



Technical data sheet (TDS)

Concretum® Q-CON

Rapid-hardening repair concrete (dry mix)

1. Description

1.1. Product

Concretum® Q-CON is a cement-based, rapid-hardening repair concrete with a maximum aggregate size of 12 mm (manufactured in France) or 16 mm (manufactured in Switzerland). The product is supplied as a pre-dosed dry mix consisting of selected binders and aggregates and requires only the addition of water for mixing and application.

1.2. Application

Concretum® Q-CON is designed for localised repair and rehabilitation of concrete pavements in transport infrastructure where rapid reopening to traffic is required. It is particularly suitable for roads, motorways and airfield pavements. The fresh concrete consistency is specifically designed for these applications and should not be modified. The specified mixing water quantity must be strictly observed to ensure the mechanical properties and durability of the product.

1.3. Advantages

- Rapid strength development
- Long open time
- Easy mixing
- Easy handling and application
- Excellent compatibility with existing concrete surfaces
- Low sensitivity to temperature fluctuations
- High durability: low shrinkage, low heat of hydration, freeze-thaw and de-icing salt resistant
- No moisture impact on adjacent repair areas
- Purely cementitious: does not contain either polymers or epoxy or methacrylate resins

2. Product data

2.1. Hardening, drying, hardened concrete properties

The values stated in this section are indicative values and were determined under controlled test conditions. Actual results may vary depending on project-specific conditions, construction practices and environmental conditions.

Concretum® Q-CON	Temperature-dependent (5 – 30 °C) **
Time from addition of water until compressive strength of 16 – 20 N/mm ² is achieved.*	120 – 150 Min.
Time from addition of water until compressive strength of 35 N/mm ² is achieved.	180 – 210 Min.
Time until moisture content falls below 4 CM-%	150 – 180 Min.
Open time	45 – 75 Min.
* usual compressive strength for approval of transport surfaces in road and airport construction	
** The applicable temperature takes into account material, base and surrounding area in the following ratios: 2/4 material, 1/4 base, 1/4 surrounding area. The temperature must not fall below 5 °C. For lower temperatures, a Concretum engineer must be consulted.	

During the hardening process, Concretum® Q-CON achieves the following hardened concrete properties:

- Compressive strength: > 75 N/mm² after 28 days
- Flexural strength: > 7.5 N/mm² after 28 days
- Young's Modulus: > 30,000 N/mm²
- Specific density: ~ 2,350 kg/m³

2.2. Other properties

Colour:	Cement grey
Delivery:	Pallet with 40 bags of 25 kg each – total 1,000 kg (manufactured in France) or pallet with 42 bags of 25 kg each – total 1,050 kg (manufactured in Switzerland).
Shelf life:	In the unopened original packaging, and complying with the storage conditions, 12 months from the production date.
Storage conditions:	Store in the unopened original container, protected against weather. It must be ensured, for example, that condensation does not form under the covering films and standing water is not absorbed from below.
Chemical basis:	Combination of powdery additives, hydraulic binder and aggregate sizes up to 12 mm (produced in France) or 16 mm (produced in Switzerland).
Consistency:	Homogeneous
Bulk density:	Approx. 1.8 kg/l

Water-soluble chloride content: $\leq 0.1 \text{ M-\%}$

3. Application instructions

3.1. Preparation

The surfaces of the areas to be repaired must be pre-wetted with water before applying Concretum® Q-CON. Any excess water in the repair area must be removed or blown off. The substrate must be clean, free from dust and grease, and sufficiently sound and load-bearing. Bonding to the existing concrete depends, among other factors, on the surface roughness. The minimum roughness must be at least 4 mm and the average roughness at least 8 mm.

The fresh concrete temperature must be above 5 °C.

3.2. Mixing

Concretum® Q-CON is mixed with tap water in a suitable mixing container. The use of recycled water or residual water is not permitted. The specified quantity of mixing water must not be exceeded. Mixing must be carried out using a high-performance twin-shaft hand-held mixer or a forced-action mixer until a homogeneous, uniform and lump-free consistency is achieved. The mixing time must be at least 120 seconds. When using lower-powered mixing equipment, the mixing time must be extended (approx. 3–5 minutes). It is recommended to determine the exact yield by means of a preliminary trial. Only complete packaging units (full bags) may be mixed.

3.3. Mixing ratios

Mixing ratios and yields	Added water per 25kg paper bag	Yield
25 kg paper bag of Concretum® Q-CON	1.8 – 2.1 litres	approx. 11 litres

3.4. Pouring and curing

The minimum placement thickness is 5 cm, and the maximum volume should not exceed 500 litres. The maximum extent of the repair area must be limited to 25 to 30 times the smallest dimension of the repair. The placement thickness must be kept uniform over the entire area. For larger repairs, relief cuts must be provided; their location and arrangement depend on the specific conditions of the structure.

Placement must begin immediately after mixing. Placement, compaction and surface finishing must be completed within the working time of approximately 45 to 75 minutes after the addition of water. Construction joints should be arranged vertically wherever possible. These joints must subsequently be cut and filled or sealed with a suitable jointing material.

Proper curing must be ensured, particularly in direct sunlight, strong winds or rain. The surface must be protected against moisture loss and washout. This can be achieved by using suitable coverings or by applying a curing compound. Care must be taken to ensure that subsequent layers are not adversely affected, particularly with regard to adhesion. If curing is omitted, fine surface cracks may develop. These cracks can facilitate the ingress of harmful substances and may adversely affect durability.

3.5. Further information

The mixing and placement of Concretum® Q-CON must be carried out in accordance with the general principles of concrete production and construction practice, as well as the applicable standards and regulations. In particular, all necessary measures must be taken to ensure proper placement and appropriate curing of the installed material.

4. Measurement values

All measured values stated in this Technical Data Sheet are based on internal laboratory tests conducted by Concretum Construction Science AG. Actual values may differ from the stated values due to external circumstances beyond the control of Concretum Construction Science AG.

5. Country-specific data

The product data and values of Concretum Construction Science AG may vary depending on the country of use. The respective local Technical Data Sheets shall apply. Upon request, Concretum Construction Science AG will provide information on the product data and measured values applicable in the respective country.

6. Safety information

When handling Concretum® Q-CON, the same recommendations regarding handling and personal protective equipment apply as for cement. The powder is alkaline and may cause irritation. For detailed information, please refer to the current Safety Data Sheet available at www.concretum.com.

7. Documentation of defects

The products of Concretum Construction Science AG have the specific properties conclusively named in this technical data sheet.

To ensure product quality, Concretum Construction Science AG retains a reference sample from each production batch for a period of 24 months.

If a customer reports a potential defect, the product properties will be verified exclusively by testing the corresponding reference sample from the affected batch in accordance with an internal test procedure.

8. Legal information

This Technical Data Sheet forms an integral part of every contract between Concretum Construction Science AG and the customer. The product properties are conclusively defined in the section “Further Properties” above. The product must be used in accordance with the specifications of Concretum Construction Science AG and the provisions of this Technical Data Sheet.

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