Hämeenkatu 9
05800 HYVINKÄÄ
Tel. 020 789 5900
www.fescon.fi

REPAIR CONCRETE RKB



Product description

Fescon Corro Shotcrete RKB is a multi-purpose, strength-rated, non-sag and fiber-reinforced special concrete that meets the requirements of EN 1504-3 structural repair material class R3. Repair concrete can be used for filling and patching concrete structures, repairing and coating floor, wall and roof surfaces and increasing the structural strength of concrete. Suitable for indoor and outdoor use. It is also suitable for use as cast concrete and sprayed concrete in applications where high strength and good weather-resistance are required. Maximum grain size 3.0 mm.

- Salt- and frost-resistant, approved by the Finnish Transport Infrastructure Agency for use in bridge repairs (SILKO approval)
- Excellent machinability, no sagging when applied to vertical surfaces
- Strength class C 30/37
- Adhesive strength R4, compressive strength R3
- Stress categories: XC4, XF4, XS1, XD2 (50 years). XC4, XF3, XS1, XD2 (100 years)
- Can be applied manually by spreading, pumping or spraying
- M1 approved

Applications

- Increasing the structural strength (also in load-bearing structures) on wall surfaces 10–30 mm in one filling, on roof surfaces 10–50 mm, filling and hole cutting 10–150 mm
- Surface and slope casting and pouring of balconies, thicknesses 20–100 mm
- Suitable for concrete casting, refills, levelling and tilting both indoors and outdoors
- Suitable for increasing structural strength in load-bearing structures
- Repair and shotcreting of concrete bridges, tunnels and pools
- Also well suited for vertical seams and underlay of precast concrete elements, backfilling of natural stone structures, plinth and stair repairs, and insulation in applications where high mechanical resistance is required.

The product is listed in the portal for building products that can be used in Nordic Swan Ecolabelled buildings.

Instructions

Base

- The temperature of the base should be +5°C..+25°C.
- Concrete base or an insulation plate suitable for insulation plastering.
- The base must be clean, dust-free, solid and firmly fixed in place
- Loose layers, cement paste and other impurities should be mechanically removed in order to ensure the proper adhesion of product to the base. Coarse surface produces best adhesion.
- In outdoor areas, it is recommended that the base is cleaned with water using a high-pressure washer, thus providing the base with the necessary moisture.

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- The reinforcement steels are cleaned of any loose rust.
- A new reinforcement is installed if necessary.
- If the base is of weak concrete (tensile strength <0.5 MPa) or an insulating sheet, casting must be done by using a floating reinforcement structure. A floating floor structure must be separated from the underfloor by using Fescon Separation Fabric and from the vertical structures by using Fescon Bordering Strip.
- For insulation plastering, a galvanized plaster mesh is always used.

Priming

- The concrete base is wetted with water to matte moistness. There must be no loose water. Starting the wetting the night before installation is recommended so that the water is absorbed deep enough into the base. In renovation sites with a very dry base that absorbs moisture, it is recommended that the base is wetted several times.
- The concrete base must be sufficiently moist to prevent water in the product from being absorbed into the base too quickly.
- Additional liquid adhesion promoters should not be used.
- An insulation plate does not require priming / wetting.

Mixing and placement

- The working area should be protected from strong wind, sun and rain
- During the casting and hardening of the concrete, the temperature should be +5°C...+25°C
- A bag (25 kg) of dry powder is mixed with 3.5 to 4.1 litres of clean water. We recommend that you initially mix the minimum amount of water and add water as necessary. The amount of water specified in the instructions must not be exceeded, as this reduces the strength values of the product, increases the risk of separation and prolongs the drying time. When casting vertical surfaces, the amount of water in the product is suitable when the product does not drain when installed.
- The product is mixed into a uniform mass using a paddle mixer, concrete mixer, horizontal pan-mixer or continuous mixer.
- Mix product until a uniform paste is formed by using a paddle mixer, concrete mixer, horizontal pan-mixer, or continuous mixer.
- When mixing with a paddle mixer or a concrete mixer, allow the mixture to stand for approx. 5 minutes, followed by a short re-mixing
- The working time is roughly 1 hour from the mixing.
- Product can be applied manually or by pumping or spraying. After application, it is compacted and levelled with a screeding level. The concrete surface can be bull floated with a polyurethane float or a steel trowel to achieve the desired quality required for the application. Bull floating is performed when product has slightly solidified
- The recommended layer thickness on large surfaces is 10–50 mm. Thicker layers are made in several layers so that the lower layer is allowed to dry for 24 hours before applying the next layer. Maximum hole depth that can be patched is 150 mm.
- Wash all tools with water immediately after finishing the work

