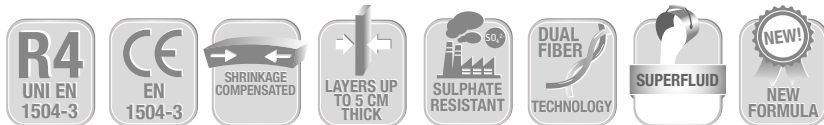


FLUECO 80 C FLOWFIBER

SUPER-FLUID PRE-MIXED MORTAR, FIBRE-REINFORCED,
SHRINKAGE-COMPENSATED WITH AIR CURING

Ideal for structural restorations on concrete by pouring
Layer thickness from 1 to 5 cm



DRACO

REFURBISHMENT
and PROTECTION
LINE

EASY-POUR CEMENT-BASED
MORTARS FOR RESTORING
CONCRETE AND SECTION
THICKENING



Flueco 80 C FLOWFIBER is a ready-to-use, pre-mixed, pourable cement-based mortar reinforced with polymer fibres and synthetic, rustproof, flexible alkali-resistant fibres, with high fracture toughness and resistance to cyclic loading.

FLUECO 80 C FLOWFIBER develops high initial and final mechanical strength, both compressive and tensile. It is waterproof and durable even in very aggressive environments and it provides strong bonding to steel and concrete.

FLUECO 80 C FLOWFIBER is resistant to chemical and environmental attacks and is suitable for all the classes of exposure required by UNI 11104.

BENEFITS

The characteristics of **FLUECO 80 C FLOWFIBER** make it suitable for maintenance, structural repairs and restoration of concrete buildings subject to high physical, chemical and environmental attacks. **FLUECO 80 C FLOWFIBER** can also be applied by spraying without requiring any electro-welded mesh. The specific characteristics of the product are:

- ✓ **RESISTANCE TO SULPHATES AND CHEMICAL AND ENVIRONMENTAL ATTACKS:** **FLUECO 80 C FLOWFIBER** has high compactness, low capillary porosity and resistance to aggressive agents present in the environment such as chlorides and sulphates.
- ✓ **IMPERMEABLE TO WATER AND CARBON DIOXIDE:** thanks to the chemical and physical characteristics of its components **FLUECO 80 C FLOWFIBER** is totally waterproof, resistant to freeze thaw cycles and is not subject to carbonation.
- ✓ **CAN BE APPLIED WITHOUT ELECTRO-WELDED MESH:** The specific formulation of **FLUECO 80 C FLOWFIBER**, together with its flexible inorganic fibres remove the necessity for the installation of electro-welded mesh, thus reducing installation costs and work time.
- ✓ **ABSENCE OF CRAZING AND CRACKS CAUSED BY PLASTIC SHRINKAGE:** **FLUECO 80 C FLOWFIBER** has no crazing or plastic shrinkage cracks thanks to the use of special synthetic fibres that impede cracking.
- ✓ **CONTRASTED EXPANSION WHEN AIR CURED:** used together with the curing additive PRESIDIO SRA it permits the development of expansive properties even when cured in the open air.
- ✓ **MAXIMUM FLUIDITY:** thanks to its fluid consistency and the additives it contains **FLUECO 80 C FLOWFIBER** flows easily even when there is complex reinforcement, thus facilitating its installation even when working on large areas.
- ✓ **Durability of work:** **FLUECO 80 C FLOWFIBER** was specifically formulated to reduce the risk of cracking even during lengthy curing, thus prolonging the useful life of concrete structures and reducing maintenance.

WHERE TO USE

FLUECO 80 C FLOWFIBER should be used for the structural repair, maintenance and restoration of damaged concrete and reinforced concrete structures exposed to aggressive environments. **FLUECO 80 C FLOWFIBER** is particularly suitable for:

- ✓ structural repair to pillars, beams, floors and walls in reinforced cement, including pre-cast elements, exposed to sulphur attack;
- ✓ restoration and build-up of concrete buildings by casting with thickness up to 5 cm per layer
- ✓ hydraulic works, viaducts, pillars and tunnels, including structures in contact with sea-water;
- ✓ repair of the cortical layer of concrete and repair of detached rebar cover caused by oxidation of the rebars themselves.
- ✓ thick lift without electro-welded mesh.



REFERENCE STANDARDS

FLUECO 80 C FLOWFIBER meets the requirements defined by EN 1504-9 "Products and systems for the protection and repair of structures: definitions, requirements, quality control and evaluation of conformity" general principles for the use of products and systems."

FLUECO 80 C FLOWFIBER meets the minimum requirements defined by EN 1504-3 "Structural and non-structural repair" for structural mortars of class R4."

