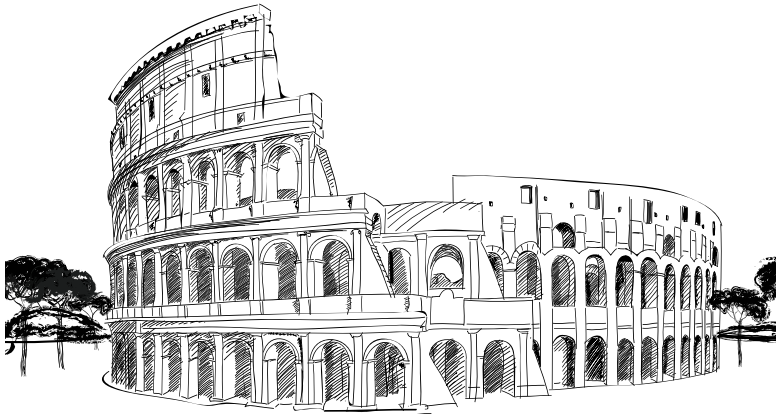
We at Eco Ace believe in a sustainable future, we begin our going green journey by Recycling plastic



After much refinement the Plastic is processed to create Polyester



It is then developed into a unique polyester fibre with a specific thickness and length ready to use



Introduction

The Colosseum in Rome was built using horse hair as a reinforcement agent. Tipu Sultan's palace at Srirangapatnam was built using sheep's wool, while the oldest existing houses in America were built using straw reinforcements.

History continues to be made with FPC, new technology to the world, as a reinforcement agent.

***Average builders create structures.
Great builders create monuments.***



When Science meets construction Offices become enterprises, houses become homes, bridges and dams become feats of engineering and roads become pathways of progress.

This is made possible with the assistance of Fibre Plast and Fibre Con (FPC) to add durability and secondary reinforcement to the structures you build.



New Generation Secondary Reinforcement for the Construction Industry

Today, concrete is used in a variety of innovative designs because of its many valuable properties such as high compressive strength, stiffness, low thermal and electrical conductivity, low combustibility and toxicity. However, concrete is also known to be brittle and weak in tension and develops cracks during curing, owing to thermal expansion and contraction over a period of time.

The recent development of secondary reinforcement in concrete in various fields has provided a strong technical base for improving some of these deficiencies. FPC brings you this technology, and South Africa is proud to be the first to develop this cutting edge innovation.

The Stellenbosch University undertook a year long study comparing polyester fibre against other plastic fibres. They discovered that by adding polyester fibre to concrete the dry shrinkage crack width was reduced substantially. It performed better than alternative plastic fibres in controlling cracking in concrete.

Polyester Fibres

Historically, Polypropylene fibre have been successful in cement applications over the years, and have financial benefits as it is cheaper and easier to manufacture. Polyester fibres are now being used equally as much. Fibre Plast and Fibre Con's polyester is a raw material.

The fibre is produced from petroleum products and is a thermal plastic fibre. The polymerization of raw materials i.e Pure Terephthalic Acid (PTA) and Mono Ethylene Glycol (MEG) using catalysts , which by a continues melting extrusion process yields finished polyester yarn. Finished yarn is then automatically cut to required length and packed in pouches. Quality assurance on raw material and manufactured process is exercised as per the requirements of ISO 9001 and Agrément certification.

Despite size, high tensile strength and excellent dispersal throughout the concrete matrix, polyester has a good heat-resistance, and assists crack reduction in concrete and plastering applications. These features and properties make polyester fibre an excellent product to be used in concrete.

Polyester fibres are a newly developed engineering material that assists in reinforcing and arresting cracks before they start to form. They have been used in the construction of cement floors and walls, plaster cement wash design, shotcrete, roads, mining and tunnel lining as well as concrete precast products. Over and above cement applications Polyester fibre has become an additive to other manufacturing industries such as paint, water proof paint, tyre puncture repair kits for tyre industrie, plaster key and jointing products and interior moulds.



Cracking is caused by volume change (expansion and contraction). In South Africa's climate, we have extreme highs and lows in temperature range and this, in conjunction with poor sand quality as well as burnt clay stock bricks, is what causes cracks to form.

Why should you use Fibre Plast and Fibre Con's polyester fibres?

It is more cost effective, manufactured locally and made from 100% recycled plastic bottles.

