

FLUECO FAST BLACK CR FR

FAST SETTING, SHRINKAGE COMPENSATED, PRE-MIXED MORTAR
REINFORCED WITH FLEXIBLE CORROSION-RESISTANT STEEL FIBRES

Ideal for fixing manhole covers and for concrete repairs



DRACO

REFURBISHMENT
and PROTECTION
LINE

GROUTING AND ANCHORING
SOLUTIONS



FLUECO FAST BLACK CR FR is a pre-mixed shrinkage compensated cementitious mortar reinforced with flexible corrosion-resistant chromium steel and synthetic fibres. It is ideal for fixing manhole covers and for the fast repair of road pavement. **FLUECO FAST BLACK CR FR** is a rapid setting and hardening mortar with high initial and final mechanical strength. It is waterproof and highly durable even in an aggressive environment; it shows high resistance to dynamic stresses and impacts, and provides strong bonding to steel and concrete. **FLUECO FAST BLACK CR FR** is resistant to chemical and environmental attack and it is also suitable for all exposure classes pursuant to UNI 11104 standard.

ADVANTAGES

Due to its properties, **FLUECO FAST BLACK CR FR** makes it possible to rapidly fix and level manhole covers, storm drains and street furniture, as well as to repair deteriorated concrete structures by pouring. The product has the following characteristics:

- ✓ **RESISTANCE TO SULPHATES AND CHEMICAL AND ENVIRONMENTAL ATTACKS:** **FLUECO FAST BLACK CR FR** is extremely compact, has low capillary porosity and excellent resistance to aggressive agents such as chlorides, sulphates, de-icing salts and hydrocarbons. It is extremely resistant to freeze-thaw cycles, waterproof and not subject to carbonation.
- ✓ **RAPID SETTING AND HARDENING:** **FLUECO FAST BLACK CR FR** is a fast-setting product that develops mechanical strength quickly. It is suitable for fast repairs and satisfies the early open to traffic requirements even at low temperatures.
- ✓ **NO CRAZING AND CRACKING CAUSED BY PLASTIC SHRINKAGE:** **FLUECO FAST BLACK CR FR** is not subject to crazing or cracking caused by plastic shrinkage even when exposed to high temperatures, dry and windy weather. It ensures improved curing and strength development if compared to conventional mortars.
- ✓ **HIGH MECHANICAL STRENGTH AND RESISTANCE TO ABRASION:** **FLUECO FAST BLACK CR FR** has been specifically formulated to ensure high mechanical strength. The admixtures added to the product make it durable and extremely resistant to abrasion and traffic.
- ✓ **DURABILITY OF WORK:** **FLUECO FAST BLACK CR FR** is specifically formulated to reduce the risk of cracking, thus prolonging the useful life of concrete structures and reducing maintenance.



USES

FLUECO FAST BLACK CR FR can be used for the fast repair of pavement and for the following interventions:

- ✓ fixing and levelling of manhole covers, inspection manholes and catch pits;
- ✓ grouting of storm drains on roads, pavements and car parks;
- ✓ fast repair of concrete industrial pavements and carriageways;
- ✓ fixing of street furniture elements, manholes, poles, fencing and bollards.

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INSTRUCTIONS FOR USE

SUBSTRATE CLEANING

- ▶ Remove any loose or poorly adherent parts from the concrete in the area to be repaired, including any grout slurry, either by mechanical chipping or pressure washing, taking care not to damage the structures.
- ▶ Remove marks, efflorescence or soaked-in stains of grease, oil, paint, lime, dust, dirt, etc.
- ▶ Remove any previous repairs, if irreparably damaged or deteriorated.

SUBSTRATE PREPARATION

- ▶ If the substrate is in good condition, only sandblasting is required.
- ▶ If the substrate is deteriorated, roughen the surface mechanically by bush hammering, chiselling or pressure washing (the latter avoids damage to the substrate and is recommended for large surface areas) to reach the sound and compact concrete.
- ▶ The substrate shall be rough and with sharp edges.
- ▶ Wet the surface with water until saturation is achieved. This procedure prevents the substrate from absorbing the water of the mix, which may lead to cracking and reduce the bond strength of the mortar. This operation also makes it possible to remove any residues caused by the roughening of the concrete sub-base. Allow excess surface water to evaporate or dry with compressed air or some rags.

Preparing the substrate for fixing manhole covers:

Using a pneumatic drill with a large bit prepare a 10cm-wide area all around the manhole cover by cutting vertically down to the duct head or to a solid support such as the slab below the manhole cover. Verify that the catch pit is stable and in good condition. Make sure that there are no cracks and the frame is intact, then apply **FLUECO FAST BLACK CR FR**.

MORTAR PREPARATION

FLUECO FAST BLACK CR FR is mixed using an on-site concrete mixer. Pour water into the mixer according to the recommended mixing ratio, that is **14 ÷ 15 litres of water every 100 kg of powder** (3.50 ÷ 3.75 litres per 25 kg bag). Slowly add the product and mix for at least 4-5 minutes until a smooth, lump-free consistency is achieved. Verify that the entire product has been properly mixed and there is no powder left on the walls or at the bottom of the container. To prepare small amounts of product use a suitable container following the mixing ratio recommended. In this case use a low-speed mixer to minimise air entrapment.



