

## mak3® Two-coat scratch render

### PRODUCT PROFILE

mak3 is a traditional mineral scratch finish render with 2, 3, 4 and 7 mm aggregate size, optionally supplied with mica additive. The uniformly thick, water-repellent mak3 scratch render coat offers both excellent weatherproofing and, by virtue of its open-pored surface, optimum vapour diffusion. mak3 is ideal for application to thermally insulating renders/renders and WARM WALL systems. 2 and 3 mm aggregate mak3 may be supplied in container form in white and pastel colours!

- mortar group CS II to DIN EN 998-1 (P Ic to DIN 18550)
- premixed dry mortar with lime/cementitious binder
- low-chromate to TRGS (German Technical Regulations for Hazardous Substances) 613
- fire rating A1 (non-combustible)
- for indoors and outdoors
- water-repellent
- vapour-permeable
- weather-resistant
- primarily for machine application
- white, natural white and coloured to CLASSIC colour chart
- with mica additive upon request

### TECHNICAL DATA

(DIN EN 998-1, DIN 18550)

Bulk density:	1.7 kg/dm <sup>3</sup>
Tensile bending strength:	1.3 N/mm <sup>2</sup>
Compressive strength:	2.4 N/mm <sup>2</sup>
Dynamic elastic modulus:	6400 N/mm <sup>2</sup>
Water vapour diffusion resistance factor $\mu$ :	8
Thermal conductivity (10°C, dry) $\lambda_{10,dry}$ :	
	≤ 0.67 W/(m•K), for P=50%
	≤ 0.76 W/(m•K), for P=90%
Capillary water absorption:	W 2

	Grading	Render thickness applied/scratched		Coverage		
				kg/m <sup>2</sup>	m <sup>2</sup> /bag	m <sup>2</sup> /tonne
<b>mak3</b>						
To WARM WALL	2 mm	13 mm	10 mm	19.1	1.6	52.5
	3 mm	13 mm	10 mm	19.1	1.6	52.0
	4 mm	14 mm	10 mm	21.5	1.4	46.5
To basecoat	2 mm	15 mm	12 mm	22.1	1.4	45.0
	3 mm	15 mm	12 mm	22.1	1.4	45.0
	4 mm	15 mm	12 mm	24.5	1.2	41.0
	7 mm	25 mm	20 mm	38.3	0.8	26.0

The above figures are approximate values and may vary according to background type.

## **PREPARATION**

Cover or watertightly mask dirt-sensitive elements. Protect weather-exposed work surfaces from precipitation. In the event of exposure to sunshine or warm weather, hang nets around scaffolding until renderwork dries or postpone works until more favourable weather conditions prevail.

Lustro für Kratzputz (Lustro for scratch render) shall generally be used for preparation of masonry, concrete, insulation board, lightweight woodfibre slab and WARM WALL system backgrounds.

Basecoats shall be allowed to dry and set. Apply min. 4 mm coat of Lustro für Kratzputz. Roughen surface with broom during initial set. Apply 5-7 mm coat of Lustro für Kratzputz to concrete, strike off with notched trowel and roughen with broom.

Apply 15 mm coat of SUPER LUPP to high-thermal-insulation masonry and roughen with broom while freshly applied. Reinforcing mortar coats, particularly to WARM WALL systems, shall be min. 7 mm (max. 10 mm) thick. Apply a further 2-3 mm coat of Lustro für Kratzputz over scrim reinforcement and roughen with broom.

## **APPLICATION**

For 2 and 3 mm aggregate mak3 in MA-MA container machine, start up with approx. 800 ltr water, then set to relatively stiff mixer consistency.

For 2, 3 and 4 mm aggregate mak3 in mixing pumps such as PFT G4/G5, use Rotoquirl as remixer.

D8-1.5 screw pump with extension. Set water to approx. 440 ltr, then set to lean mortar consistency.

7 mm aggregate mak3 can only be machine applied using dual-piston pump. Pre-lubricate hoses with wallpaper paste and start up separately.

For manual application (small areas only), prepare mak3 with continuous mixer and apply to produce unbroken surface.

Apply approx. 13 mm coat of mak3 to WARM WALL systems or approx. 15 mm coat to basecoats.

Apply/spray on mak3 in required thickness, working from top to bottom, platform by platform, level off using notched darby, smooth and compact with floorlaying trowel (risk of entrapped air).

Prior to scratching, close any shrinkage cracks that may occur due to thicker coats or windy conditions by pressing/patting down and compacting. Stop, compact and re-scratch any defects produced during scratching due to entrapped air using material from same coating operation (possibly from previous day).

Scratch with circular strokes when material starts to set, possibly on same, but normally on following day, straighten out small irregularities using scraper. Very early scratching produces darker hue and prevents achievement of crisp texture. To counteract weather- and application-related colour variations, connected or visually unified surfaces shall always be rendered from corner to corner without interruption and shall likewise be finished in single operation after hardening.

