Technical Datasheet

weber.rep R4 duo

Repair mortar & resurfacing mortar

Polymer-modified concrete substitute mortar R4/M2/PCC and fairing coat mortar

Fields of application

As combination product for use as reprofiling mortar or concrete replacement mortar in thick applications (up to 50 mm and more) and as fairing coat mortar in thin applications (from 2 to 5 mm). As structural repair mortar for the repair/reprofiling of worn-out reinforced concrete structures (vertical and overhead without formwork) and also unreinforced concrete surfaces. As resurfacing mortar for levelling and patching all surface imperfections, like honeycombs, small breakouts, voids, broken edges etc. on new and old concrete substrates, such as filigree concrete walls, ceiling elements etc. in structural engineering, and also as fairing coat on repaired concrete surfaces. Also for provision of inclined slopes up to 50 mm thickness, e.g. cantilever slabs of balconies. Furthermore, for all repair works on concrete walls and floors, as well as for re-profiling e.g. stair steps. For indoors and outdoors.

Description

weber.rep R4 duo is a polymer-modified, ready-mixed dry mortar of class R4 according to EN 1504-3. It fulfils the requirements of the concrete strength class M2 according to DAfStb-Rili and is suitable for use as PCC II mortar according to the German specifications TL BE-PCC of ZTV ING (Additional Technical Terms of Contract and Guidelines for Civil Engineering Works). With German approval. Together with the concrete surface protection systems weber.tec 771 or weber.tec 772, it also fulfills the requirements according to DafStb-Rili (system OS-C resp. OS-D II) and according to DIN V 18026 (systems OS-4 resp. OS-5).

Composition

Cement, mineral fillers, polymer resins, regulating additives

Main features

- very good workability

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- no drop-off on vertical and overhead surfaces
- very high mechanical strengths
- high resistance to frost and de-icing salts
- low shrinkage and low residual stress
- very fine-grained - maximum grain size 0.5 mm
- open to diffusion of water vapour
- for surfaces with pedestrian and vehicular traffic
- approved by the German Federal Road Authority

Technical values

Application thickness:	unitary layers up to 50 mm
Largest grain size:	0.5 mm
Application temperature:	+5°C - +30°C
Pot life:	approx. 60 - 90 minutes
Flexural strength (28 days):	> 8 N/mm²
Compressive strength (28 days):	> 45 N/mm²
Fresh mortar density:	approx. 2.1 kg/dm³
Adhesive tensile strength:	≥ 2 N/mm²
Powder bulk density:	approx. 1.6 kg/dm³
Class of water absorption:	≤ 0,05 kg/(m². h☹·☹)
Class of reaction to fire:	E
Air content:	approx. 7% by volume
Chloride content:	< 0.05%

Quality control

weber.rep R4 duo is subject to a regular quality control by internal and external monitoring.

General notes

- All characteristics mentioned in this data sheet are given for a temperature of +20°C without draught and a relative humidity rate of 60%.
- Do not add any foreign substances during mixing and application.

Special notes

- Limits of use: weber.rep R4 duo is neither suitable for lightweight blocks or bricks, nor on horizontal concrete surfaces on large areas.

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- In case of existing concrete cover > 20 mm resp. > 40 mm, depending on the exposure classes (EN 206) the use of the corrosion protection weber.rep KB duo is not necessary.
- For application in layers up to approx. 25 mm thickness beyond the scope of EN 1504 (i.e. in static not-relevant areas, where the standard EN 1504 is not requested) weber.rep R4 duo can be used as bondcoat instead of weber.rep KB duo. For this purpose, mix weber.rep R4 duo in brush consistency and apply it with mason's swab on the dull-moist substrate; afterwards apply the mortar mixed in trowel consistency onto the fresh bondcoat up to 25 mm thickness
- For applications beyond the scope of EN 1504 the use of a bondcoat is not necessary; in further cases with concrete covers > 20 mm the use of a corrosion protection is not necessary as well. In such cases, first apply weber.rep R4 duo as pore-sealing slurry coat by mason's swab or as scratch layer by flat trowel onto the dull-moist concrete surface; afterwards apply weber.rep R4 duo in the required thickness onto the fresh previous layer.

Substrate preparation

- The substrate preparation must be adapted to the specific job site conditions

As concrete repair mortar / reprofiling mortar / concrete substitute

- The substrate must be clean, frost-free, absorbent, load-bearing, rough and free of all adhesion-impairing substances.
- Tensile strength of surface (pull-off strength) of concrete > 1.5 N/mm²
- Appropriate mechanical treatment is first milling, and afterwards sand-blasting.
- Protect reinforcement steel bars from corrosion by application of weber.rep KB duo in 2 passes.
- After hardening of the corrosion protection pre-wet the whole concrete area and all broken parts intensively, avoiding formation of puddles; allow to dry until dull-moist at the time of processing.

