



## WOOD WOOL CONSTRUCTION PANELS

### CEWOOD PANEL PLASTERING

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## 1. CEWOOD PANELS

CEWOOD construction panels are a natural, nature and human health friendly, easy handiness, excellent sound absorption, good thermal insulation and much better thermal inertia material produced in Latvia. Construction panels are made from high quality wood wool and grey cement and thanks to the natural materials, the panels perfectly provide the pleasant microclimate characteristic of wooden constructions in the premises.

### Application

CEWOOD construction panels are materials that do not change their properties during lifetime, they have the widest application in different building constructions:

- In demarcated constructions of buildings – walls, partitions, coverings, roof construction, etc.
- In building insulation – especially in wooden frame buildings, renovation of old buildings, increasing of building thermal inertia.
- Sound insulation solutions and permanent shuttering in monolith building.

### CEWOOD construction panels



**Table 1. CEWOOD construction panels - 3,0 mm wood wool, grey cement**

Thickness	mm	25	50	75	100
Size	mm		2400x600		
Dimensional tolerance (EN 13168)			L3; W1; T2; S2; P2		
Weight	kg/m <sup>2</sup>	11,5	19,5	28,0	36,0
Density	kg/m <sup>3</sup>	460	390	370	360

Thermal resistance (Ro)	m <sup>2</sup> ·K/W	0,35	0,75	1,10	1,50
Thermal conductivity (λD)	W/m·K		0,066		
Specific heat (c)	J/(kg·K)		2100		
Bend (EN 12089)	kPa	≥ 1300	≥ 700	≥ 500	≥ 300
Compression (EN 826)	kPa	≥ 300	≥ 200	≥ 150	≥ 100
Chloride content (EN 13168)	%		≤ 0,15		
Reaction to fire (EN 13501-1:2007)			B-s1, d0		

CEWOOD panels are placed on 2400x600 mm wooden pallets, with cardboard on top and corners, plastic film around pallets.

## 2. PLASTER

Traditional mineral plaster is used for CEWOOD panel plastering, using lime-sand (P I) mortar, cement-lime-sand (P II) mortar, cement-sand (P III) mortar and gypsum-sand (P IV) mortar, as well as reinforcement mortar. Mortar quality requirements are established in the standard EN 998-1. Plaster mortar is characterised by compressive strength, water absorbability, thermal conductivity, etc.

The standard EN 998-1 establishes the following classifications of plaster mortar.

**Table 2.**

Compressive strength class	N/mm <sup>2</sup>
CS I	0,4–2,5
CS II	1,5–5,0
CS III	3,5–7,5
Cs IV	≥ 6,0
Capillary water absorbability	C Kg/(m <sup>2</sup> /min)
W0	Not standardised
W1	C ≤ 0,40
W2	C ≤ 0,20
Thermal conductivity	λ W/(m*K)
T1	≤ 0,1
T2	≤ 0,2

For multi-layered plaster, the requirements of mortar are defined in the building project. We recommend using mortar manufacturer's recommendations. In the following sections, mortars suitable for Latvian conditions are described; these should be used for CEWOOD panel plastering. The mortar compositions are dosed and prepared at the building site according to instructions given in Appendix 1.

Owing to the surface structure, the CEWOOD panels establish good adhesion with the traditional cement-lime-sand plaster. Mineral plaster in comparison with thin plasters:

- features higher mechanical strength,
- increases fire safety of the building.

The type of plaster is determined by the building project. The choice of the plaster type depends on a number of factors (aesthetics, construction physics, etc.), as well as on the panel fixation structure. The right choice of plaster to fit the frame structure ensures a high-quality and long-serving plaster surface.

### 3. FACADE PLASTER

Facade plaster is formed of several layers.

