

FLUECO 80 T

SHRINKAGE-COMPENSATED FIBRE-REINFORCED
THIXOTROPIC MORTAR FOR THE REPAIR OF CONCRETE.

Ideal for structural repairs in highly aggressive environments.



FLUECO 80T is a premixed ready-to-use fibre-reinforced thixotropic mortar based on cement, synthetic fibres and special nanometric additives. **FLUECO 80T** has high initial and final tensile strength, and is even impermeable and durable in arsh environments, ensuring superior adhesion to both steel and concrete. **FLUECO 80T** is prepared by only adding water obtaining a shrinkage-free mortar ideal for concrete repairing and restoration. **FLUECO 80T** does not contain metallic ingredients and is chloride-free.

BENEFITS

The characteristics of **FLUECO 80 T** make it possible to carry out structural repairs to concrete structures subject to high chemical, physical and environmental attack, by applying up to a 4 cm thicknesses without requiring an electrowelded mesh.

The specific characteristics of the product are:

- ✓ **RESISTANCE TO SULPHATES AND CHEMICAL AND ENVIRONMENTAL ATTACK:** **FLUECO 80 T** has high compactness and high resistance to aggressive agents present in the environment such as chlorides, sulphates and lubricants. It has excellent resistance to freezethaw cycles as well as water-tightness and is not subject to carbonatation.
- ✓ **NO CRAZING OR CRACKING FROM PLASTIC SHRINKAGE:** **FLUECO 80 T** develops no crazing or cracking from plastic shrinkage thanks to the use of special synthetic fibres that control plastic shrinkage.
- ✓ **WATERPROOFING AND RESISTANT TO FREEZE THAW CYCLES:** the specific formulation of **FLUECO 80 T** and the high quality of its components ensure it is completely waterproof and increase resistance to freeze thaw cycles.
- ✓ **CONSTRASTED EXPANSION WHEN EXPOSED TO AIR:** used together with the curing additive **PRESIDIO SRA** it permits the development of expansive properties even when cured in the open air.
- ✓ **HIGH ADHESION TO SUBSTRATES:** **FLUECO 80 T** has been specifically formulated to increase bonding between the substrate and mortar, so it can be applied even on surfaces that have simply been sandblasted, thus facilitating its application.
- ✓ **VERSATILITY:** **FLUECO 80 T** is applied by trowel or spray in layers up to 4 cm thick. It can be pumped over long distances and sprayed directly. It resists stress after a brief curing period.



WHERE TO USE

FLUECO 80 T is ideally used for the structural repair, maintenance and restoration of reinforced cement structures exposed to highly aggressive environments that cause deterioration over time. **FLUECO 80 T** is particularly suited for:

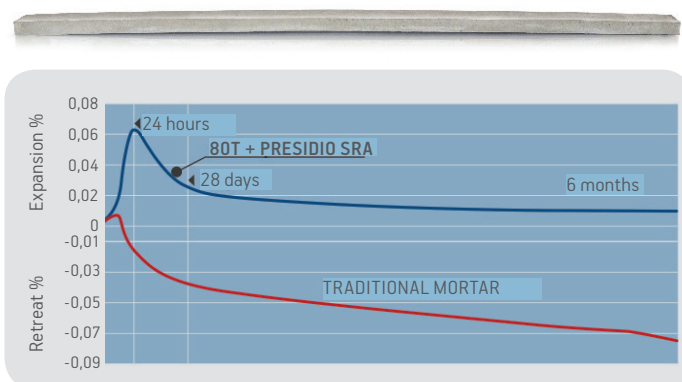
- ✓ structural repair to columns, beams, floors and screeds in reinforced cement exposed to high chemical, physical and environmental attack;
- ✓ reconstruction and thick- layer repairs to hydraulic works, viaducts, columns and canal features;
- ✓ cortical restoration of concrete and repair of rebar cover detachment caused by oxidation of rebars.
- ✓ maintenance work in mechanical industries where mineral oils, lubricants, etc. are present.

TECHNOLOGY

The addition with PRESIDIO SRA provides the carrying out of the **expansive effect** even when not in damp environment assuring a good curing also in exposed air, hot climate and in general in the real conditions that are often found on the construction sites.

THE ARCHING TEST: By preparing a test specimen having dimensions of 100x5x2 with **FLUECO 80T** is possible to evaluate the ability of the product to counteract the shrinkage having a good compensated expansion also in open air. The arching of the specimen even just after 24 hours demonstrate the expansive effect of the mortar.

The graphic underlines how **FLUECO 80T** additivated with PRESIDIO SRA is able to guarantee the expansion and so to compensate the shrinkage of the grout much better than standard grouts. This features generally improves the performance of the product in hot climates.