Coating

- Indoors, the surface can be covered with ceramic tiles, plastic coatings, textile mats, vinyl tiles, parquet/laminate board or cork.
- If necessary, the surface can be sanded and/or levelled with Fescon’s wall and floor levelling products

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- Product's strength values and other technical characteristics are sufficient to provide an adequate underlay structure for almost all coating materials. However, it must be ensured that the paste meets the technical requirements of the coating manufacturer, including the moistening of the base
- Product can be left uncovered or uncoated

After treatment

- Sufficient moisture of the installed product must be ensured during the curing phase so that the curing reaction works correctly and the desired strength is achieved. This also prevents possible plastic cracking and surface detachment from the substrate.
- The surface of the installed product must be kept moist for 2 to 5 days. Depending on the conditions and work site, moistening can be done either with water spray, plastic film, or with Fesco aftercare material.
- Especially in the spring, aftercare should be started immediately and carried out carefully, since in the spring the relative humidity of the air is often less than 40% RH. Low relative humidity combined with sunlight and wind dries the surface very quickly.

Other considerations

- In floor structures where RKB is cast onto the base concrete, the layer thickness is 20–100 mm
- Can be used in floating floors with a reinforcing mesh size of e.g. # 150/5 mm. In this case, the layer thickness is 50–100 mm. For castings thicker than 100 mm, Fescon Corro Concrete K45 with a maximum grain size of 10 mm should be used.
- It is recommended that no more than 15 m^2 of floor area is cast at a time. When casting areas larger than 15 m^2, the risk of cracking increases. To prevent cracking, a sufficient number of contraction joints should be added by following the instructions in the concrete floor installation manual (BY45/BLY 7 Betonilattiat 2014). The maximum size of a floor area to be cast at a time is approx. 50–100 m2.
- When casting wide floor surfaces onto a base, the tensile strength of the base must be >1.5 MPa. The concrete slab may shrink and consequently become detached from the base. To avoid this, it is important to size the slab correctly.
- Dried product can only be removed mechanically.

Waste handling

Storage and handling of waste
See the separate storage and disposal instructions https://www.fescon.fi/en/material-bank

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Technical information

Material usage	Appr. 2.0 kg/m^2/mm
Water requirement	3.5 - 4.1 l / 25 kg
Finished compound	12 - 13 l / 25 kg
Type	Powder
Binder	Special cement
Colour	Grey
Maximum grain size	3.0 mm
Package size	25 kg and 1000 kg
Storage	Storage time in a dry location approx. 12 months
Layer thickness	10 – 100 mm (floating and reinforced min. 50 mm)
Fibre	Fibre-reinforced
Additives	Substances improving workability
Usage temperature	+5°C...+25°C (platform and internal temperature)
Workability time	Approx. 1 h
Walkable	Approx. 8 h
Strength class	C 30/37 (R3, EN 1504-3)
Compressive strength	> 37 MPa (28 day +20°C, RH 50 %)
Adhesion strength	> 2.0 MPa (R4, EN 1504-3)
Reaction to fire	A1
Exposure class	XC4, XF4, XS1, XD2 (50 v.), XC4, XF3, XS1, XD2 (100 years)
Frost resistance	Frost-resistant, for indoor and outdoor use
Waterproofness	Water-resistant
GWP A1-A3	0,46
GWP unit	kg CO2e/kg
Method for calculating the GWP value	Generic

Limitation of liability, product use notes and restrictions: Please familiarize yourself with Fescon Oy's general terms of delivery and the design and work instructions related to the product.