

# HSM 5

## Restoration mortar



### Masonry mortar for laying cut stones containing gypsum

Standard masonry mortar M5 acc. EN 998-2  
NM IIa according to DIN 20000-412

- with high sulphate-resistance



## APPLICATIONS

- for producing masonry, facing, plaster and grout mortar
- particularly suitable for rehabilitating masonry on historic buildings with masonry containing gypsum
- the special version HSM 2a M5 wa (grit 0-4 mm) can also be used as a pond mortar, for further information please contact our Technical Consultant at 0541/601-601
- for interior and external use

## PROPERTIES

- compatible with old mortar and substrates containing gypsum
- mineral
- no watering due to set water retention capacity
- weather and frost resistant after hardening
- driving rain-proof
- positive locking adhesive bond in the contact areas between mortar and bricks
- quick and time-saving processing

## COMPOSITION

- Binder according to patent PA 3437680, special binder developed according to the basic research with the Institute of Rock Metallurgy at RWTH Aachen University
- trass in accordance with DIN 51043
- graded stone aggregates in accordance with DIN 13139

### SUBSTRATE

<b>Suitable substrates</b>	<ul style="list-style-type: none"><li>■ All types of masonry</li><li>■ old masonry containing gypsum</li></ul>
<b>Properties/tests</b>	<ul style="list-style-type: none"><li>■ Joint flanks must be frost-free, dry, free of oil, paint, dust as well as soft and loose mortar residue.</li><li>■ Masonry and substrates must be firm, load-bearing, clean, dry, frost-free and free of paints or adhesion-reducing residues.</li></ul>
<b>Pretreatment</b>	<ul style="list-style-type: none"><li>■ Highly absorbent substrates should be wetted in good time, days before if need be.</li><li>■ When pre-treating the areas being worked on, the different absorbency levels of the materials is to be taken into account. The pre-treatment is to be adapted to the circumstances by observing the water absorbency capacity. For instance, it may be noticed that low-absorbent, dense stone (e.g. granite) does not need much water, whilst the mortar in the joint is very absorbent. If this is not sufficiently pre-wetted before grouting, too much water will be extracted from the newly introduced mortar. This leads to inadequate bonding strengths and reduced grouting strengths. This also applies to processing in several layers, due to grouting over a depth of 2 cm.</li><li>■ When grouting for the first time, it is necessary to clean the chiselled out joints beforehand. The joint flanks must be dust-free and free of soft and loose mortar residue. The depth of the chiselled out joint should be twice the width.</li></ul>

### PROCESSING

<b>Temperature</b>	<ul style="list-style-type: none"><li>■ Do not process or allow to dry out at air, material or substrate temperatures below +5°C, or if there is a risk of exposure to night frost, or at temperatures above +30°C, or in direct sunlight, or on heated up surfaces, and/or in windy conditions.</li></ul>
<b>Mixing / Preparation / Processing</b>	<ul style="list-style-type: none"><li>■ When machine-processing: Adjust the amount of water accordingly to obtain a workable consistency.</li><li>■ Using a flow mixer, gravity mixer or compulsory mixer, mix the dry mortar with clean water for no longer than 2 to 3 minutes to achieve the correct consistency.</li><li>■ Do not use a plastering machine. Grouting by wet and dry spraying on request.</li><li>■ When mixing manually, first place the quantity of water specified in the technical data in a clean container and then sprinkle in dry mortar. Use clean tap water.</li><li>■ use a suitable agitator to mix the material until smooth and free of lumps. Leave to rest for a moment and then mix again, adding more water, if required, to achieve the right consistency for applying.</li><li>■ Do not mix with other products and/or other substances.</li></ul>
<b>Processing</b>	<ul style="list-style-type: none"><li>■ <b>Brick laying:</b><ul style="list-style-type: none"><li>■ Apply mortar on the masonry in the required layer thickness with the trowel, set stones in place and skim off protruding mortar. Masonry joints must be flush-jointed.</li><li>■ In the case of visible masonry, allow joints to stiffen and smooth with a jointing iron, hose or something similar. Then clean the masonry immediately.</li></ul></li><li>■ <b>Plastering:</b><ul style="list-style-type: none"><li>■ The plaster should be applied in two layers.</li><li>■ Once a sufficient surface strength has been reached, roughen the first layer well and allow to harden for 1 day per mm.</li><li>■ Application thickness at least 10 mm per layer.</li></ul></li><li>■ <b>Joints:</b><ul style="list-style-type: none"><li>■ The mortar should not be introduced into joints with a joint width larger than 4 cm unless adequately pre-wetted crushed stone is inserted in these joints.</li><li>■ Deep and wide joints are to be grouted in two layers.</li><li>■ In special cases, e.g. boulder stonework, only smaller areas of masonry are to be chiselled out and grouted again immediately to prevent eruptions in the masonry areas.</li></ul></li></ul>