Depending on weather, spray in morning and scratch in afternoon, or vice versa. This is particularly important for terraced house fronts. Surfaces may also be mechanically scratched using our GRIPSI machine. Properly sweep scratch render surfaces from top to bottom when fully dried. As stated in DIN V 18550 Part 2, Section 6.6.6, "Scratch render finishes shall not be deemed defective where rubbing by hand causes isolated aggregate grains to detach from surface."

## **REINFORCEMENT**

On facades, bed basecoat scrim in wet mortar near surface over whole area, with 10 cm lap at joints, at junctions between different wall materials, over small lightweight woodfibre slab or XPS-R board surfaces, diagonally above or below corners of openings, for brushed finishes or textured renderwork with aggregate size less than 2 mm (< 3 mm specified by DIN 18345/18350, VOB – German Construction Contract Procedures – Part C) etc. After drying, incorporation of scrim over whole surface in final coat or scrim reinforcement using SM700 or Lustro reinforcing mortar is recommended to meet special demands, e.g. for composite masonry, on weather-exposed elevations, for render thicknesses exceeding 30 mm and for felt-floated finishes etc.!

## **PLEASE NOTE**

Rendering works are subject to the requirements of DIN EN 13914, DIN 55699 and DIN 18345/DIN 18350, VOB (German Construction Contract Procedures) Part C. Do not apply at air and/or wall temperatures below +5°C. Protect fresh renderwork against frost and premature drying out. Mix dry mortar only with clean water. Do not use any foreign additives. The renderwork surface may exhibit variations in colour or suffer calcium carbonate efflorescence due to consistency-, weather- or drying-related factors. These features shall, however, provide no justification for claims in respect of the material as they stem from uncontrollable physical conditions and their impact will, over time, diminish through natural weathering and subsequent carbonation. Silicone colour equalization paint may be used to even out colour variations. Apply to whole surface where necessary. Due to its natural alkalinity, mak3 helps to control and inhibit algal and fungal attack. No guarantee can, however, be given for long-term protection against algal and fungal growth. Vulnerability to attack depends on local factors and the prevailing environmental conditions.

## **PLINTH TREATMENT**

Use of mak3 in plinth areas is subject to implementation of additional measures and approval by client. Apply saturating coat of FINOL impregnation to areas subject to splashing.

After drying out, all rendered surfaces in contact with ground or gravel beds shall be waterproofed/protected against moisture, starting from external basement wall waterproof barrier up to approx. 5 cm above ground level, in accordance with DIN 18195.

To this end, a 2.5 mm coat of MARMORIT SOCKEL-DICHT may be applied. Cover with nonwoven-faced studded sheet after drying.

## **COLOUR ENHANCHMENT**

After completion of the works to enhance the appearance of darker colours it is recommended to coat in Finol, silicone equaliser paint, or Autol self cleaning effect paint.

## **SAFETY AT WORK**

Mineral mortars exhibit an alkaline reaction upon contact with water. Causes eye irritation. Avoid contact with skin and eyes. Wear eye/face protection. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Requirements of safety data sheet shall be observed (current version obtainable at [www.marmorit.de](http://www.marmorit.de)). Once set, the material poses no physiological or ecological hazards.

## **MACHINE/EQUIPMENT**

2 and 3 mm aggregate mak3 in MA-MA container machine with following equipment:

Screw pump: in machine ex works

Wet mortar pumping distance max. 67 m

Mortar hoses: 50 mm dia, 27 m and 35 mm dia, 40 m

Rendering machines such as PFT G4/G5 with Rotoquirl II remixer and following equipment:

Stator: D6-3 or D8-1.5 (yellow)

Rotor: D6-3 or D8-1.5 with extension

Mortar hoses: 35 mm dia, 27 m or 25 mm dia, 20 m

Wet mortar pumping distance max. 40 m

## **COMPOSITION**

Binder: Hydrated lime to DIN EN 459

White Portland cement to DIN EN 197

Aggregate: Quartz, limestone and marble graded to DIN 4226

Admixtures: Water-retaining admixture, water-repellent, where required alkali-resistant and lightfast colour pigments

## **QUALITY**

In accordance with DIN EN 998-1, the product shall be subject to initial type testing and ongoing factory production control (FPC). Being additionally subject to external monitoring, it is entitled to carry – alongside the CE mark – the RAL Quality Label for premixed dry mortar.

## **DELIVERY FORM/SHELF LIFE**

30 kg paper bags; 2 and 3 mm aggregate render also supplied in bulk form in container with MA-MA machine.

Shelf life 9 months, subject to storage in dry, moisture-protected environment.

## **SUPPLY**

Via Marmorit approved applicators or local distributors

## **NOTE**

This data sheet, which replaces all previous editions, is designed to provide you with advice and assistance. The information presented herein reflects our present state of knowledge. It cannot, however, embody the sum total of good practice, nor incorporate the provisions of all relevant standards, codes of practice and guidelines. These – together with the relevant application rules and guidelines – shall be duly observed by the applicator!

## **TECHNICAL ADVICE**

Information and advice may be provided by our external representatives or the MARMORIT Technical Department

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