- Massive mineral plaster (type A4), consists of the levelling or priming layer (P II, P III), base layer (P I, P II), reinforcement layer and finishing layer (P I);
- Mineral plaster (type A3), consists of the priming layer (P II, P III), the base layer with integrated reinforcement (P I, P II) and the finishing layer (P I);
- Thin plaster (type AP3), consists of a reinforced levelling layer, a reinforced base layer and the finishing layer (P I).

#### 3.1. PREPARATORY WORKS

When plastering CEWOOD panel surfaces, it must be secured that the plaster structure must be formed on a solid base.

Before applying the plaster, make sure that surface has been prepared properly:

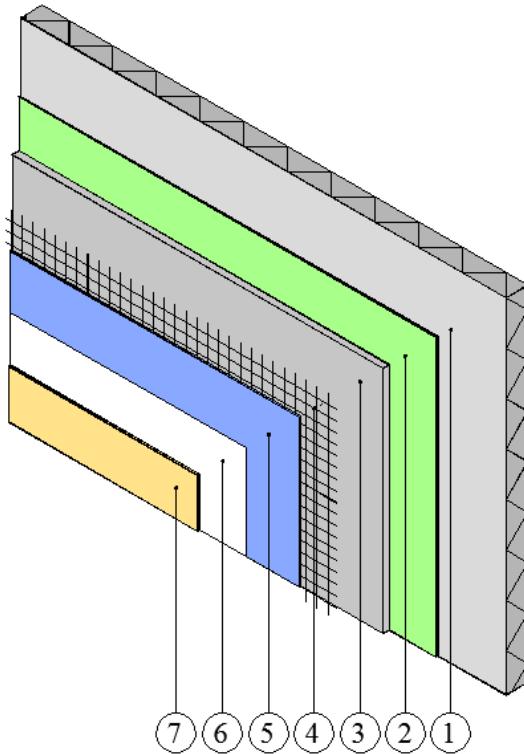
- CEWOOD panels are attached with fitting wooden screws of the required amount and placement;
- the frame construction is stable;
- the placement of panels along the window and door openings and in the corners of buildings meets the panel installation requirements.

#### 3.2. TYPES OF FACADE PLASTER

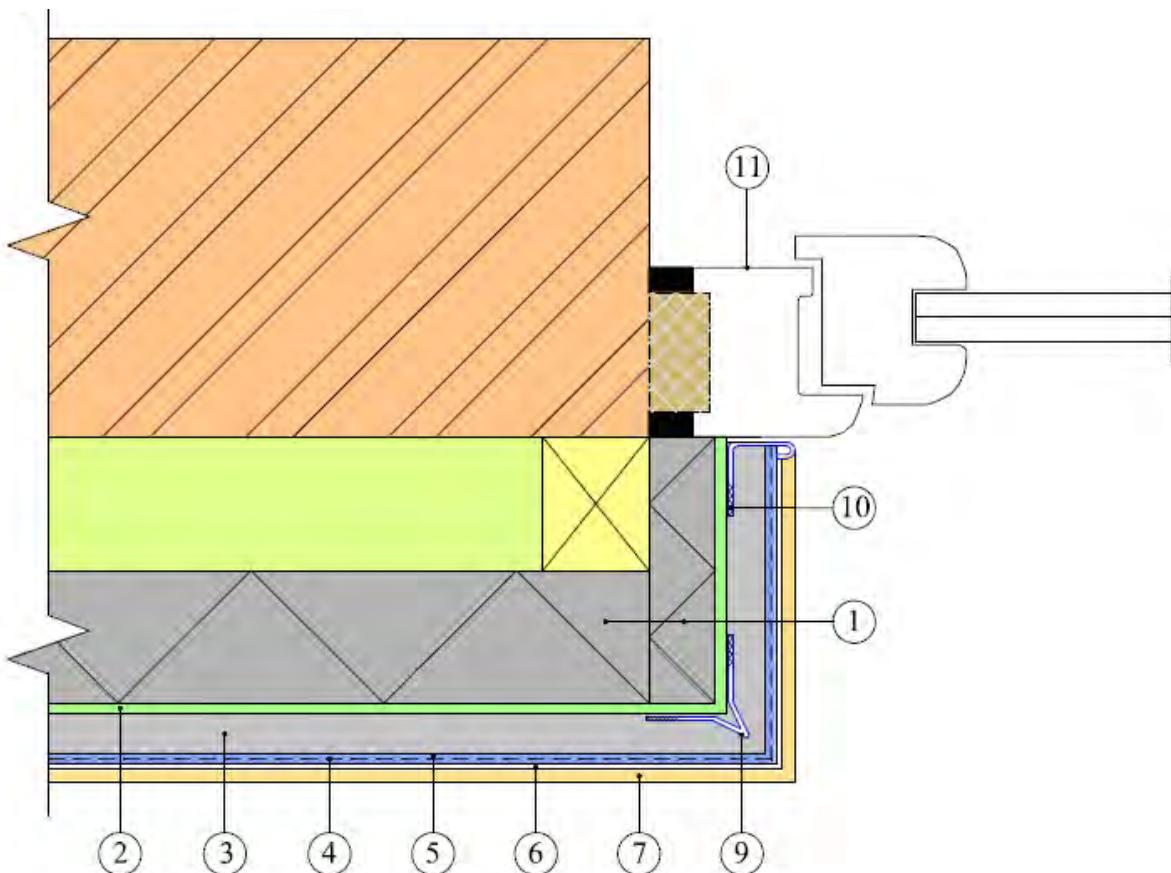
The type of plaster is determined by the building project. Several systems are employed.

