External Wall / Facade

Technical Information - Tektalan-E-21 External Wall Insulation System

Heraklith® Dämmsysteme

Heraklith® Heraflax® Heralan®

Thermal Insulation system, Plastered

Tektalan-E-21

The plaster and paint is not all that counts in facades. With the Tektalan-E-21 façade insulation system, the external wall assumes the function of a heat accumulator and thus provides increased living comfort and coziness. In contrast to other insulation systems in which the sound insulation of the external wall often deteriorates, the Tektalan façade insulation system additionally increases living quality through considerably improved sound insulation. Furthermore, the vapor diffusing openness of the system makes it possible for the masonry to quickly dry to the outside. Facade insulation with Tektalan-E-21 is not only for new constructions, but it is also well suited for reconstructing old houses, since the insulating boards can be applied directly to the existing plaster.
Due to the thick plaster construction and the stable wood-wool covering layer, this system is extremely impact resistant.

Scope of Applications:
For insulating facades in the Tektalan-E-21 insulation system or with mineral plaster made at the construction site.

System Advantages:
- hail, woodpecker, and impact resistant due to wood-wool covering layer and thick plaster system.
- outstanding sound protection
- very good fire protection
- thermal insulation made to measure
- open vapor diffusion insulation system
- fastening only by doweling

System Components

	Product	Thickness/Dimension mm	Requierements for 1 m² installt surface *
Insulation	Tektalan-E-21	50, 75, 100, 125, 150, 175, 200	1,00 m²
Reveal board	Tektalan-E-21	35	as required
Dowels	Heraklith ”E” Dowel	125, 145, 185, 205, 225, 245, 285	5 pieces **
	Heraklith ”P” Spezial Dowel	,95 115, 135, 155, 175, 215	5 pieces **
Accessories	Base profile	50, 75, 100, 125	as requiered
	metal wire meshGlass fibre fabric	Standard	1,10 m²

* without cutting or other losses ** observe dowel statics

Scope of Applications

Tektalan-E-21

Magnesite-bound three layer wood board according ÖNORM EN 13168
Product type: WW-C/3
Facade insulation board made of non-combustible Heralan stone wool core and laminated both sides with **magnesite-bound** Heraklith surface layers, thickness approx. 5 mm
Formats: 1000 x 600 mm, 2000 x 600 mm

Formats mm	Weight approx. kg/m²	Thermal resistance R_D m²K/W	Compressive strength σ_m kPa	Delamination resistance σ_{mt} kPa	Diffusion restistance value μ	Fire behaviour ÖNORM EN 13501-1 (B-s1, d0)
50	11,5	1,00	≥ 50	≥ 20	2	B
75	14,4	1,55	≥ 50	≥ 20	2	B
100	17,3	2,10	≥ 50	≥ 20	1	B
125	20,1	2,70	≥ 50	≥ 20	1	B
150	22,7	3,25	≥ 50	≥ 20	1	B
For further information please take notzice of the present product data sheet, available **www.heraklith.com)**						

Heraklith "E" Dowel

Drill hole - 8 mm Dia.
The Heraklith-E dowel comprises an expanding plastic plug with integral buttress threaded screw (steel pin).
Do not use in gas concrete.
Requirement: minimum of 5pcs. per square metre.

Dowel length:

Dimensions mm	For board thickness mm
125	50
145	75
185	100
205	125
225	150

On request:
Heraklith "P" Special Dowel with integrated clip for fixing metal wire mesh.

Heraklith Fast set cement

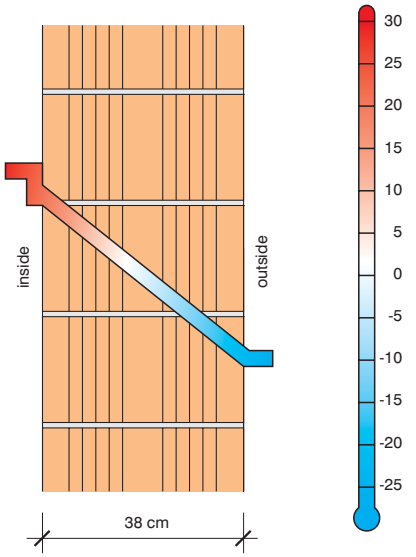
A cement-based waterproof adhesive, characterised by its rapid setting time.
Stirred with an agitator whilst water is added and used to cement cut board strips or to cement Heraklith reveal strips and render profile sections. The adhesive cement must not be used at temperatures below +5°C or on cold substrates.
Bag content: 25 kg