HOT WEATHER PRECAUTIONS

- ▶ Store **FLUECO FAST BLACK CR FR** away from direct sunlight.
- ▶ Carry out work in the early hours of the morning, interrupting work when the sun is strongest: it is better to resume work in the late afternoon, providing the substrate has been kept continuously wet for at least 6 hours before work begins again.



COLD WEATHER PRECAUTIONS

- ▶ Store **FLUECO FAST BLACK CR FR** in a heated environment, if possible.
- ▶ Do not apply the product if temperature is below 5°C.
- ▶ Start working in the later hours of the morning.
- ▶ Make sure that the substrate is not frozen or thawing and there is no risk of frost in the following 24 hours.

MORTAR APPLICATION

Apply **FLUECO FAST BLACK CR FR** with a trowel. Apply several coats to obtain the desired thickness; compact the mortar and remove any voids. If necessary, you can use a needle vibrator. Perfect the finish immediately with a spatula. If the area adjacent to the manhole cover has to be repaved, you should envisage a bituminous coat of at least 3 cm thickness where the mortar is applied, to make sure it can withstand vehicular traffic. To avoid microcracking due to plastic shrinkage, smooth the mortar with a dampened sponge float once it has hardened.

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MORTAR APPLICATION FOR FIXING CATCH PITS

1. Fill with water the concrete base, then secure the rubber ring of the formwork into the hole dug into concrete for the catch pitch.
2. Fit the collection formwork and taper above the ring.
3. Prepare **FLUECO FAST BLACK CR FR** mortar as indicated in the previous paragraph, then apply it with a trowel into the bed of the catch pit.
4. Using a spatula or a trowel remove any excess material and smooth the surface with a float at the pavement level.
5. After about 1.5 h (with light traffic at +20°C) the surface can be reopened to traffic.

PACKAGING AND STORAGE

FLUECO FAST BLACK CR FR is packed in 25 kg bags.

If properly stored in a sheltered, dry place in its original container, the product maintains its properties for 12 months.

PRODUCT CHARACTERISTICS

APPEARANCE AND COLOUR	anthracite grey powder
MAXIMUM DIAMETER OF AGGREGATES	< 3 mm
POWDER BULK DENSITY	approx. 1.4 kg/l
CHLORIDE ION CONTENT ($\leq 0.05\%$) - UNI EN 1015-17	$\leq 0.05\%$
PACKAGING	25 kg bag

APPLICATION SPECIFICATIONS (+23°C and 50% R.H.)

MIX COLOUR	black
MIXING WATER	14-15% (3.50 ÷ 3.75 litres per 25 kg bag)
HARDENED PRODUCT DENSITY - UNI EN 12190	2300 kg/m ³
MIX pH	> 12 ± 1
WORKABILITY - UNI EN 13395-1	approx. 20 min.
APPLICATION TEMPERATURE	+5 to +35°C
POT TIME	max 15 minutes (20°C and 50% R.H.)
TIME BEFORE OPENING TO TRAFFIC	vehicular traffic: 1 h 30 min medium traffic: 2 h intense traffic: 3 h extraordinary traffic: 4 h
TOTAL HARDENING	approx. 28 days
THICKNESS OF APPLICATION	min 1 cm - max 30 cm (several coats)
CONSUMPTION	approx. 21 kg/m ² per cm of thickness

PERFORMANCE CHARACTERISTICS mixing water 22% at +20°C and 65% R.H.

PERFORMANCE CHARACTERISTICS	TEST METHOD	REQUIREMENTS AS PER STANDARD EN 1504-3 FOR CLASS R4 MORTARS	PRODUCT PERFORMANCE
COMPRESSIVE STRENGTH	EN 12190	≥ 45 MPa (after 28 days)	30 MPa at 3 hours 35 MPa at 6 hours 65 MPa at 7 days 69 MPa at 28 days
FLEXURAL STRENGTH	EN 196-1	None	6 MPa at 3 hours 13 MPa at 7 days 14 MPa at 28 days
MODULUS OF ELASTICITY IN COMPRESSION	EN 13412	≥ 20 GPa (after 28 days)	> 20 GPa
BOND STRENGTH TO CONCRETE after 28 days (MC 0.40 type substrate, w/c ratio = 0.40) according to EN 1766	EN 1542	≥ 2 MPa (after 28 days)	> 2 MPa
RESISTANCE TO CRACKING	"0 Ring Test"	Crack-free after 100 days	Meets specification
RESISTANCE TO ACCELERATED CARBONATION	EN 13295	Depth of carbonation ≤ of concrete specimen (MC 0.45, w/c ratio = 0.45) according to UNI 1766	Meets specification
CAPILLARY ABSORPTION	EN13057	≤ 0.5 kg/m ² · h ^{0.5}	< 0.5 kg/m ² · h ^{0.5}
THERMAL COMPATIBILITY after 28 days measured as bond strength according to EN 1542 on concrete MC 0.4 UNI EN 1766	EN 13687/1	≥ 2 MPa (after 50 cycles)	> 2 MPa
Freeze-thaw cycles with de-icing salts			
REACTION TO FIRE	EN 13501-1	Euroclass A1	A1

Legal notes - 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 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.