As resurfacing mortar / fairing coat mortar

- The substrate must be clean, frost-free, absorbent, load-bearing, rough and free of all adhesion-impairing substances.
- If necessary, use appropriate mechanical means, for e.g. milling, blasting, etc.
- Tensile strength (pull-off strength) of concrete surfaces ≥ 1.5 N/mm²
- Pre-wet concrete substrate intensively, avoiding formation of puddles; allow to dry until dull-moist at the time of processing.

Working instructions

Mixing

- Mix the bag content (25 kg) with 14.5 % of water (2.9 liters per 20 kg dry mortar) until lump-free.
- First pour the water, then the powder step by step.
- Mix 3 minutes, intensively, with a forced-action mixer or a slow-running electric drill with the stirrer weber.sys Rührpaddel no. 2.
- After a ripening time of 2 minutes mix again shortly.
- Adjust the consistency if necessary with additional water up to 1.5% (0.2 liter per 20 kg dry mortar) for use as thin resurfacing mortar.
- When used as resurfacing mortar, the consistency can be adjusted by adding up to 1.5 % additional water (0.3 litres per 20 kg dry mortar).
- The mortar can be stirred from time to time; this improves its consistency and smoothness.

Application as concrete repair mortar / re-profiling mortar / concrete substitute

- Apply the mortar to the breakouts on the fresh bondcoat weber.rep KB duo, using a spatula or a flat trowel; compact the mortar well into place, ensuring no air is trapped.
- Work the mortar into the broken areas without any voids; do not pull the concrete mortar beyond the flanks of the breakouts.
- Deep cut-outs > 50 mm must be closed in several operations (approx. 50 mm per operation); respect a waiting time of approx. 12 hours between each operation.
- In case of application in 2 layers (total thickness over 50 mm) do not smooth the first layer with a float, but leave it rough by combing horizontally with notched trowel; apply the bondcoat weber.rep KB duo on the first layer of the repair mortar weber.rep R4 duo and afterwards the second layer of the repair mortar on the tacky bondcoat.
- Working areas should not be oversized in order to allow application of subsequent layers "wet-in-wet"; the dimensions of working areas must allow that the concrete substitute mortar can always be applied to the fresh bondcoat, i.e. before skin formation occurs. The mortar for the bondcoat and for the concrete repair should therefore be mixed at the same time.
- Clean mixing equipment and tools with water (fresh product). Hardened material can only be removed mechanically.

Application as resurfacing mortar / fairing coat mortar

- First apply weber.rep R4 duo on full surface in grain thickness as a pore-filling scratch layer with a flat trowel, and afterwards "wet-in-wet" up to 2 mm - 5 mm thickness

- Keep the working area for scratch layer operations small.
- After initial setting (15 up to 90 minutes, depending on weather conditions and thickness) smooth the mortar layer with a damp, fine-pored sponge float without pressure to eliminate all imperfections.
- Clean mixing equipment and tools with water (fresh product). Hardened material can only be removed mechanically.

Aftercare

- Avoid exposure to frost and to excessive sunlight and draughts in order to protect from too rapid drying out (dehydration); take appropriate measures, e. g. by covering with polyethylene foils, textile membranes.
- After a drying time > 5 days when used as repair mortar/ reprofiling mortar or > 1 day when used as resurfacing mortar/fairing coat mortar, the protection of the repaired concrete surfaces and the existing surrounding concrete areas with one of the Weber systems must be carried out: either weber.tec 771 (paint) for protection against carbonation or weber.tec 772 (coating) for protection against carbonation and thaw salt impact; both products are also dedicated for the colored finish design of repaired areas.

Practical information

Colours:
concrete grey

Application thickness: As repair mortar / reprofiling mortar / concrete substitute: unitary layers of 50 mm
As resurfacing mortar / fairing coat mortar: 2 mm - 5 mm

Tools: Electric drill + stirrer weber.sys Rührpaddel no. 2, flat trowel, notched trowel, fine-pored sponge float

Water demand:
As repair mortar/ reprofiling mortar / concrete substitute: max. 2.9 liters/ 20 kg
As resurfacing mortar / fairing coat mortar: max. 3.2 liters / 20kg

Drying time:
like concrete

Storage:
The product can be stored at least 9 months in its original unopened packaging, if kept dry.

Consumption / yield

per mm layer thickness (fresh mortar):	approx. 1.9 kg/m²

Packagings

Type	Sales unit	Number / euro-pallet
Plastified paper bag	20 kg	48 bags