

# FLUECO BLITZ R4

RAPID-SETTING, FIBRE-REINFORCED, THIXOTROPIC, FINE FINISH MORTAR FOR CONCRETE STRUCTURAL REPAIR.

*For repair and smoothing in single layers of 1 to 40mm thick*



**FLUECO BLITZ R4** is a ready-to-use thixotropic cementitious mortar. Rapid setting, microfibres, medium modulus of elasticity combined with the shrinkage compensation technology turn this mortar into a multipurpose product for repair and levelling of concrete surfaces, which are usually hard to achieve with one product alone. **FLUECO BLITZ R4** is suitable for rapid structural repair and smoothing of vertical and horizontal concrete surfaces and reinforced concrete structures. **FLUECO BLITZ R4** increases initial and ultimate mechanical strength; it is waterproof, long-lasting - even in aggressive environments - and also ideal for repairing structures exposed to the atmosphere or in contact with water. Applied in layers from 1 to 40 mm thick, **FLUECO BLITZ R4** provides strong bonding to steel and concrete and protection against carbonation. **FLUECO BLITZ R4** is resistant to chemical and environmental attacks and is suitable for all exposure classes defined by UNI 11104.

## BENEFITS

**FLUECO BLITZ R4** is a fast-setting, thixotropic structural mortar for concrete repair and smoothing. The specific characteristics of the product are as follows:

- ✓ **Rapid repair and finishing:** **FLUECO BLITZ R4** allows to perform rapid repairs and create a thin finish coat with one single product, thus simplifying application and significantly reducing overall work time.
- ✓ **Structural repair:** **FLUECO BLITZ R4** develops its mechanical strength rapidly and makes it possible to restore structural concrete elements quickly and to make repairs where superior performance is a must.
- ✓ **Resistant to sulphates and chemical-environmental attack:** **FLUECO BLITZ R4** features high compactness, low capillary porosity and high resistance to aggressive agents present in the environment such as chlorides and sulphates; it is not subject to carbonation.
- ✓ **High adhesion to substrate and reinforcement bars:** **FLUECO BLITZ R4** has been specially formulated to increase adhesion to the substrate, even to surfaces that have just been sandblasted, thus facilitating its application.
- ✓ **No crazing or plastic shrinkage cracking:** **FLUECO BLITZ R4** develops no craze-cracks or plastic shrinkage cracks thanks to the ZERO CRACK TECHNOLOGY and the use of synthetic fibres that counter cracking and increase volumetric stability.
- ✓ **Waterproof and resistant even in aggressive environments:** the special formulation of **FLUECO BLITZ R4** and the high quality of its components make it completely waterproof and increase resistance to freeze-thaw cycles.
- ✓ **Easy to apply:** the special additives contained in **FLUECO BLITZ R4** make it possible to apply layers from 1 mm to 4 cm thick by trowel or spatula ensuring high bonding.
- ✓ It contains an inorganic corrosion inhibitor which inhibits any further oxidation when in direct contact with metal.

## USES

**FLUECO BLITZ R4** is especially recommended for:

- ▶ rapid repair and structural strengthening of concrete elements where a mortar with high mechanical performance is needed;
- ▶ repair of broken edges and reconstruction of missing sections of concrete and reinforced concrete elements, even prefabricated, such as pillars, beams, infill panels, balconies and other overhanging elements;
- ▶ rehabilitation and levelling prior to waterproofing or coating cycles;
- ▶ spot /general restoration and patch repair of apron linings, balconies and other concrete elements with a fine float finish;
- ▶ restoration of concrete damaged by steel reinforcement corrosion due to carbonation.
- ▶ It can be painted or overcoated quickly.



## APPLICATION INSTRUCTIONS

### SUBSTRATE CLEANING

- ▶ **Remove all flaking parts** from the surface, including cement laitance, by either mechanical chipping or high-pressure water blasting being careful not to damage the substrate.
- ▶ **Remove spots, efflorescence or soaked-in stains** of oil, grease, paint, lime, dust, dirt etc.
- ▶ **Remove previous repair works**, if irreversibly damaged or deteriorated.

### SUBSTRATE PREPARATION

- ▶ **Roughen the surface** mechanically by bush hammering, chipping or water jetting (the latter avoids damage to the substrate and is recommended for large areas) until reaching the sound, compact concrete layer so as to ensure proper bonding to the substrate.
- ▶ **Wet the surface with pressurised water up to saturation.** This prevents the substrate from absorbing water from the mix as this could lead to cracking and reduce adhesion. This operation also removes fragments resulting from roughening of the concrete substrate. Remove excess water from the surface with compressed air or a sponge.
- ▶ **Water ingress in the substrate:** Water infiltration in the substrate may cause leaching of the mortar before it is completely set. Any water ingress must therefore be blocked using the quick-setting mortar **HYDROPLUG** before applying FLUECO BLITZ R4, or by creating specific drain-offs where possible.