##### **Massive mineral plaster, consists of 4 layers (type A4)**

- Levelling layer approx. 3-4 mm. Mortar of type P II or P III and strength class CS III un CS II must be used (compression strength  $\geq 3.5 \text{ N/mm}^2$ ), which is used to level out the CEWOOD panel surface. It is applied immediately after panel installation. Curing time 3-4 days.
- The base layer – cement-lime-sand mortar or lime-sand mortar, strength class CS II or CS I and thickness 15 mm. Curing time 14 days.
- Reinforcement layer – glass fibre mesh, embedded with reinforcement mortar 3-4 mm. The reinforcement layer is formed after the base layer has cured, i.e. 6-7 days after applying the base layer.
- Finishing layer – mortar of type PI and strength class CSI (decorative plaster), after priming the surface first.

**3.1 Fig. Massive mineral plaster A4**

1. CEWOOD panel
2. Levelling layer 3-4 mm
3. Plaster base layer - 15 mm
4. Glass fibre mesh
5. Reinforcement mortar 3-4 mm (embedded glass fibre mesh)
6. Priming
7. Finishing layer

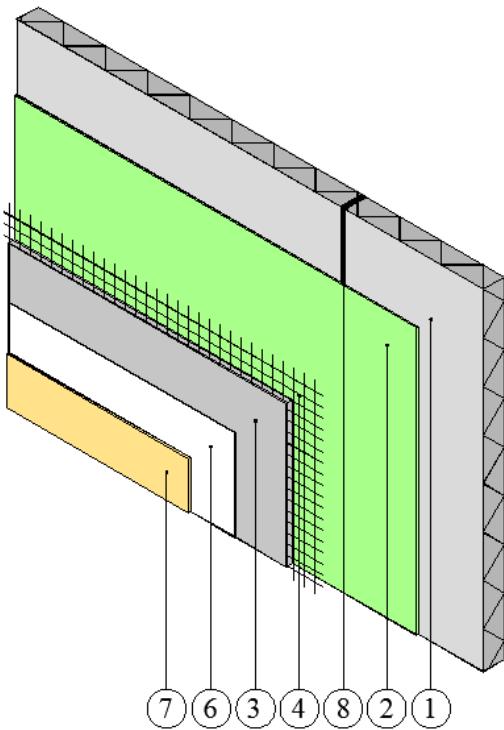


**3.2 Fig. Massive mineral plaster for finishing of sides of window openings.**

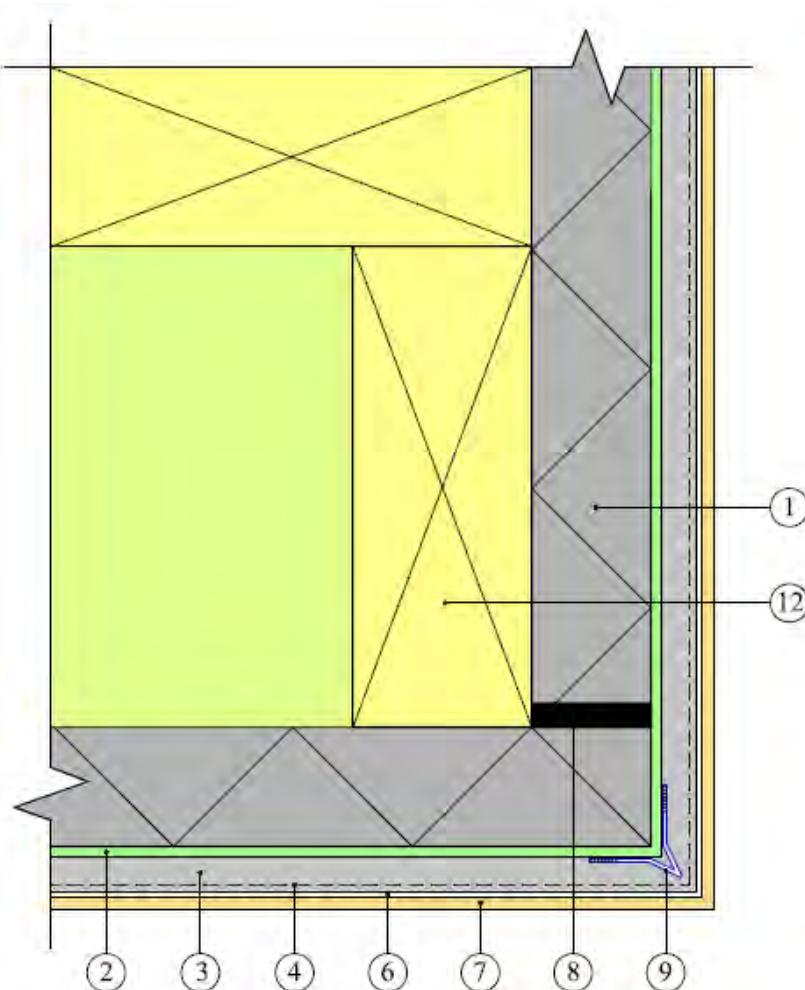
1. CEWOOD panel
2. Levelling layer 3-4 mm
3. Plaster base layer
4. Glass fibre mesh
5. Reinforcement mortar 3-4 mm (embedded glass fibre mesh)
6. Priming
7. Finishing layer
9. Plaster corner profile
10. Plaster finish profile
11. Window extension profile

#### **Mineral plaster, consists of 3 layers (type A3)**

- Levelling layer, mortar strength class CS III and CS II (compression strength  $\geq 3.5 \text{ N/mm}^2$ ) - 3-4 mm.
- The base layer — cement-lime-sand mortar, strength class CS II or CS I, thickness 15 mm. The reinforcement glass fibre mesh is embedded into the upper third of the base layer, in damp mortar; the reinforcement mesh must be "rubbed" into the base layer, before it has started hardening.
- Finishing layer – mortar CS I (decorative plasters), after priming the surface first.