Compressive Strength Report

This table shows the increased strength by adding polyester fibre

CUBE NO	AGE (DAYS)	STRENGTH (MPA)	AVERAGE (MPA)
5648 A Control	3	22.8 23.4	23.0
	7	32.2 34.7	33.5
	28	53.4 52.4	53.0
Polypropylene	3	25.5 26.1	26.0
	7	34.3 37.5	36.0
	28	53.6 53.0	53.5
5648 C Fibre Con Eco Ace	3	25.8 35.6	25.5
	7	38.2 35.5	37.0
	28	54.2 56.6	55.5



Huge savings on long term maintenance costs.

Advantages of using Fibre Plast (6mm) and Fibre Con's (12mm and up) polyester fibres in plaster and concrete.

- ***Crack Reduction*** – the addition of cut polyester fibres in concrete products assist in preventing cracking caused by volume change and also helps reduce cracks in concrete formed during plastic and hardening stages.
- ***Reduces water permeability*** – the use of cut polyester fibres assists in reducing water migration. It also assists in the drying stage and ultimately reduces the formation of micro cracking.
- Polyester fibres disperse extremely well through the concrete matrix therefore eliminating cracking, surface cracks and protects corners and edging in precast slabs and concrete flooring.
- ***Reduces rebound in plaster, shotcrete and guniting*** – cut polyester fibres aid in reducing the 'splattering' of plaster and shotcrete as well as causing less friction in pump pipes. There is less waste which then saves you time and money.
- ***Saves money*** - avoid unwanted call backs. Finish targeted jobs on time and save on future crack repair costs.
- ***Safe and easy to use*** – cut polyester fibres are environmentally friendly, non-hazardous and safe to use. Polyester fibres sink in water and therefor disperses easily into the mix and do not interfere with any application of the product.

Please note: Fibre Plast and Fibre Con must not be used as a replacement for primary structural or load bearing reinforcement materials.

- FPC fibres have shown an increase in flexural strength of concrete
- FPC fibres have better abrasion resistance than plain concrete (with fibres)
- FPC improves split tensile strength of concrete
- Feed back from users have confirmed that FPC fibres mix uniformly with other ingredients
- Tests have shown that the presence of FPC fibres reduce the length in change of wetting and drying therefore reducing the expansions.

Typical fibre use in concrete /cement applications

Construction

- Plastering
- Floor slabs, industrial floors and foundations
- Harbours, breakaways, open-sea jetties and quay walls Tanks and pools
- Roofing, cladding and ridge tile mortar
- New technology building systems, houses, factories, walling and slabs
- Lintels, pressed ceiling beams and pipes
- Cement wash



Before: 100% Clay + FPC



After: 8 hour test in H2O

Mining

- Tunnel lining, Shotcrete and gunniting
- Slope stabilisation

Manufacturing

- Fibre Paint - Water proofing paint & interior design paint
- Tyre puncture repair kits (Tyre industry)
- Ceiling and wall joints mix
- Key coats
- Man-hole covers, Concrete ornaments, Precast concrete products
- Cement fibre boards
- Burial vaults
- Floor and roof tiles



Common Dry shrinkage Cracks in concrete can be avoided - 12mm Fibre Con can be used for Garage, Showroom, Factory floors or any exposed concrete beams.



Typical fibre use in mining



Due to its special shape, finish and specific gravity properties polyester fibre has great dispersion characteristics both in dry and wet mixes.

Polyester fibre is a great additive and its prime purpose is for reinforcing various cement applications as well as being an excellent additive for concrete manufacturing, shotcrete and tunnel lining machinery.

Due to its excellent mixing properties it passes through piping and tubes with ease as a result there is no clogging up of pipes and systems which can often delay work time.

Typical fibre use in Paint manufacturing



Cement & Plaster wash design

Waterproof sealant - For use on flat deck roofs, cracks, roof bolts, flashing joints, holes in gutters, parapet walling, leaks in tanks or ponds, repair of galvanised iron roofing. Fibre reinforced waterproof sealant.

Typical fibre use in Tyre puncture repair



The composition remains liquid inside the bicycle tyre to instantly thicken and form a flexible and permanent plug. As the tyre rotates, the product spreads evenly over the inside surface. The moment a penetration occurs, the air pressure in the tyre forces millions of fibre particles and fillers suspended which plugs the hole in the tread area preventing any further air loss within one or two revolutions of the wheel.



Dosage

Concrete : Use between 600g to 1kg of Fibre Con 12mm to 1m³ of concrete.
For best results use 1kg of FC per m³.