Technical values

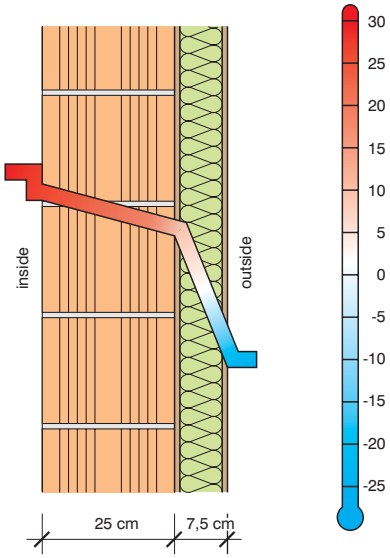
Generally

Brickwork becomes to a heat accumulator

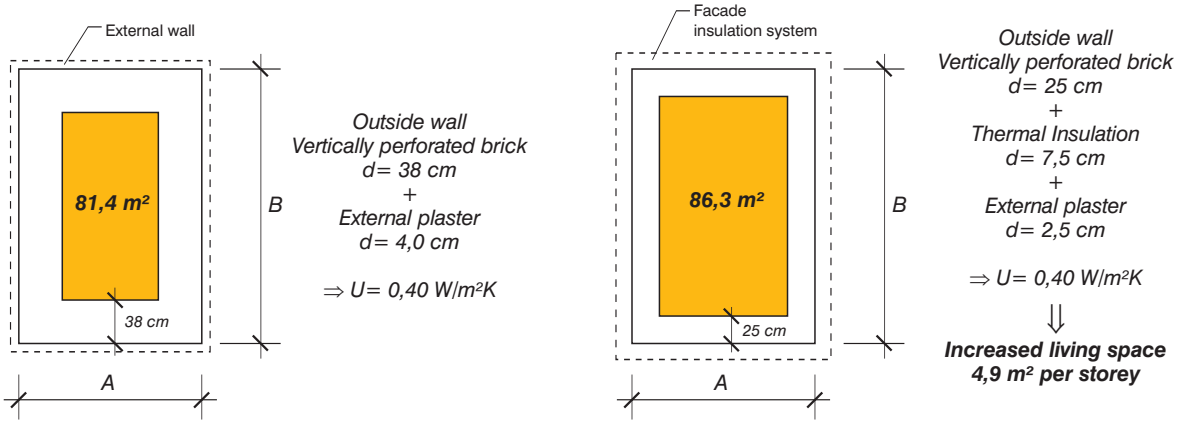
Solid brickwork:
A high proportion of any solid external brick wall is made up of joints. Load bearing components such as lintels and columns allow heat transfer. Shown graphically, the temperature in winter is below zero within a large part of the wall. This results in thermal stress, allowing very little heat to be stored.



Brickwork insulated with E-21
The temperature graph shows that all the brickworks is above zero. Tektalan-E-21 Insulation gives the brickwork the capacity to store a high amount of heat; it regulates the temperature and provides a comfortable interior. The insulation layer is virtually jointless. It can diffuse and "breathe", allowing the necessary exchange of humidity in both directions.



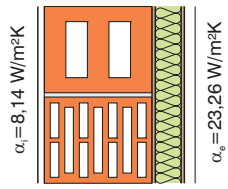
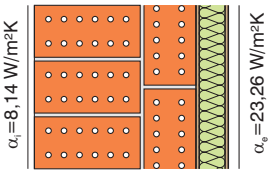
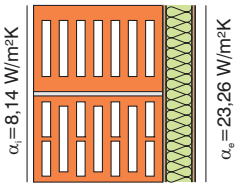
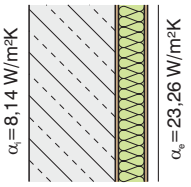
Increased living space due to thinner walls with the same U-value



Information about effective living space in m² for same building shell dimensions (e.g.: building shell A x B = 8.0 x 12.0m)

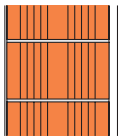
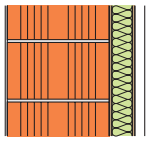
Technical values - U-values