**4.1 Fig. Mineral plaster A3**

1. CEWOOD panel
2. Levelling mortar layer 3-4 mm
3. Plaster base layer (embedded glass fibre mesh) - 15 mm
4. Glass fibre mesh
6. Priming
7. Finishing layer
8. Adhesive mortar to connect CEWOOD panels

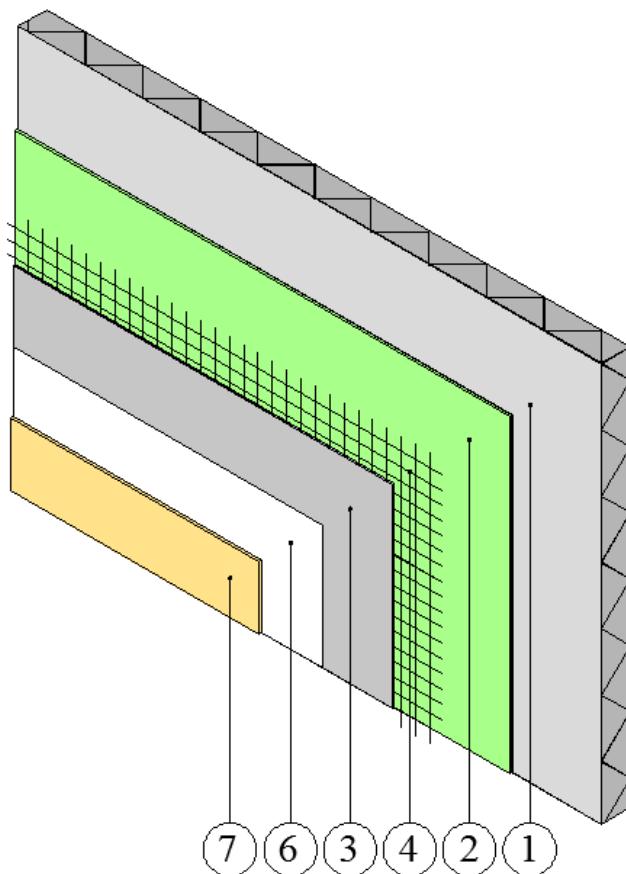


#### 4.2 Mineral plaster A3, corner finish

1. CEWOOD panel
2. Levelling mortar layer 3-4 mm
3. Plaster base layer (embedded glass fibre mesh) - 15 mm
4. Glass fibre mesh
6. Priming
7. Finishing layer
8. Adhesive mortar to connect CEWOOD panels
9. Plaster corner profile
12. Wooden upright

#### Thin plaster (type AP3)

- Levelling layer – analogous to A4 or A3 type plasters, or by using reinforcement mortar – 3-4 mm. Minimum curing time 3-4 days.
- Base layer/reinforcement layer – glass fibre mesh embedded in reinforcement mortar 3 mm. On surfaces, where additional strength is necessary, another layer of glass fibre mesh reinforcement is formed, by embedding an extra mesh in a 2 mm thick layer of reinforcement mortar. The mortar must be applied and the reinforcement embedded in it according to the manufacturer's instructions.
- Finishing layer – mortar CS I (decorative plaster), after priming the surface first.