APPLICATION INSTRUCTIONS

SUBSTRATE CLEANING

- ▶ **remove all flaking parts from the concrete** in the area to be repaired, including grout slurry, either by mechanical chipping or pressure washing and taking care not to damage the structures.
- ▶ **remove spots, efflorescence or soaked-in stains** of grease oils, paints, lime, dust, dirt etc.;
- ▶ **remove any earlier repairs** if irreparably damaged or deteriorated;

SUBSTRATE PREPARATION

- ▶ **roughen the surface** mechanically by bush hammering, chiselling or pressure washing (this last avoids damage to the substrate and is recommended for large areas) to reach the sound, compact concrete and enhance bonding between the mortar and substrate. The surface should be roughened with unevenness to a depth of at least 5 mm while the edges around the area to be repaired must be scarified to a depth of at least 10 mm with a sharp edge finish. Roughening of the surface layer is needed both to promote bonding of the mortar to the substrate and to allow the expansive properties to develop correctly.
- ▶ **wet the surface with water under pressure to saturation.** This procedure avoids the substrate absorbing water from the mix as this could lead to cracking and reduce the bonding strength of the mortar. This operation also allows the removal of any fragments remaining from the roughening of the concrete substrate. Excess water must evaporate completely before restoration is carried out.

REBAR PROTECTION

- ▶ **sandblast the reinforcement bars** and remove all loose particles such as rust flakes or fragments of material that could lead to corrosion or impair bonding. Scarification of the substrate by hydroblasting also effectively cleans the bars, making sandblasting unnecessary.
- ▶ **protect the reinforcement bars** by re-alkalising them with the corrosion-inhibiting agent DRACOSTEEL.

ADDITIONAL REINFORCEMENT

For lifts over 2 cm thick we recommend using an **electro-welded mesh** with spacers (at least 1 cm from the substrate) and the application of a rebar cover of at least 1.5 - 2 cm.



PRECAUTIONS IN HOT CLIMATES

- ▶ Store **FLUECO 80T** in a shaded area;
- ▶ work in the early morning, stopping during the sunniest hours of the day and start work again only in late afternoon, provided you keep the structure wet for at least 6 hours before returning to work
- ▶ to obtain the best results from **FLUECO 80T**, a thorough curing with **PROBETON CURING N**, applied with a sprayer or paintbrush, is crucial.



PRECAUTIONS IN COLD CLIMATES

- ▶ If possible, store **FLUECO 80T** in a warm area;
- ▶ do not apply the product in temperatures below 0°C;
- ▶ start work in the late morning;
- ▶ make sure that the support surface does not freeze
- ▶ Soaking Support Surfaces with Water After preparing foundation, soak concrete or masonry with water for at least 6 hours before applying **FLUECO 80T**. Remove any residual surface water with compressed air or rags.

APPLICATION

FLUECO 80 T can be laid using either a trowel or by spraying. The product must be applied to clean, roughened and water-saturated surfaces as described in the previous paragraph. The finishing time for **FLUECO 80 T** is roughly half an hour during the summer months and about 1 hour in the cold season. To impede micro-cracking due to plastic shrinkage we recommend smoothing the mortar with a wet sponge float once it has started setting (approx. 20 min at 20° C).

LIFTS UP TO 2 CM THICK

With repairs of this thickness it is not possible to insert an electro-welded mesh; it is therefore necessary to create a very rough substrate that will allow for a valid restrained expansion of the repair mortar. Sandblasting alone will not be sufficient.

LIFTS OVER 3 CM THICK

Place an electro-welded mesh in position with spacers to keep it at a uniform distance of 1 cm from the substrate and provide a rebar cover of at least 1.5 - 2 cm.

CURING

If added **PRESIDIO SRA** acts as an internal curing additive by regulating the water evaporation and enhancing a correct curing of the mortar. The addition with **PRESIDIO SRA** of **FLUECO 80T** allows a correct expansive action of the mortar even in exposed air reducing the shrinkage by 20-50% in comparison to the non additivated product.

In any case to assure a correct curing of the mortar even in hot dry climates and surfaces exposed to wind and sunlight it is recommended the use of the curing membrane **PROBETON CURING N**.

PACKAGING AND STORAGE

FLUECO 80T comes packaged in 25 kg bags.

If the product is properly stored in its original packaging in a dry sheltered place, its ingredients will remain intact for one year.



PRODUCT CHARACTERISTICS

APPARANCE AND COLOUR	Grey powder
MAXIMUM AGGREGATE SIZE	2.5 mm
APPARENT BULK DENSITY	1.2 kg/l
✓CE CHLORIDE IONS CONTENT - UNI EN 1015-17	0.012%
PACKAGING	25-kg bag

Excellent performance levels are reached at 20°C and 50% RH. Hardening and laying times may vary throughout the winter period. Strictly comply with the specified mixing ratio and do not use the content of open or damaged bags. Store the product at room temperature in the 24 hours before the application.