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### PROCESSING

- Processing / Working time**
- approx. 2 hours
  - The stated times apply for a temperature of +20°C and relative humidity of 65%.
  - Mortar that has already started to harden must never be thinned down with additional water, remixed or applied.
- Drying / Hardening**
- The fresh masonry work must be protected from unfavourable weather conditions such as very high and very low temperatures, frost, draughts, direct sunlight and driving rain (by covering with a plastic sheet, for example).
  - Tubag HSM restoration mortars harden slower to match the job. Completed sections are therefore to be effectively protected from drying out. Moisture losses must be prevented by spraying with water. If the still fresh mortar is sprayed immediately after processing, care must be taken that no binder is washed out. When properly processed, the mortar has the strength of a conventional mortar of mortar group II after approx. 7 days. This period is extended considerably at low temperatures.
  - When planning the execution times, it should be taken into account that the temperatures on or in the masonry must not drop below +5°C. At times of the year when the possibility of a further drop in temperature must be assumed, work with the product must no longer be carried out.
  - Completed sections are to be effectively protected from cooling down. The temperature must not fall below +5°C even during the post-treatment period. At low temperatures, the hardening of the mortar slows down considerably, meaning that the mortar must be post-treated for a very long time.
- Cleaning the tools**
- Clean all tools and equipment with water immediately after use.

### PACKAGING

- 25 kg/sack

### STORAGE

- Store sacks appropriately and in dry conditions on pallets.

### QUANTITY REQUIRED / YIELD

- consumption: depending on application
- yield: app. 16 l fresh mortar per 25 kg/sack

### TECHNICAL DATA

<b>Binder base</b>	Binder according to patent no. PA 3437680
<b>Product type</b>	Standard masonry mortar
<b>Compressive strength class</b>	M5 according to DIN EN 998-2
<b>Mortar group</b>	NM IIa according to DIN 20000-412
<b>Compressive strength</b>	≥ 5 N/mm <sup>2</sup>
<b>Grain</b>	0 – 2 mm, 0 – 4 mm
<b>Water requirement</b>	approx. 4.0 l per 25 kg/sack
<b>Colour</b>	grey / light beige

All data are average values that were determined under laboratory conditions according to relevant test standards and application tests. Deviations are possible under practical conditions.

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### SAFETY AND DISPOSAL INSTRUCTIONS

<b>Safety</b>	<ul style="list-style-type: none"><li>■ This product produces an alkaline reaction when it comes into contact with moisture/water. Therefore ensure that skin and eyes are protected. If it should come into contact with the skin or eyes, rinse them thoroughly with water. See a doctor immediately if it comes into contact with the eyes.</li><li>■ Further information can be found in the safety data sheet at <a href="http://www.tubag.de">www.tubag.de</a>.</li></ul>
<b>GISCODE</b>	<ul style="list-style-type: none"><li>■ ZP1 (products containing cement, low-chromate)</li></ul>
<b>Disposal</b>	<ul style="list-style-type: none"><li>■ Completely empty and recycle the packaging.</li><li>■ Dispose of the material in accordance with the official regulations.</li><li>■ Dispose of hardened product in accordance with the local regulations. Do not allow to enter the sewer system. Dispose of the hardened product in the same way as concrete waste and slurries. Waste code according to the Ordinance on the European Waste Catalogue depending on the origin: 17 01 01 (concrete) or 10 13 14 (concretewaste and concrete slurries).</li></ul>

### GENERAL INFORMATION

This information sheet provides only general recommendations. Should you have any queries relating to a specific application, please contact our technical sales advisor or call our hotline: +49 541 601-601. Since natural raw materials are used, the values and properties described may vary somewhat. All of the details given are based on our current knowledge and experience and on the assumption that the materials are professionally applied and used for their normal purpose. All of the details are non-binding and do not release users from their duty to undertake their own tests to ensure suitability for the intended application. Due to the effects of different weather, processing and construction site conditions, no guarantee can be given for the general validity of all details. We reserve the right to make changes as a result of further development of the product and applications engineering. The general rules for construction engineering, the valid standards and guidelines, and the technical working guidelines must be observed. The publication of this technical data sheet renders all previous editions of this data sheet void. Please obtain the latest information from our website.