

# UNIVERSAL MORTAR/CONCRETE

<b>UM02</b>	<b>FINE GREAT PUTTY</b>
<b>UM20</b>	<b>UNIVERSAL MORTAR</b>
<b>UM50</b>	<b>UNIVERSAL CONCRETE</b>

## TEST CERTIFICATES AND SUPPORTING DOCUMENTS

- › Concrete replacement system acc. to
  - DIN EN 1504-3 „for the statically and non statically relevant repair“
  - DIN EN 13813 „Cement-based screed for wearing layers“
- › Factory production control acc. to DIN EN 1504-3 and DIN EN 13813
- › Company certification acc. to DIN EN ISO 9001:2015

## PROPERTIES

- › Ready to use cement-based mortar
- › Only requires mixing with water
- › Processable by spraying and hand application
- › Soft plastic processing consistency and highly suitable for application to vertical and overhead surfaces
- › Excellent processing properties with the MAWO-PAGEL<sup>®</sup> dense-phase wet spraying process (**UM02**, **UM20**)
- › Also available plastic or steel fibre
- › Microsilica-modified high carbonation resistance - reduces the ingressing of CO<sub>2</sub> and moist
- › Active corrosion protection of the reinforcement
- › Non-combustible
- › Largely oil and water impermeable

## SYSTEM COMPONENTS

<b>RM02</b>	Corrosion protection and bonding layer
<b>UM02</b>	Fine grain putty
<b>UM20</b>	Universal mortar
<b>UM50</b>	Universal concrete

## AREAS OF APPLICATION

- › Repair of concrete, reinforced concrete and prestressed concrete structures
- › Repair of facade, wall, floor and ceiling surfaces
- › Repairing, patching and reprofiling of holes, edges and cracks

### MOISTURE CLASSES BASED ON CONCRETE CORROSION FROM ALKALI-SILICIC ACID REACTIONS

Moisture class	WO	WF	WA	WS
<b>UM</b>	•	•	•	•

The aggregates in PAGEL<sup>®</sup>'s products comply with the requirements of alkali sensitivity class E1 from non-hazardous sources specified under DIN EN 12620.

### EXPOSURE CLASS ALLOCATION ACC. TO: DIN EN 206-1 / DIN 1045-2

	XO	XC	XD	XS	XF	XA*	XM
	1 2 3 4	1 2 3	1 2 3	1 2 3	1 2 3 4	1 2 3**	1 2 3
<b>UM02</b>	•	• • • • •	• •	• • •	•		
<b>UM20</b>	•	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •	•
<b>UM50</b>	•	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •	•

**UM20** and **UM50**:

\* Having sulfate attack up to 600 mg/l

\*\* With protective measures according to DIN 1045-2

## TECHNICAL DATA

TYPE			UM02	UM20	UM50
Grain size		mm	0-0.2	0-2.0	0-5.0
Amount of water	max.	%	16	13	13
Processing time approx.	20 °C	min	30	30	30
Consumption approx.		kg/(m <sup>2</sup> · mm)	1.8	2.0	2.0
Fresh mortar raw density approx.		kg/m <sup>3</sup>	2,100	2,200	2,200
Coating thickness		mm	0.5-10	6-80	20-200
Compressive strength*	1 d	N/mm <sup>2</sup>	≥ 15	≥ 20	≥ 20
	7 d	N/mm <sup>2</sup>	≥ 20	≥ 35	≥ 35
	28 d	N/mm <sup>2</sup>	≥ 30	≥ 45	≥ 45
Bending tensile strength*	1 d	N/mm <sup>2</sup>	≥ 2	≥ 3	n. d.
	7 d	N/mm <sup>2</sup>	≥ 3	≥ 4.5	n. d.
	28 d	N/mm <sup>2</sup>	≥ 4	≥ 6	n. d.
Adhesive pull strength	7 d	N/mm <sup>2</sup>	≥ 1.5	≥ 2	≥ 2
Modulus of elasticity	28 d	N/mm <sup>2</sup>	n. d.	≥ 20,000	≥ 20,000
Classification according to DIN EN 1504-3			R3	R4	R4

\* Testing of bending tensile and compressive strengths in accordance with DIN EN 196-1;

Testing of concrete compressive strength in accordance with DIN EN 12390-3

n. d. = not determined

**Note:** All fresh and solid mortars are tested at 20 °C ± 2 °C. Higher or lower temperatures result in deviating properties of fresh respectively solid mortars and test results.

