MasterCrete THI 405

Fibre-reinforced, thixotropic fine filler of class R2 in accordance with EN 1504-3, for levelling, fine reprofiling and protective filling of concrete surfaces in layer thicknesses of 1 to 3 mm

Product Description

MasterCrete THI 405 is a single-component, polymer-modified, thixotropic, fibre-reinforced, cement-based fine filler with a fine grain size. The product meets the requirements of class R2 in accordance with EN 1504-3 and is also classified as a surface protection product in accordance with EN 1504-2, category MC-IR.

When mixed with water, it forms a plastic, non-sagging and easily workable mortar that can be applied manually or mechanically by spraying.

MasterCrete THI 405 is suitable for applying thin layers of filler to concrete surfaces in layer thicknesses of 1 to 3 mm in a single operation. The formulation is designed to provide good adhesion, high dimensional stability, reduced susceptibility to cracking and durable protection against exposure to water and CO_2.

Areas of Application

- Fine filling of concrete surfaces in horizontal, vertical and overhead applications
- Levelling of concrete surfaces with minor irregularities, pores, voids or workmanship defects
- Filling of previously repaired concrete surfaces following localised or full-surface repairs using products from the MasterCrete range
- Thin-layer surface finishing of reinforced concrete components prior to the application of subsequent protection or coating systems
- Surface protection of concrete components by reducing water absorption and CO_2penetration

For applications not listed here, please contact your technical sales adviser.

Properties

- Class R2 in accordance with EN 1504-3
- Surface protection in accordance with EN 1504-2, cat. MC-IR
- Single-component and polymer-modified
- Fine-grained and fibre-reinforced
- Thixotropic and non-sagging
- Can be applied manually or mechanically
- Can be spray-applied using a suitable machine
- Good, smooth workability
- Very good adhesion to properly prepared concrete substrates
- Reduces the risk of plastic microcracking
- Good dimensional stability and resistance to water absorption and CO_2penetration.
- Permeable to water vapour
- Suitable for indoor and outdoor use
- Low in chlorides in accordance with EN 1015-17
- Reaction to fire A2-s1,d0 in accordance with EN 13501-1

Substrate Preparation

The concrete surface to be filled must be clean, firm, load-bearing, open-pored, absorbent and sufficiently rough. Unsound layers and adhesion-impairing substances must be removed completely, particularly cement laitance, dust, oil and grease, old coatings, residues of formwork oil or release agents, water-repellent agents and similar substances.

The surface must be prepared to produce a slightly rough, load-bearing and absorbent concrete surface. Suitable methods include sandblasting, milling and high-pressure water jetting in particular. Smooth substrates must not be coated without prior roughening. For concrete surfaces without major defects, suitable surface preparation to clean and slightly roughen the substrate is sufficient.

Pronounced irregularities, larger defects or insufficiently even areas must be repaired before the application of MasterCrete THI 405 using suitable fine repair mortars from the Master-

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Crete range. For defects requiring layer thicknesses of more than 10 mm and where reinforcement is exposed, suitable repair mortars from the MasterCrete range must be used. Exposed or corroded reinforcement must be properly uncovered, derusted and treated with a suitable corrosion protection system.

Construction joints, expansion joints and other movement joints must not be rigidly filled over. These must be treated with suitable elastic joint tapes or sealants, e. g. from the MasterJoint range.

Pre-wetting

The prepared substrate must be sufficiently pre-wetted and kept damp until application. At the time of application, the substrate must be matt damp. Standing water or puddles must be avoided. Adequate cleaning and saturation of the substrate are essential to prevent the fresh mortar from losing water, loss of adhesion and cracking.

Mixing

Use only undamaged containers in their original sealed condition. First, pour approximately ¾ of the required quantity of water into a suitable mixing container. Then add MasterCrete THI 405 and mix using a suitable compulsory mixer or slow-speed stirrer. During mixing, add the remaining quantity of water until a homogeneous, plastic and lump-free consistency is achieved.

After a short maturing time of approximately 2–3 minutes, briefly mix again. The water requirement is approximately 4.25–4.75 litres per 25 kg bag. The actual quantity of water must be adjusted within this range according to the desired consistency and application method. The maximum permissible quantity of water must not be exceeded.

Mortar that has begun to stiffen must not be diluted with water or mixed with fresh mortar.

Application

For optimum application, the substrate, material and ambient temperatures should be between +5 °C and +35 °C. The mortar can be applied manually using a trowel, spatula, finishing trowel or float, or mechanically by spraying.