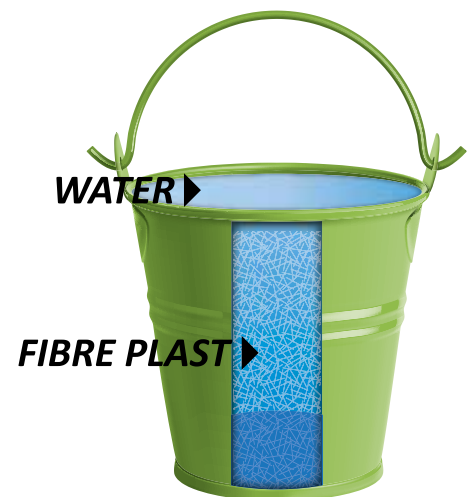
Plaster : Use 125g of Fibre Plast 6mm to one pocket of cement at 50 kgs in 1:4 cement sand ratio.
Dosage rate can be altered to obtain other benefits according to engineer specifications.

Direction

- **Transit mixer:** Simply add Fibre Con fibre bag into a revolving truck mixer, according to dosing recommendations, on top of concrete matrix.

- **Mixer:** Sprinkle Fibre Con fibres in the rotating mixer on top of sand and stone.
Allow dry aggregates to mix for 30 seconds, add cement, balance with water and allow to rotate as usual.

- **Manual mixing:** For best results use half a bag of Fibre Plast 6mm (125g) to one bag of cement.
Soak half a bag of Fibre Plast into a bucket of water and **stir until fibres are dispersed**.
Mix cement and required sand and make a pond. While adding water, pour content of the bucket into the pond and mix thoroughly for a few minutes.



APPLICATION	LENGTH	SPECIFICATION
Plaster, Concrete	6mm	125g, 250g packaging
Concrete	12mm	125g, 250g packaging
Ready mix concrete	12mm	625g (up to 1kg)

*Custom size orders can be arranged on request

Storage

Boxes containing bags of our fibres must be stored in a **dry area**, preferably on a pallet to avoid deterioration of packing material. The packaged material can be stored for indefinite periods without affecting the products's properties.

Fibre product – properties (Technical Data Sheet)

- Appearance: white staple fibre
- Fibre type : polyester (PES) T290 3.6 Dtex 6 mm and 12mm (SD/IN) or (RC)
- Chemical name: Polyethylene terephthalate
- Crack elongation: 15 – 20%
- Description: thermoplastic fibre, round and uncrimped
- Fibre diameter: 18 µm
- Fibre count per gram: 231.400 for 12mm fibre and 462.800 for 6mm fibre
- Specific density: 1.34 -1.4
- Melting point: 254 °C flaming point 560 °C
- Auto ignition temperature: 515 °C – C DIN 51794
- Physical state: solid
- Moisture regain: 0.5%
- Solubility in water: not soluble
- Solvents: none
- Tenacity at break: 45 cN/Tex (+/- 5)
- Elongation at break: 40% (+/- 5)
- Fibre tenacity at 10% elongation: > 10 cN/Tex
- Acid and alkali resistance: strong (UV protected)
- Fibre lengths: 6mm, 12mm, 18mm and 26mm and up (can be cut to your specification but no smaller than 6mm)
- Packing: Fibre Plast 6mm comes in a 250g bag and Fibre Con 12mm and up comes in a 500g, 600g and 900g bag or paper bag for factory use. **Can be made as per customer request.** Price may vary due to package size and quantity.



Plaster without Fibre Plast



Plaster with Fibre Plast

- *The user is responsible for proper use of the product on site. Guidance for usage/mixing of the product is provided on the packaging and website. On site guidance can be provided on request only.*
- *Appropriate type of fibre should be chosen depending upon the application required by user*
- *Good practice and usage of FPC fibres should be used in conjunction with standard concrete curing procedure*
- *Concrete and Plaster mortar contain FPC polyester fibres may be finished using normal methods*
- *Fibres are not visible after finishing*

FIBRE PLAST CON

*Our products at Eco Ace possess the resources and capabilities to add structure to your building challenges
Contact us for available stores.*

**VISIT ARE WEBSITE TO VIEW OUR
COMPLETE PRODUCT RANGE -
www.ecoace.co.za**

- EcoAce Wood

(made from a plastic compound)

- Skirting
- Decking
- Outdoor Furniture
- Planter Boxes, Poles and Pallets
- Plastic profile planks - Available in various sizes and colours, used for jungle gyms, sub-structures, garden decking, walls and horse stables.





**FIBRE
PLASTCON**



**100% recycled
Go Green**
Cleaning SA one bag at a time