



## **DURGLASS® GLASS FIBER RODS**

**GLASS FIBER RODS, ANCHORS  
AND REINFORCEMENT CAGES**

# DURGLASS® GLASS FIBER CAGES FOR DIAPHRAGM WALLS

The Soft-Eye technique is based on the replacement of the metal reinforcements with fiber glass products.

Whenever there is a need to destroy and / or crossing a reinforced concrete temporary structure, if the concrete reinforcement is made of composite bars, this is done without damaging the TBM cutting tools.

The high tensile strength, combined with the low shear strength of the fiber-reinforced bars, enable the structures made with these materials to be destroyed with extreme facility.

Nowadays the Soft-Eye technique is used in several projects all around the world and it is applied not only for diaphragm walls, but also as reinforcement for piles and for complex concrete structures.



*Crossing of DURGLASS®  
glass fiber reinforced piles*



*DURGLASS® cage lifting*



*DURGLASS® cage for piles*



*Installation*



## DURGLASS® BOLTS, PIPES AND STRUCTURAL ELEMENTS FOR TUNNELLING

DURGLASS® glass fiber bolts are used for the reinforcement of the excavation front of tunnels with traditional methods. Combined with DURVINIL® sleeved grouting pipes, they improve the mechanical properties of the soil before excavation.



Portal with DURGLASS® glass fiber bolts

## DURGLASS® GLASS FIBER ANCHORS

DURGLASS® glass fiber anchors are a cost effective alternative to removable or temporary steel anchors.

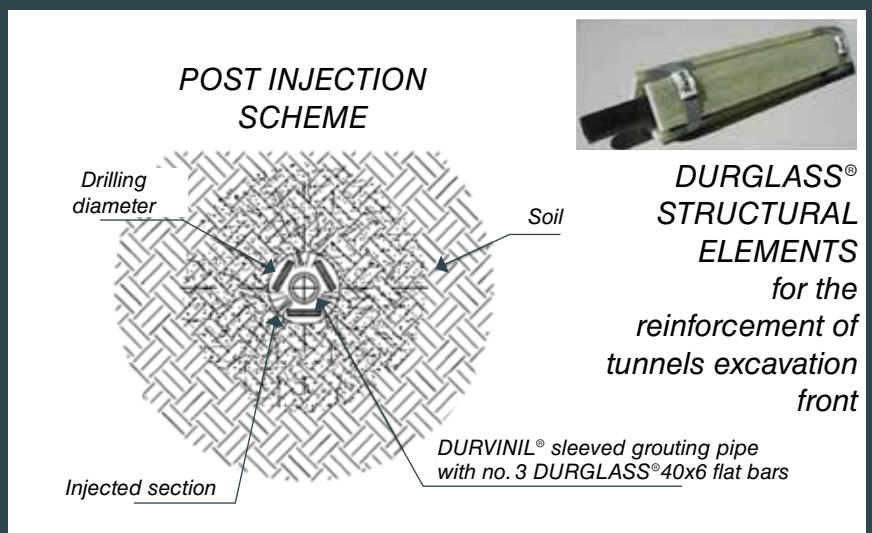
Where there is a need not to let any metal elements in the soil, due to local restrictions or future projects of subways, DURGLASS® glass fiber anchors are the right solution to project constraints.



Stretching of a DURGLASS® anchor



DURGLASS® STIRRUPS AND RINGS



## SIZE AND SHAPE OF COMPOSITE PRODUCTS

	Solid rod Diameter [mm]	Y rod	Flat bars	Stirrups	Hollow rod
DURGLASS®	1-40	YES	YES	YES	YES
CARBOPREE®	3-14	YES	YES	-	-
ARAPREE®	5,5-12,5	YES	YES	-	-

## TECHNICAL CHARACTERISTICS

Properties of materials	DURGLASS® Glass Fiber	CARBOPREE® Carbon Fiber	ARAPREE® Aramid Fiber	Reinforcement Steel En 15630
TENSILE STRENGTH [MPa]	800-1.000	2.300-2.450	1.400	550
ULTIMATE ELONGATION	2,5%	1,4-1,8 %	2,0%	7%
ELASTIC MODULUS [GPa]	40	130-200	70	200
DENSITY [g/cm³]	1,9	1,6	1,3	7,85
THERMAL CONDUCTIVITY [W/mK]	0,3	YES	YES	60
ELECTRICAL CONDUCTIVITY	NO	YES	NO	YES
MAGNETISM	NO	YES	NO	YES
APPLICATION	TEMPORARY	PERMANENT	PERMANENT	PERMANENT/TEMPORARY

The values in the tables are indicative. Sireg can supply, on demand, detailed technical data sheets of the products with up dated values.

## CARBOPREE® CARBON FIBER REINFORCEMENTS



Sireg products in composite materials are used in civil engineering for structural consolidation and restoration of existing buildings and structures, subject to chemical / physical and seismic risk. Sireg composite bars, laminates and fabrics have high mechanical properties, low specific weight, high chemical resistance: they are a modern answer to the most varied project requirements.



Column reinforcement by means of CARBOPREE® fabric



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