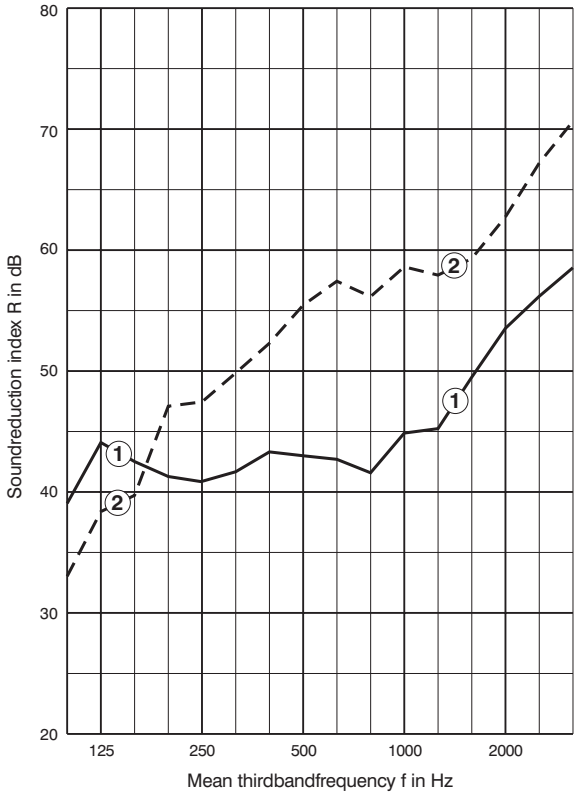
U-values

Sketch/section	Wall build up (from internal side to outside)	Insulation thickness mm	thermal transmission coeffizent U W/m²K	Test certificate Nr.
external wall  	Internal plaster Hollow block or concrete hollow block wall d= 25 cm λ= 0,40 W/mK Tektalan-E-21 Thick render layer 25 mm	without Tektalan-E-21	1,23	4W1
		50	0,54	4W1
		75	0,41	4W1
		100	0,33	4W1
		125	0,28	4W1
		150	0,24	4W1
		175	0,21	4W1
		200	0,19	4W1
external wall  	Internal plaster Solid brick wall d= 38 cm λ= 0,76 W/mK Tektalan-E-21 Thick render layer 25 mm	without Tektalan-E-21	1,46	4W2
		50	0,57	4W2
		75	0,44	4W2
		100	0,35	4W2
		125	0,29	4W2
		150	0,25	4W2
		175	0,22	4W2
		200	0,19	4W2
external wall  	Internal plaster Porous vertical coring brick or light concrete hollow block d= 30 cm λ= 0,30 W/mK Tektalan-E-21 Thick render layer 25 mm	without Tektalan-E-21	0,84	4W3
		50	0,45	4W3
		75	0,36	4W3
		100	0,30	4W3
		125	0,25	4W3
		150	0,22	4W3
		175	0,19	4W3
		200	0,18	4W3
external wall  	Reinforced concrete d= 20 cm λ= 2,30 W/mK Tektalan-E-21 Thick render layer 25 mm	without Tektalan-E-21	3,96	4W4
		50	0,77	4W4
		75	0,54	4W4
		100	0,41	4W4
		125	0,33	4W4
		150	0,28	4W4
		175	0,24	4W4
		200	0,21	4W4
U-value calculation including heat transfer coefficients ($\alpha_i + \alpha_e$)				

Technical values - R_w-values

Sound reduction index

Curve No.	Sketch/section	Wall build up (from internal side to outside)
①		Internal plaster d= 0,6 cm Hollow block d= 30 cm Lime cement plaster d= 2,5 cm
weighted sound reduction index R_w= 46 dB		
Certificate No.: TGM - 5347/WS		
②		Internal plaster d= 0,6 cm Hollow block d= 30 cm Tektalan-E-21 d= 7,5 cmThick render layer d= 2,9 cm
weighted sound reduction index R_w= 57 dB		
Certificate No.: TGM - 5347/WS		
Improvement ΔR_w= +11 dB		

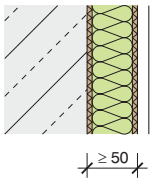
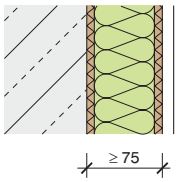


Fire protection

Based on fire tests that were conducted, it was established that Tektalan façade insulation boards with a thickness of 7.5 cm and plastered on one side, were able to withstand the effects of fire on the plastered side for over 90 minutes.

Consequently, Tektalan-E-21, 75 mm thick and plastered on one side, can be classified as fire resistant in the F90 fire resistance class in accordance with ÖNORM B 3800 and can be used to cover load-bearing structural components (supporting constructions both of wood as well as reinforced concrete or masonry).

The Tektalan-E-21 façade insulation board with a thickness of 5 cm and plastered on one side can be can be classified as highly fire retardant on the plastered wall side in accordance with ÖNORM B 3800.