APPLICATION DATA

MIX COLOR	Grey
MIXING RATIO	approx. 4 - 4.5 litres of water per 25-kg bag
✓CE CONSISTENCY OF MIX - UNI EN 13395-1	2270 kg/m ³
pH	12.5
✓CE CONSISTENCY OF MIX WORKABILITY AT THE FLOW TABLE TEST - UNI EN 13395-1	170 mm (thixotropic)
TEMPERATURE OF USE	+5 ÷ +35°C
POT LIFE OF MIX	approx. 1 h (20°C-50% R.H.)
COMPLETE HARDENING	approx. 28 days at 20°C
WAITING TIME BETWEEN COATS	approx. 30 minutes (20°C-50% R.H.)
THICKNESS OF APPLICATION	4 cm (2 cm overhead)
CONSUMPTION	19 Kg/m ² per cm of thickness

REFERENCE STANDARDS

FLUECO 80 T meets the requirements defined by EN 1504-9 "Products and systems for the protection and repair of concrete structures Definitions, requirements, quality control and evaluation of conformity" general principles for the use of products and systems". **FLUECO 80 T** complies with the minimum requirements claimed by EN 1504-3 "Structural and non structural repair" for structural mortars of class R4.

TECHNICAL SPECIFICATIONS



FLUECO 80 T, produced by Draco Italiana SpA, is a shrinkage-compensating, thixotropic mortar that provides resistance to sulphates and chemical attack from the environment used for structural repair work and restoration of concrete buildings. It can be applied by trowel or by spraying. All instructions and precautions followed must comply with the recommendations given by the manufacturer: Draco Italiana SpA.

FINAL PERFORMANCE (17% BLENDING WATER)

	PERFORMANCE CHARACTERISTIC	TEST METHOD	MINIMUM REQUIREMENTS ACCORDING TO EN 1504-3 FOR R4 CLASS MORTAR	PERFORMANCE OF PRODUCT
✓CE	COMPRESSIVE STRENGTH	EN 12190	> 45 MPa (after 28 days)	25 MPa (after 1 day) 55 MPa (after 7 days) 70 MPa (after 28 days)
	FLEXURAL STRENGTH	EN 196/1	not required	7 MPa (after 1 day) 10 MPa (after 7 days) 11 MPa (after 28 days)
✓CE	COMPRESSIVE MODULUS OF ELASTICITY	EN 13412	≥ 20 GPa (after 28 days)	30 GPa (after 28 days)
✓CE	BOND STRENGTH TO CONCRETE (MC 0.40-TYPE CONCRETE) ACCORDING TO EN 1766	EN 1542	≥ 2 MPa (after 28 days)	2.4 MPa (after 28 days)
	CONTRASTED EXPANSION IN AIR DRYING (μm)	UNI 8147 method A	not required	0.4 μm after 28 days (*)
	CRACK RESISTANCE:	"O-Ring Test"	no cracks after 180 days (*)	test passed (*)
	BENDING TEST:	-	not required	convex (*)
✓CE	RESISTANCE TO ACCELERATED CARBONATATION	EN 13295	Depth of carbonatation < reference concrete (MC 0.45 type with water/ concrete ratio = 0.45) in compliance with UNI 1766	test passed
	IMPERMEABILITY TO WATER penetration depth	EN 12390/8	not required	< 5mm
✓CE	CAPILLARY ABSORPTION	EN 13057	≤ 0.5 kg/m ² ·h ^{0.5}	< 0.13 kg/m ² ·h ^{0.5}
✓CE	THERMAL COMPATIBILITY MEASURED AS BONDING ACCORDING TO EN 1542:			
	– freeze-thaw cycles with deicing salts	EN 13687/1	For rigid systems without traffic: > 1.0	2.3 MPa
	– thunder-shower cycle	EN 13687/2	with traffic: > 2.0	
	– dry thermal cycle	EN 13687/4		
✓CE	REACTION TO FIRE	EN 13501-1	value declared by manufacturer	A1

(*) Performance figures obtained by adding 1% of Presidio SRA

Legal notice - SLCMP version dated 01.03.2017

In the technical specifications herein, Draco Italiana s.p.a. used the indicators therein specified, with the relevant standards.

Please check if this Sheet and the figures therein contained apply to the product batch you are interested in or if they have been overridden by any later release. If in doubt, check whether this Sheet matches the one applicable at the time of finalising the sales agreement, at www.draco-edilizia.it, and/or contact our Engineering Department.

No advice provided by our staff, either verbally or in writing at your request, about the potential applications of the Products shall be binding under the sales agreement or shall be considered an integral part of the agreement. Such advice is based on our experience and on the best available practical and/or scientific knowledge; as such, it shall not be binding or conditional on the buyer or user. Please try our products first to find out whether they are fit for your intended use or application; in any case, you shall be solely responsible for your choice.