TECHNOLOGY

RESTRAINED EXPANSION IN AIR

The addition of PRESIDIO SRA to the mortar enhances the expansive properties even when the curing environment is not sufficiently damp, thus ensuring top performance in real jobsite conditions. The shrinkage control gives the mortar dimensional stability and avoids cracking, thus providing improved bonding of the mortar and monolithic adhesion to the substrate.

ARCHING TEST It is possible to assess the product's ability to guarantee the correct contrasted expansion in the open-air by preparing a sample of approx. 100x5x2. The arching of the sample after just 24 hours demonstrates the actual expansion behaviour of the mortar.

CHARACTERISTICS OF THE FIBRES

Flexible inorganic alkali-resistant fibres.

TECHNICAL CHARACTERISTICS

DIAMETER	14 micron
MODULUS OF ELASTICITY	72 GPa
TENSILE STRENGTH	1700 MPa

APPLICATION PROCEDURE

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, and to ensure the expansive properties 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 be removed with compressed air jets or with cloths.

REBAR PROTECTION

- ▶ **sandblast the rebars** 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 with hydro-blasting also effectively cleans the bars, making sandblasting unnecessary.
- ▶ **protect the reinforcement bars** by re-alkalising them with the corrosion-inhibiting agent DRACOSTEEL.

FORMWORK

FLUECO 80 C FLOWFIBER can be installed by casting, including pouring into formwork. However, the maximum thickness of 5cm must not be exceeded. The formwork must be waterproof and adequately anchored and sealed to prevent absorption of the mixing water, leakage of material or blowout of the sides due to the pressure created by the jet of mortar.

MORTAR PREPARATION

The mixing of the mortar **FLUECO 80 C FLOWFIBER** is carried out using an on-site concrete mixer. Pour the mixing water into the cement mixer according to the recommended mixing ratio indicated in the Table. Add slowly, mixing for at least 4 to 5 minutes until the mix is smooth and free of lumps. Make sure that all the product has been properly mixed in and that there are no residues of powder on the sides or bottom of the concrete mixer. To prepare small quantities of product use a suitable vessel or container and respect the recommended mixing proportions. We recommend the use of a mechanical agitator at low speed to reduce air entrapment.

PRESIDIO SRA, added to the mix at a dosage of 1% on the weight of the mortar (0.25 kg per bag) acts as internal curing, and enhances the expansive properties in the open air. PRESIDIO SRA affects the curing of the mortar, so the dosage should be adjusted on the basis of the ambient temperature. In warm climates PRESIDIO SRA permits good workability; when ambient temperatures range between 5 and 10 ° C we recommend reducing the dosage to avoid excessive slowing down of the setting time.



PRECAUTIONS IN HOT CLIMATES

- ▶ store **FLUECO 80 C FLOWFIBER** away from direct sunlight;
- ▶ use low temperature mixing water
- ▶ carry out the work in the early hours of the morning, and stop work when the sun is strongest. It is better to resume working in the late afternoon, as long as the structure has been wet continuously for at least 6 hours before work starts;
- ▶ to achieve optimum performance from **FLUECO 80 C FLOWFIBER** you should ensure proper curing by applying **PROBETON CURING N** by spray or by brush.



PRECAUTIONS IN COLD CLIMATES

- ▶ store **FLUECO 80 C FLOWFIBER** in a heated environment where possible;
- ▶ use heated mixing water;
- ▶ do not use the product at temperatures below 0 ° C;
- ▶ start work 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 hot water continuously for at least 6 hours before laying **FLUECO 80 C FLOWFIBER**. Any excess water on the surface must be removed with compressed air or cloths.

APPLICATION

FLUECO 80 C FLOWFIBER can be applied by pouring using a rotor stator or piston pump without requiring electro-welded mesh. The product must be applied on clean, roughened surfaces that have been saturated with water as described in the previous paragraph. When the desired thickness has been reached, level the surface using a straight edge to eliminate surface bubbles. Avoid prolonged floating during finishing to avoid pull-off cracks.

FLUECO 80 C FLOWFIBER is applied in thicknesses up to 5 cm per layer. For greater thicknesses we recommend overlaying, with a waiting time of at least 5 hours between layers. In cold climates the waiting time may be greater.

Pumping mortar into formwork requires specific precautions to ensure it is installed correctly: the casting must be done slowly and only on one side to facilitate the expelling of air. Vibrate slightly to ensure that the concrete is compact.

