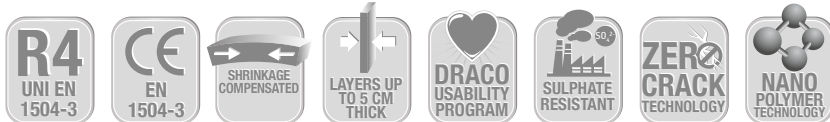


# FLUECO 40 T

NANO POLYMERIC THIXOTROPIC, FIBRE-REINFORCED CEMENT MORTAR WITH SHRINKAGE COMPENSATION AND HIGH RESISTANCE FOR STRUCTURAL RESTORATION

*Easy to use for layer thickness up to 5 cm without electro-welded mesh.*



**FLUECO 40 T** is a one-component, nano-polymeric, fibre-reinforced, cementitious mortar that is mixed with water to obtain non-segregatable, shrinkage-compensating thixotropic mixes.

The specific formulation of **FLUECO 40 T**, with its nano-modified microstructure, ensures high initial and final mechanical strength and durability even in aggressive environments as well as strong bonding. It contains no metal parts or chlorides. **FLUECO 40 T** is resistant to chemical and environmental attack and is suitable for all exposure classes required by UNI 11104.

## BENEFITS

The characteristics of **FLUECO 40 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 5 cm thicknesses without requiring an electrowelded mesh.

The specific characteristics of the product are:

- ✓ **Resistance to sulphates and chemical and environmental attack:** **FLUECO 40 T** has high compactness and high resistance to aggressive agents present in the environment such as chlorides and sulphates. It has excellent resistance to freeze-thaw cycles as well as water-tightness and is not subject to carbonation.
- ✓ **No crazing or cracking from plastic shrinkage:** **FLUECO 40 T** develops no crazing or cracking from plastic shrinkage even at high temperatures and in environments exposed to dry, windy conditions. The product cures and gains strength better than traditional mortars.
- ✓ **Shrinkage-compensating in the open-air:** the specific formulation of **FLUECO 40 T**, thanks to the exclusive additive with internal curing, enables the development of its expansive properties even in inadequately damp environments, without requiring extra additives.
- ✓ **Thicker layers:** **FLUECO 40 T** can be applied with a trowel or by spraying in single layers up to 5 cm thick without requiring electrowelded mesh inserts.
- ✓ **High bonding to substrates:** **FLUECO 40 T** has been specifically formulated to increase bonding between the substrate and mortar, meaning it can be applied even on surfaces that have simply been sandblasted, thus facilitating its application.
- ✓ **Anti-corrosion protection:** by using **FLUECO 40 T** there is no need for re-alkalisation treatment of the reinforcement bars (rebar covers > 1cm).



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## WHERE TO USE

**FLUECO 40 T** is ideally used for the structural repair, maintenance and restoration of damaged concrete and reinforced cement structures exposed to highly aggressive environments. **FLUECO 40 T** is particularly suited for:

- ✓ structural repair to columns, beams, floors and walls in reinforced cement even in prefabricated buildings exposed to sulphate attack;
- ✓ bulk reconstruction and build ups of concrete with layers up to 5 cm thick without requiring electro- welded mesh;
- ✓ hydraulic works, infrastructures, viaducts and tunnels, including structures in contact with sea-water;
- ✓ repair of the cortical layer of concrete and repair of detached rebar cover due to oxidation of the reinforcing bars.

## REFERENCE STANDARDS

**FLUECO 40 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 40T** complies with the minimum requirements claimed by EN 1504-3 "Structural and non structural repair" for structural mortars of class R4.

## 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 making sure 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

- ▶ where the **substrates are in good condition** it is sufficient to prepare them by sandblasting;
- ▶ where the **substrates are degraded**, the damaged layer must be removed mechanically by bush hammering, chiselling or pressure washing (the latter avoids damage to the substrate and is recommended for large areas) to reach the sound, compact concrete;
- ▶ **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

**Restoration with rebar cover of less than 1 cm:**

- ▶ **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. Milling of the substrate with hydrodemolition also effectively cleans the bars, making sandblasting unnecessary;
- ▶ for restoration work where there is less than 1 cm rebar cover, **protect the reinforcement bars** by re-alkalising them with **DRACOSTEEL**, the corrosion-inhibiting agent.

## MORTAR PREPARATION

The mixing of **FLUECO 40 T** mortar is carried out using an on-site concrete mixer. Pour the mixing water into the cement mixer according to the proportions indicated: 18 ÷ 20 litres of water for every 100 kg of mortar (4.5 - 5 l per pack of 25 kg of **FLUECO 40 T**).

Add the product slowly, mixing for at least 4 to 5 minutes until the mix is smooth and lump free. Make sure that all the product has been properly mixed and that there is no powder residue on the sides and bottom of the container. To prepare small quantities of product use a suitable vessel or container complying with the recommended mixing proportions. We recommend the use of a mechanical agitator at low speed to reduce air entrainment.



### PRECAUTIONS IN HOT CLIMATES

- ▶ Store **FLUECO 40 T** away from direct sunlight;
- ▶ carry out the work in the early hours of the morning, and stop working when the sun is strongest. It is better to resume working in the late afternoon, as long as the structure has been wet continuously before work starts;
- ▶ to achieve optimum performance from **FLUECO 40 T** you should ensure proper curing by applying **PROBETON CURING N** by spray or by brush.