**Fig. 5 Thin plaster**

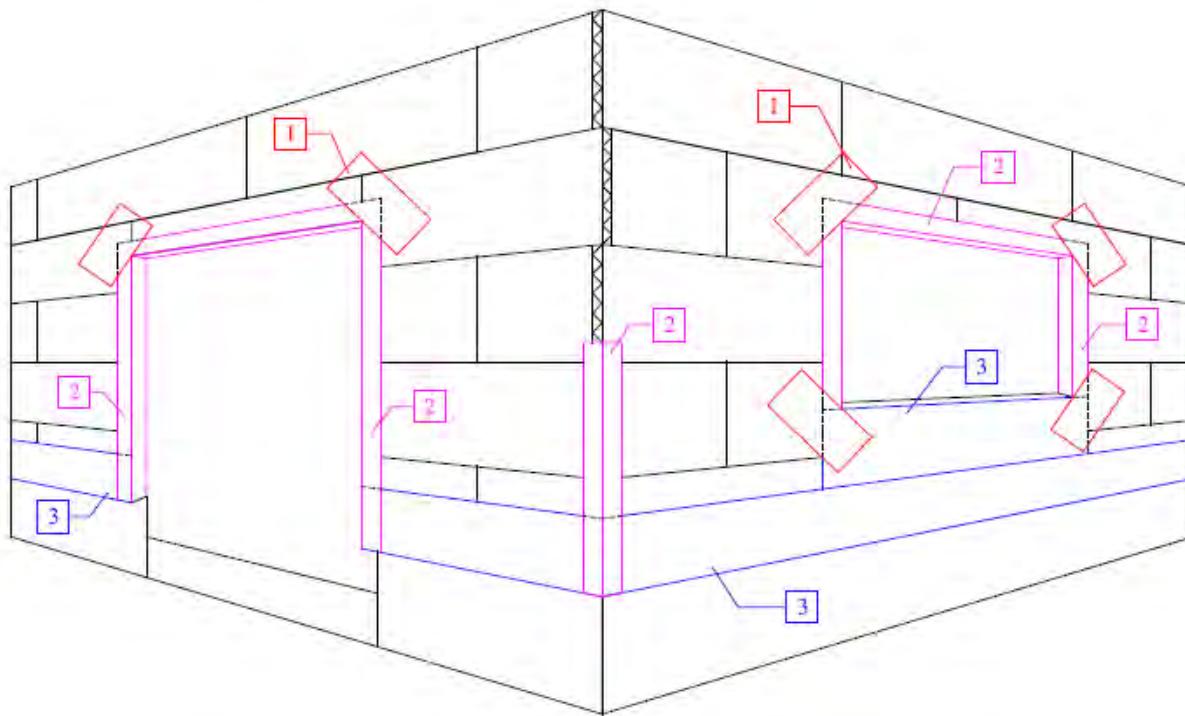
1. CEWOOD panel
2. Levelling layer 3-4 mm
3. Base layer (reinforcement layer), reinforcement mortar with embedded glass fibre mesh 3-5 mm
4. Glass fibre mesh
6. Priming
7. Finishing layer

#### Remarks

- a) in hot weather when water evaporates quickly, A3 type plaster must be formed in small areas so that the mesh can be duly embedded in the damp mass;
- b) in type A3 plaster, the base layer is analogously applied with light mortars ( $< 1300 \text{ kg/m}^3$ ) in line with mortar manufacturer's instructions;
- c) plinth, window extension, corners, amortisation joints and other profiles must be attached before applying the base layer;
- d) plaster manufacturers offer specific products that can be used for the finishing of CEWOOD panels and determine the application technology of these products.

### 3.3. REINFORCEMENT OF FACADE PLASTER

The reinforcement increases mechanical strength of plastering, prevents formation of cracks. Reinforcement is formed, by embedding metal or glass fibre meshes in the plaster mass, as well as by adding artificial (e.g., propylene) fibre to the plaster composition in the production process. In the parts of a building where additional stress forms, extra reinforcement should be embedded.



**Fig. 6. Layout of extra reinforcement**

1. Diagonal reinforcement 300x600 mm
2. Corner reinforcement 150x150 mm
3. Band type reinforcement width 400 mm

### 4. INTERIOR PLASTER

Before applying the plaster, the panel fastening must be evaluated. If the panels are fastened onto profiles or a lathing frame, glass fibre mesh must be embedded in the plaster. If panels are connected in butt-jointed seams with mortar, then the plaster reinforcement with glass fibre mesh is not necessary.

The composition of mortar for interior plastering is chosen depending on the usage needs. The levelling layer is made by cement-sand mortar plaster in the premises with higher humidity.

The plaster reinforcement glass fibre mesh is embedded according to the plaster manufacturer's recommendations – in mineral mortars, by rubbing it into the first plaster layer, followed by "damp on damp" finishing layer.