### REBAR PROTECTION

- ▶ **Sandblast the reinforcement bars** and remove all loose particles such as rust flakes or fragments of material that could affect adhesion. Concrete removal from the substrate by hydrodemolition also cleans the bars thoroughly, making sandblasting unnecessary.
- ▶ With **FLUECO BLITZ R4** there is no need to re-alkalise the rebars with corrosion-inhibiting agents.

## MORTAR PREPARATION

**FLUECO BLITZ R4** mortar can be mixed in a suitable vessel or container using a low-speed mixer to reduce air entrapment. Pour water according to the recommended mixing ratio: 4.3-5 litres of water every 25kg bag of **FLUECO BLITZ R4**. Add the powder slowly while mixing continuously for at least 4-5 minutes until a homogeneous, lump-free consistency is achieved. Make sure that all the product has been properly mixed and there is no powder left on the walls and bottom of the vessel. **FLUECO BLITZ R4** retains its workability for about 20 minutes (at 20 °C and 50% R.H.). Due to its quick-setting properties, it is recommended to mix the mortar in small batches.



### HOT WEATHER PRECAUTIONS

- ▶ Store FLUECO BLITZ R4 in the shade.
- ▶ Carry out the work early in the morning and stop when the sun's rays are strongest. It is recommended to resume work late in the afternoon after wetting the substrate continuously for at least 6 hours.
- ▶ Ensure adequate protection of the area with tarpaulins and keep them wet for the first 48 hours. Then apply PROBETON CURING N to complete curing.
- ▶ In particularly dry and ventilated climates, the use of the curing additive Presidio SRA at 1% by weight, reduces the risk of cracking.



### COLD WEATHER PRECAUTIONS

- ▶ Store FLUECO BLITZ R4 in a heated place, where possible.
- ▶ Do not apply the product with temperatures below 0°C.
- ▶ Start work in the later hours of the morning.
- ▶ Make sure the substrate is not frozen.
- ▶ Protect from frost by covering the surfaces with insulated waterproof sheets.

## APPLICATION

**FLUECO BLITZ R4** can be applied by trowel or spatula in layers from 1 to 40 mm. The product must be applied on clean, roughened and water-saturated surfaces, as described in the previous paragraph. To prevent micro-cracking due to plastic shrinkage we recommend smoothing the mortar with a damp sponge float once it has started setting.

## CURING

**FLUECO BLITZ R4** is formulated to counter plastic shrinkage cracks resulting from inadequate curing during the first 24-48 hours after application. To ensure proper wet curing even in dry weather or where surfaces are exposed to excessive wind or sun, we recommend using the curing additive PRESIDIO SRA and sprayed water or the curing membrane PROBETON CURING N. In case of difficult application conditions, we recommend adding the self-curing additive PRESIDIO SRA (1% by weight) to the mortar.

## PACKAGING AND STORAGE

**FLUECO BLITZ R4** is packed in 25kg bags. If properly stored in a sheltered, dry place in its original packaging, the product maintains its properties for 12 months.



## PRODUCT CHARACTERISTICS

APPEARANCE	Powder
COLOUR	Grey
MAXIMUM AGGREGATE SIZE	1 mm
CHLORIDE CONTENT OF FRESH MORTAR - UNI EN 1015-17	< 0.05%
PACKAGING	25kg bags
SHELF LIFE	12 months

## APPLICATION SPECIFICATIONS

MIX COLOUR	Grey
MIXING WATER	4.3 - 5 l per 25kg bag (17-20%)
BULK DENSITY OF MIX - UNI EN 12190	2160 kg/m <sup>3</sup>
WORKABILITY - UNI EN 13395-1	180 mm (thixotropic)
APPLICATION TEMPERATURE	+5°C to +35°C
POT LIFE OF MIX	approx. 20 minutes (20°C - 50% RH)
WAITING TIME BEFORE FLOATING	approx. 30 minutes
INITIAL SETTING TIME	approx. 25 minutes
FINAL SETTING TIME	approx. 35 minutes
THICKNESS OF APPLICATION	1 - 40 mm per layer
CONSUMPTION	approx. 18-18.5 kg/m <sup>2</sup> per cm of thickness

## REFERENCE STANDARDS

**FLUECO BLITZ R4** complies with the principles set 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 BLITZ R4** meets the minimum requirements of EN 1504-3 "Structural and non-structural repair" for class R4 structural mortars and principles 1.3(C) and 2.2(C) of EN 1504-2.