### PRECAUTIONS IN COLD CLIMATES

- ▶ Store **FLUECO 40 T** in a heated environment where possible;
- ▶ do not use the product at temperatures below 0 ° C; start working in the later hours of the morning;
- ▶ make sure that the substrate is not frozen.
- ▶ **Substrate saturation with water.** Carry out all the procedures to prepare the substrate then saturate the concrete or masonry with water. Any excess water on the surface must be removed with compressed air or cloths.

## APPLICATION

**FLUECO 40 T** can be laid using either a trowel or by spraying. The product must be applied on clean, roughened and water-saturated surfaces as described in the previous paragraph. The finishing time for **FLUECO 40 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 trowel once it has started setting (approx. 20 min at 20 °C).

### BUILD-UPS UP TO 5 CM THICK

It is not necessary to insert an electro-welded mesh for build-ups up to a thickness of 5 cm.

### BUILD-UPS OVER 5 CM THICK

It is possible to do build-ups over 5 cm thick by applying the product in more than one layer (waiting 24 hours between each layer).

## CURING

To ensure proper curing of the product even in dry climates, or where surfaces are exposed to excessively windy or sunny conditions, we recommend the use of **PROBETON CURING N**, the curing membrane.

## PACKAGING AND STORAGE

**FLUECO 40T** is packed in 25 kg bags and if kept in its original packaging and properly stored under cover in a dry place, the product maintains its characteristics for a year.



## TECHNICAL SPECIFICATIONS

For structural repair work, bulk reconstruction and thick coating in highly aggressive environments you should use a sulphate-resistant, fibre-reinforced, shrinkage-compensating thixotropic mortar, like **FLUECO 40 T** produced by **Draco Italiana SpA**, which can be applied in layers up to 5 cm thick. The product must have high bond strength, water-tightness and develop high initial and final mechanical strength as well as meeting the requirements defined by EN 1504-3 for R4-class structural mortars. All instructions and precautions implemented must comply with the recommendations given by the manufacturer: **Draco Italian SpA**.

## PRODUCT CHARACTERISTICS

APPEARANCE AND COLOUR	Gray powder
MAXIMUM AGGREGATE SIZE	2.5 mm
CHLORIDE ION CONTENT (UNI EN 1015-7)	≤0.05%
PACKAGING	25 kg bag

## APPLICATION DATA

MIX COLOUR	Gray
MIXING WATER	4.5 - 5 l per bag
BULK DENSITY OF MIX	2070 Kg/m <sup>3</sup>
PH OF MIX	> 12
MIX CONSISTENCY UNI EN 13395	175 mm (thixotropic)
APPLICATION TEMPERATURE RANGE	+5 ÷ +35°C
POT LIFE OF MIX	approx. 80 minutes (20° C - 50% RH)
COMPLETE HARDENING	approx. 28 days at 20° C
THICKNESS OF APPLICATION	5 cm (3 cm overhead)
CONSUMPTION	17.4 kg/m <sup>2</sup> ca. per cm of thickness

## FINAL PERFORMANCE (20° C - 50% UR)

CHARACTERISTICS PRODUCT	TEST METHOD	REQUISITI IN ACCORDO A EN 1504-3 PER MALTE DI CLASSE R4	PRESTAZIONI PRODOTTO
COMPRESSIVE STRENGTH	EN 12190	≥ 45 MPa (after 28 days)	> 10 MPa at 1 day > 40 MPa at 7 days > 50 MPa at 28 days
FLEXURAL STRENGTH	EN 196/1	None	> 3 MPa at 1 day > 5,5 MPa at 7 days > 6,5 MPa at 28 days
COMPRESSIVE MODULUS OF ELASTICITY	EN 13412	≥ 20 GPa (after 28 days)	> 22 GPa
BOND STRENGTH ON CONCRETE (substrate of type MC 0.40 water/cement ratio = 0.40) according to EN 1766	EN 1542	≥ 2 MPa (after 28 days)	> 2 MPa
CRACK RESISTANCE	"O Ring Test"	None	No cracking at 180 days
RESISTANCE TO ACCELERATED CARBONATATION	EN 13295	Depth of carbonatation ≤ reference concrete (type MC 0.45 water/cement ratio = 0.45) according to EN 1766	Meets specifications
IMPERMEABILITY TO WATER -penetration depth-	EN 12390/8	None	< 5mm
CAPILLARY ABSORPTION	EN 13057	≤ 0.5 kg/m <sup>2</sup> ·h <sup>0.5</sup>	< 0.5 kg/m <sup>2</sup> ·h <sup>0.5</sup>
THERMAL COMPATIBILITY measured as bond strength according to EN 1542 on class MC 0.4 UNI EN 1766- freeze-thaw cycles with de-icing salts	EN 13687/1	≥ 2 MPa (after 50 cycles)	> 2 MPa
REACTION TO FIRE	EN 13501-1	Euroclass A1	A1

NOTE: the performance values indicated are obtained with a consistency of 170-180 mm according to UNI EN 13395-1

### 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](http://www.draco-edilizia.it), and/or contact our Engineering Department.

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