## 5. TYPES OF PLASTER OFFERED BY PLASTER MANUFACTURERS

### 5.1. SAKRET SYSTEM SOLUTIONS

#### Facade plaster

##### 1) Massive mineral plaster A4

###### Plaster structure

- **Panel surface levelling (adhesion) layer of panel surfaces** – mortar PM Super, SAKRET CLP+ - layer thickness 3 mm. Min. curing time 3 days.
- **Base layer** – mortar CLP Plus – layer thickness – 15 mm, curing time 14 days;
- **Reinforcement layer** on cured based layer – reinforcement mortar BAK 3-4 mm with embedded glass fibre mesh SSA-1363 160 g/m<sup>2</sup>, curing time 4 days;
- **Finishing layer** of SAKRET finishing compositions SMS, SIP, SBP, MPR-E. Before applying decorative plaster, the surface is primed with a primer SAKRET PG.

##### 2) Mineral plaster A3

###### Plaster structure

- **Panel surface levelling (adhesion) layer of panel surfaces** – mortar PM Super, SAKRET CLP+, SAKRET BAK – layer thickness 3 mm. Min. curing time 3 days.
- **Base layer:**
  - a) On CEWOOD panels, onto which the levelling layer has been applied by galvanised steel mesh 20\*20 mm Ø 1±0.1 mm (rabica) is installed using fasteners that are equipped with galvanised mesh locks. On the mesh, using mechanical application method, lime mortar HML 1 or historical plastering HM 10 or HM 12 is applied in a thickness of 10-12 mm;
  - or
  - b) After applying the levelling layer, lime mortar HML 1 or historical plastering HM 10 or HM 12 is applied on CEWOOD panels in a thickness of 10-12 mm, by embedding a glass fibre mesh of 1111-340 (100) 340 g/m<sup>2</sup> in the top layer. Meshes are joined up with at least 10 cm overlap;
- **levelling layer of the base layer** – after 24 hours, the levelling layer of plastering is applied on the base layer plaster – with lime mortar HML 1 or historical plastering HM 10 or HM 12 in a thickness of 5-12 mm, by levelling out the plastering with a profile ruler, smoothing out with a trapezoid rules and refining with a plastering float, min. curing time – 14 days;

###### Finishing layer:

- a) **Painting** – SAKRET facade paints KS, SKF, FM applied in 2 layers, after priming the surface with suitable primers SAKRET FM-G, Sakret KS-P.
- b) **Decorative plasters** – SAKRET decorative plasters SMS, SIP, SBP, MPR-E. Before applying decorative plaster, the surface is primed with a primer SAKRET PG.

##### 3) Light plaster AV3

###### Plaster structure

- **Panel surface levelling (adhesion) layer of panel surfaces** – mortar SAKRET PM Super, SAKRET CLP+, SAKRET BAK – layer thickness 3 mm. Min. curing time 3 days.

- **Base layer** – light lime-cement plaster SAKRET MAP-MFF is applied on CEWOOD panels, layer thickness 10–15 mm, a glass fibre mesh is embedded in its surface layer 1111-340 (100) 340 g/m<sup>2</sup>. Meshes are joined up with at least 10 cm overlap.
- **Levelling layer of plastering** – after 24 hours, the levelling layer of plastering – SAKRET MAP-MFF – is applied on the base layer plaster in a thickness of 5–10 mm, by levelling out the plastering with a profile ruler, smoothing out with a trapezoid rules and refining with a plastering float, min. curing time – 14 days.
- **Finishing layer:**
  - a) **Painting** – SAKRET facade paints KS, SKF, FM applied in 2 layers, after priming the surface with suitable primers SAKRET FM-G, SAKRET KS-P.
  - b) **Decorative plasters** – SAKRET decorative plasters SMS, SIP, SBP, MPR-E. Before applying decorative plasters, the surface is primed with a primer SAKRET PG.