## PRODUCT PERFORMANCE 18% MIXING WATER

PERFORMANCE	TEST METHOD	REQUIREMENTS AS PER EN 1504-2: COATING (C TYPE), MC AND IR PRINCIPLES	REQUIREMENTS AS PER EN 1504-3 FOR R4 CLASS	PRODUCT PERFORMANCE
COMPRESSIVE STRENGTH	EN 12190	not required	≥ 45 MPa (after 28 days)	15 MPa after 3 hours 25 MPa after 1 day 40 MPa after 7 days 50 MPa after 28 days
FLEXURAL STRENGTH	EN 196-1	not required	None	4 MPa after 3 hours 5 MPa after 1 day 7 MPa after 7 days 9 MPa after 28 days
MODULUS OF ELASTICITY IN COMPRESSION	EN 13412	not required	≥ 20 GPa (after 28 days)	22 GPa
BOND STRENGTH TO CONCRETE substrate of type MC 0.40 according to EN 1766	EN 1542	For rigid systems without traffic: ≥ 1.0 with traffic: ≥ 2.0	≥ 2 MPa (after 28 days)	> 2 MPa
RESISTANCE TO ACCELERATED CARBONATION	EN 13295	not required	Depth of carbonation ≤ reference concrete (type MC 0.45, W/C ratio=0.45) according to UNI 1766	Meets specifications
CAPILLARY ABSORPTION	EN 13057	not required	≤ 0.5 kg/m <sup>2</sup> · h <sup>0.5</sup>	< 0.5 kg/m <sup>2</sup> · h <sup>0.5</sup>
WATERPROOFING EXPRESSED AS LIQUID WATER PERMEABILITY	EN 1062-3	W < 0.1	None	W < 0.1 Class III (low permeability to water) as per EN 1062-1
PERMEABILITY TO WATER VAPOUR Diffusion equivalent air layer thickness S <sub>D</sub>	EN ISO 7783-1	Class I SD < 5 m Class II 5m ≤ SD ≤ 50 m Class III SD > 50 m	None	S <sub>D</sub> < 5 Class I (permeable to water-vapour)
PERMEABILITY TO CARBON DIOXIDE Diffusion equivalent air layer thickness S <sub>D</sub>	UNI EN 1062-6	S <sub>D</sub> > 50 m	None	1200 m
THERMAL COMPATIBILITY according to EN 1542 measured as bond strength to concrete (MC 0.4) UNI EN 1766 - Freeze-thaw cycles with de-icing salts	EN 13687-1	For rigid systems without traffic: ≥ 1.0 with traffic: ≥ 2.0	≥ 2 MPa (after 50 cycles)	> 2 MPa
CRACKING RESISTANCE	"O-Ring test"	not required	None	no cracks after 180 days
REACTION TO FIRE	EN 13501-1	Euroclass	Euroclass	A1
CURLING TEST	internal beam curling test	None	None	Positive

### Legal notices -SLCMP version of 01.03.2017

Draco Italiana s.p.a. has adopted the parameters indicated in this data sheet and the related standards for the calculation of the values and technical data contained herein. Customers shall verify that this data sheet and the values indicated herein apply to their product batch and have not been superseded by later editions. If in doubt, verify that the sheet corresponds to the one available on the website [www.draco-edilizia.it](http://www.draco-edilizia.it) at the time the sales contract was executed and/or by previously contacting the Technical Department. Any suggestions on the use of the Products provided by our personnel either orally or in writing upon the Customer's request do not constitute additional obligations to the purchase contract and do not imply a contractual obligation for the company. They are based on our experience and limited to the current state of practical and/or scientific knowledge. They are not binding for the client or for the installer. It is the Customer's responsibility to test our products and verify they are suitable for the type of application and use envisaged.

SPECIFICATIONS ITEM: Repair and smoothing of concrete surfaces with fast-setting, fine-grained one-component structural cementitious mortar with corrosion inhibitor and compensated shrinkage type FLUECO BLITZ R4 by DRACO Italiana S.p.A. The product ensures strong bonding to the substrate, high mechanical strength, excellent resistance to sulphates and to chemical attack from the environment; it can be applied by trowel or spatula in layers of 1 to 40 mm. The instructions and measures to be taken must comply with the recommendations provided by the manufacturer DRACO Italiana S.p.A. The product must satisfy the minimum requirements set by EN 1504-3 for class R4 structural mortars and principles 1.3(C) and 2.2(C) of EN 1504-2.