For manual application, first apply a thin contact layer or scratch coat to the matt-damp substrate to improve adhesion. Then apply another layer wet-on-wet until the desired total layer thickness is achieved.

MasterCrete THI 405 can be applied in layer thicknesses of 1 to 3 mm. For mechanical application, MasterCrete THI 405 can be applied using suitable spraying machines, such as screw or piston pumps. During extended interruptions in spraying, the hoses and pump must be thoroughly cleaned with water.

Depending on the desired texture, the surface can be smoothed or finished using suitable tools. This must be carried out within the working time and in accordance with the stiffening behaviour of the material. Finishing too early or too late may result in cracks or adhesion problems.

Curing

After application, MasterCrete THI 405 must be protected against drying out too quickly, direct sunlight, strong wind, rain and frost. In dry, highly ventilated or warm weather conditions, curing must be carried out with particular care. Curing may be carried out, for example, by covering with PE sheeting or damp jute mats, keeping the surface regularly moistened or using suitable curing agents, provided that these do not adversely affect subsequent coatings.

Drying out too quickly must be avoided, as this may impair strength development, adhesion and surface quality

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Cleaning of Tools

Tools and mixing equipment must be cleaned with water immediately after use. Hardened material can only be removed mechanically.

Consumption

Consumption is approximately 1.6 kg of dry mortar per m^2 and mm layer thickness. Actual consumption depends on roughness, substrate profile, compaction, application and site conditions.

Packaging

MasterCrete THI 405 is available in 25 kg bags.

Storage Conditions

Store in a dry, cool place, protected from moisture, in the unopened original packaging. Avoid prolonged storage at temperatures above +30 °C. When stored correctly, MasterCrete THI 405 has a shelf life of 12 months.

Handling and Transport

The usual precautions for handling chemical products must be observed when using this product.

Specific safety information on handling and transporting this product can be found in the material safety data sheet.

The product and its packaging must be disposed of in accordance with applicable legislation and are the responsibility of the product's final owner.

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Technical data			
Property	Standard	Value	Unit
Chemical base	-	Cement	-
Colour	-	grey	-
Maximum grain size	-	≤ 1	mm
Chloride ion content	EN 1015-17	≤ 0.05	%
Applicable layer thickness	-	1–3	mm
Fresh mortar density	-	approx. 1.9	g/cm³
Mixing water per 25 kg bag	-	approx. 4.25–4.75	l
Working time	At 20°C	approx. 60	min
Application temperature	-	from +5 to +35	°C
Consumption	-	approx. 1.6	kg/m²/mm
Compressive strength: After 1 day: After 7 days: After 28 days:	EN 12190 EN 196-1	 ≥ 15 ≥ 30 ≥ 38	N/mm²
Flexural tensile strength: After 1 day: After 7 days: After 28 days:	EN 196-1	 ≥ 4 ≥ 5 ≥ 6.5	N/mm²
Pull-off strength on concrete at a layer thickness of 2 mm:	EN 1542	> 2.0	N/mm²
Water absorption at a layer thickness of 2 mm:	EN 1062	< 0.1	$kg/m^2 \cdot h^{0.5}$
Water vapour permeability at a layer thickness of 2 mm:	EN 7783-1	Class I, Sd < 1.5	m
Pull-off strength on concrete after freeze-thaw cycling with de-icing salt attack	EN 13687 EN1542	> 3.0	N/mm²
Resistance to carbonation	EN 13295	passed	-
Capillary water absorption	EN 13057	≤ 0.2	$kg \cdot m^{-2} \cdot h^{-0.5}$
Reaction to fire	EN 13501-1	A2-s1,d0	-

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Legal Notice

This technical data sheet, like our other technical notes and information, serves only to describe the nature of this product, its processing and application possibilities. However, it does not guarantee certain properties of the product or its suitability for a purpose, nor does the description contain complete instructions for use. As we reserve the right to make changes to our technical data sheets, it is the customers' responsibility to ensure that the latest technical data sheet is available. Current technical data sheets can be requested at all our locations or downloaded from our website at www.master-builders-solutions.com/de-at, in the category "Products". In addition, our current general terms and conditions apply.

The processor shall remain obliged to carry out its own investigations and tests in order to take responsibility for the processing and application of our products in its specific business sector. With the publication of this data sheet, any previous editions shall become invalid.

The information in this data sheet has been compiled to the best of our knowledge and reflects the current state of our knowledge and experience.