## 4) Thin plaster AP3

### Plaster structure

**Panel surface levelling (adhesion) layer of panel surfaces** – SAKRET PM Super, SAKRET CLP+, SAKRET BAK – layer thickness 3 mm. Min. curing time 3 days.

- **Base layer/reinforcement layer** – reinforcement mortar SAKRET BAK, with embedded two layers of glass fibre mesh SSA 1363 160 g/m<sup>2</sup> – total thickness of layers – 6–8 mm. The second reinforcement layer is embedded after the first has cured – min. after 3–4 days. Meshes are joined up with at least 10 cm overlap.
- **Finishing layer** – SAKRET decorative plasters SMS, SIP, SBP, MPR-E. Before applying decorative plasters, the surface is primed with a primer SAKRET PG.

## 5) Interior plastering

All mortar compositions designed for facade plastering are also suitable for interior finishing. Plaster structure is made according to SAKRET instructions, upon consulting with specialists of this company as needed.

## 5.2. BAUMIT – BALTIKUM SYSTEM SOLUTIONS

### 1) Mineral plaster A4

- **Panel surface levelling layer** – BAUMIT Haftmörtel or BAUMIT VorSpritzer – 3–4 mm.
- **Base layer** – BAUMIT MPA 35 – 15 mm.
- **Reinforcement layer** – BAUMIT Textilglas Giter, adhesion with BAUMIT StarContact Forte or BAUMIT Supra Fix 3–4 mm.
- **Finishing layer** – BAUMIT Nanopor Top, BAUMIT Silikon Top, BAUMIT Silikat Top, BAUMIT Stellapor Top. Before applying the decorative plaster, the surface is primed with BAUMIT Uni Primer.

### 2) Thin plaster AP3

- **Panel surface levelling layer** – analogous to plastering A4.
- **Base layer/reinforcement layer** – BAUMIT Haftmörtel or BAUMIT Supra Fix, BAUMIT StarContact Forte with embedded glass fibre mesh BAUMIT Textilglas Giter. Total thickness 6–8 mm.
- **Finishing layer** – analogous to plastering A4.

### 3) Interior plastering

Lime-cement-sand mortar MPI 25, MPA 35 is used for mineral plasters.

Thin plastering is made by applying reinforcement mortar BAUMIT MC 55/Star Tex, in which glass fibre mesh is embedded as needed. The finishing layer is made of BAUMIT Kalk Putz, Divina Kalk Spachtel, BAUMIT Glema I, Glema I plus, Divina Bio Kalk.

## 5.3. KNAUF

### Interior plastering

Gypsum mortar compositions MP 75, Rotband. Observe manufacturer's recommendations.

### Appendix

#### Recommended types of mortar for wood wool panel plastering.

#### Recommendations of the Association of German Wood Wool Manufacturers.

Structure	Requirements	Levelling layer	Base layer	Finishing layer
Facade	No special requirements	PII, PIII	PI, PII	PI
	Water resistant	PIII	PI, PII	PI, PII
	Increased strength	PIII	PII	PII
	Plinth, exterior walls of basements	PIII	PIII	PIII
Interior walls	Low requirements		PI, PII, PIV	PI, PIV
	Standard requirements		PI, PII, PIII, PIV	PI, PII, PIII, PIV
	Increased humidity conditions		PII, PIII	PI, PII, PIII
Interior ceiling	Standard requirements		PI, PII, PIV	PI, PII, PIV
	Increased humidity conditions		PII, PIII	PI, PII, PIII

#### Plaster mortar compositions in parts of volume (DIN 18550)

Denomination of mortar group	Construction lime	Cement	Sand
PI	1	-	3.5 - 4
PII	1,5 - 2	1	9 - 11
PIII	-	1	3 - 4

Leichtbauplatten fibel. Bundesverband der Leichtbauplattenindustrie e.V. München

DIN 1102 Holzwolle – Leichtbauplatten. Verarbeitung