CURING

When **PRESIDIO SRA** is added to the mix at a dosage of 1 % on the weight of the mortar it acts as internal curing and regulates moisture loss by reducing shrinkage and cracking and enhancing curing. The addition of **PRESIDIO SRA** to **FLUECO 80 C FLOWFIBER** enables correct expansion in air thus reducing shrinkage by 20 - 50 % compared to the use of the product without the additive. To ensure proper curing of the product even in dry climates, or where surfaces are exposed to excessively windy or sunny conditions, we in any case recommend the use of the curing membrane **PROBETON CURING N**.

FLUECO 80 C FLOWFIBER




PACKAGING AND STORAGE

FLUECO 80 C FLOWFIBER is packaged in 25 kg bags

If kept in its original packaging and properly stored under cover in a dry place, the product maintains its characteristics for a year.



PRODUCT CHARACTERISTICS

APPEARANCE AND COLOUR	Grey powder
MAXIMUM AGGREGATE SIZE (COMP. A)	2.5 mm
BULK DENSITY	approx. 1.2 kg/l
 CHLORIDE ION CONTENT ($\leq 0.05\%$)	0.05%
PACKAGING	25 kg bags

APPLICATION DATA

MIX COLOR	Grey
MIXING WATER	3.75 - 4.25 litres per bag
DENSITY OF MIX - UNI EN 12190	2200 kg/m ³
PH OF MIX	>12
MIX CONSISTENCY - UNI EN 13935	Super fluid
TEMPERATURE OF USE	+5° C to +35° C
POT LIFE OF MIX	approx. 60 minutes (20° C - 50% RH)
COMPLETE HARDENING	approx. 28 days at 20° C
WAITING TIME BETWEEN COATS	at least approx. 30 minutes (23° C - 50% RH)
THICKNESS OF APPLICATION	5 cm
CONSUMPTION	20 kg/m ² per cm of thickness

TECHNICAL SPECIFICATIONS



FLUECO 80 C FLOWFIBER produced by **Draco Italiana SpA**, is a fibre-reinforced pourable mortar that is shrinkage-compensated and sulphate resistant for structural repair and thick layer restoration in highly aggressive environments. It can be cast in layers up to 5cm thick. The product must be characterised by high adhesion to the substrate, watertightness and development of high initial and final mechanical strength and comply with the requirements defined in EN 1504-3 for Class R4 structural mortars. All instructions and precautions followed must comply with the recommendations given by the manufacturer: **Draco Italiana SpA**.

FLUECO 80 C FLOWFIBER



FINAL PERFORMANCE 16 % MIXING WATER (20° C - 65% RH)

CHARACTERISTICS	TEST METHOD	REQUIREMENTS IN ACCORDANCE WITH PERFORMANCE EN-1504-3 FOR CLASS R4 MORTARS	PRODUCT PERFORMANCE
COMPRESSIVE STRENGTH	EN 12190	≥45 MPa (after 28 days)	30 MPa at 1 day 35 MPa at 3 days 45 MPa at 7 days 70 MPa at 28 days
FLEXURAL STRENGTH	EN 196/1	None	6 MPa at 1 day 7 MPa at 3 days 10 MPa at 7 days 12 MPa at 28 days
COMPRESSIVE MODULUS OF ELASTICITY	EN 13412	≥20 GPa (after 28 days)	28 GPa
BOND STRENGTH ON CONCRETE (substrate of type MC 0.40 w/c ratio = 0.40) according to EN 1766	EN 1542	≥2 MPa (after 28 days)	2.8 MPa
CONTRASTED EXPANSION IN AIR AT 1 DAY	UNI 8147	None	0.05%
CRACK RESISTANCE	"O Ring Test"	None	no cracking at 180 days (*)
PULL OUT RESISTANCE OF STEEL RODS	UNI 8147 RILEM-CEB-FIP RC6-78	None	>25 MPa
CAPILLARY ABSORPTION	EN 13057	≤0.5 kg/m ² · h ^{0.5}	< 0.20 kg/m ² · h ^{0.5}
RESISTANCE TO ACCELERATED CARBONATATION	EN 13295	Depth of carbonatation ≤ reference concrete type (MC 0.45 water/cement ratio = 0.45) according to UNI 1766	Meets specifications (*)
IMPERMEABILITY TO WATER penetration depth	EN 12390/8	None	< 5 mm
THERMAL COMPATIBILITY measured as bond strength according to EN 1542 on concrete type MC 0.4 UNI EN 1766: freeze-thaw cycles with de-icing salts	EN 13687/1	≥2 MPa (after 50 cycles)	2.3 MPa
REACTION TO FIRE	EN 13501 - 1	Euroclass A1	A1

* Specification satisfied with the addition of PRESIDIO SRA to **FLUECO 80 C FLOWFIBER**

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.