Depending on the temperature, the consistency can be adapted with a slight reduction of the mixing water.

**Storage:** 12 months. Cool, dry, free from frost. Unopened in its original container.

**Delivery form:** 25-kg bag, Euro pallet 1,000 kg

**Hazard class:** Non-hazardous material, observe information on packaging.

**GISCODE:** ZP1

**Types of cement:** At the customer's request, other types of cement may be used for the product, however, this will change the technical properties.

Should you have any questions, please contact our customer service.

## PROCESSING

### SUBSTRATE PREPARATION:

Remove loose and unsound material such as cement slurry and dirt etc. using suitable methods, e.g. shot-blasting or similar until the underlying solid grain structure has been exposed. A sufficient average tear strength ( $\geq 1.5 \text{ N/mm}^2$ , KEW  $\geq 1.0 \text{ N/mm}^2$ ) must be ensured.

### Prewetting:

Prewet the concrete substrate to capillary saturation for approx. 6-24 hours.

### Reinforced concrete:

The grade of surface preparation of reinforcement as well as other metallic parts is based on the requirements of the current applicable regulations and must be ensured before the application.

### Non-iron metals:

Cement and cement-bound building materials may cause non-iron-metals in the transitional area of the contact surface (e.g. aluminium, copper, zinc) to loosen. Please contact us for technical advice.

### MIXING:

The dry mortar is supplied ready to use and only needs to be mixed with water. Fill the specified amount of water apart from a residual amount into a clean and suitable mixing device (e.g. compulsory mixer).

Add the dry mortar and mix for at least 3 minutes. Add the remaining water and mix for at least another 2 minutes until it forms a homogeneous mass.

### Mixing water:

Drinking water quality

### Temperature range:

+5 °C to +35 °C

Low temperatures and cold mixing water reduce strength development, require intensive forced mixing and reduce flowability. Higher temperatures accelerate strength development and can also reduce the flowability.

### APPLICATION:

#### Corrosion protection:

If necessary, apply two coats of **RM02** corrosion protection and bonding bridge to exposed and prepared reinforcement. Observe the technical data sheet.

#### Putty: **UM02**

If necessary, close existing cavities and pores by brushing or scraping.

Apply **UM02** Fine Grain Putty fresh-in-fresh in one step using suitable tools. Smooth after a suitable waiting time. If spray application is intended, request separate technical advice if necessary.

#### Manual application: **UM20** and **UM50**

A mineral bonding bridge made of **UM20** must be brushed onto the pre-wetted, surface-dry matt damp substrate with a brush or broom without gaps and pore deep. The subsequent coating must be applied fresh-in-fresh.

We recommend **EH1** epoxy resin primer as a bonding bridge for substrates with different absorbencies. Please refer to the technical data sheet. Apply **UM** universal mortar fresh-in-fresh with suitable tools on epoxy bonding bridge. Compact, spread and smooth the material afterwards.

#### Mechanical application: **UM20**

Processing of the **UM** Universal Mortar using the MAWO-PAGEL<sup>®</sup> dense phase wet spraying method. The spraying of the mortar can be carried out with conventional screw feed pumps with a variable speeddrive suitable for this application. Hold the nozzle preferably at a right angle with a distance of approx. 50 cm to the area to be coated. The first layer of spraymortar is sprayed on with a high compressed air flow to support the bonding layer. The application of the additional spray layers is carried out with a conveying speed correspondingly adapted to the position of the respective structural component and adapted compressed air support. The adjustment of the conveying speed and air output should be carried out by specialised personnel depending on the actual conditions. The post processing and the smoothing of the surfaces can be carried out immediately after the completion of the spray works.

#### Air compressor:

at least 5 m<sup>3</sup>/min, 5 bar

#### FOLLOW-UP TREATMENT:

Exposed grout areas must be protected from premature water evaporation (from wind, draughts, direct exposure to sun, etc.) immediately on completion of the work for a period of 3-5 days.

#### Suitable curing methods:

Water spray, foil covers with jute sheets, thermofolios or moisture-retaining covering sheets, **O1** Evaporation protection.

The technical data sheet must be observed when using **O1** Evaporation protection.