Fire resistance class accord. ÖNORM B 3800	
F 60	F 90
Tektalan-E-21 50 mm	Tektalan-E-21 75 mm
	
Certificate No.	
IBS-2571/85	IBS-2574/85

Technical values

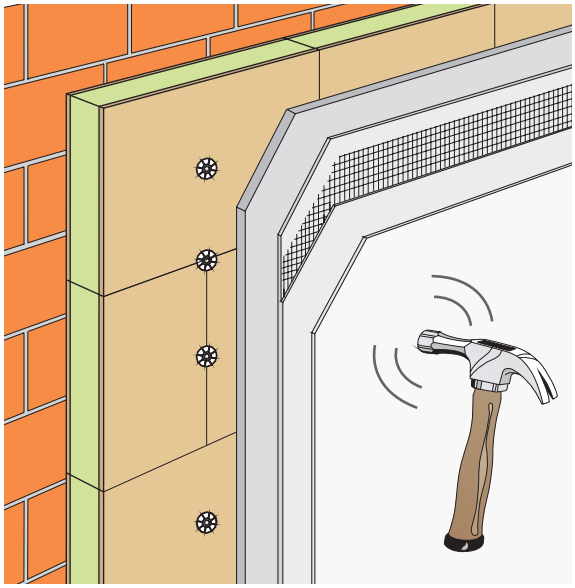
Impact resistance

Impact resistance is a quality criterion with regard to the resistance of the system (no tears, no layer separation) resulting from mechanical stress (e.g. hail impact).

The standard requirement with regard to this defines an impact resistance of 2 Joules. The façade insulation system exceeds the required value more than threefold.

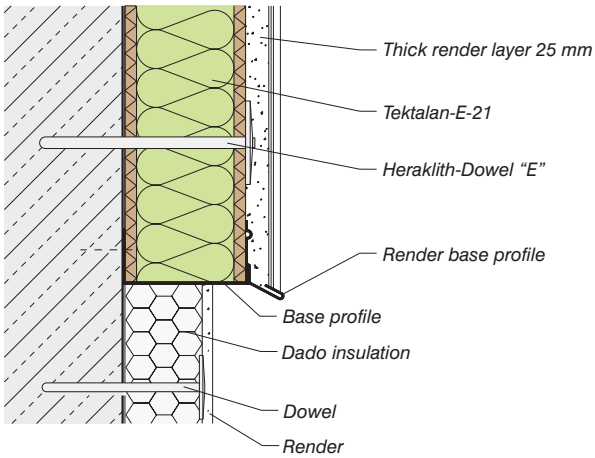
Consequently, the Tektalan-E-21 insulation system can be designated as being absolutely impact and hail resistant.

	Impact Resistance J
Requirement according to ÖNORM B 6125, or B 6135	≥ 2
Test value for the facade insulation system Tektalan-E-21	≥ 6
Certificate No.: MA 39 - VFA 2000-1535.01	

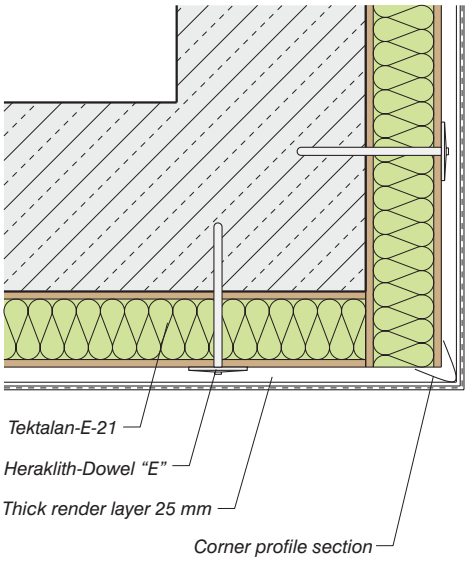


Details

Base building



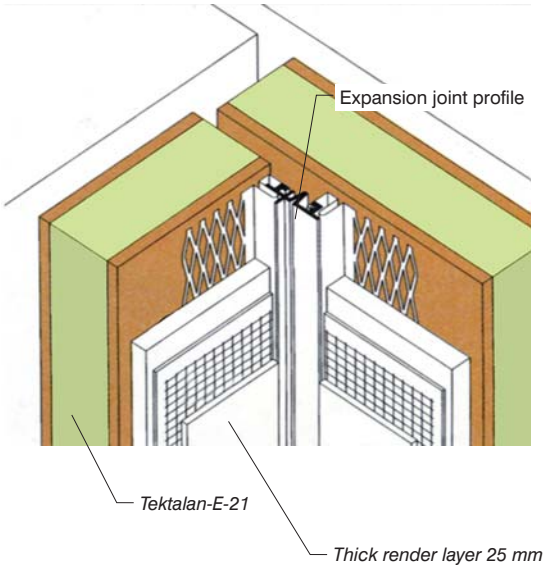
Corner building

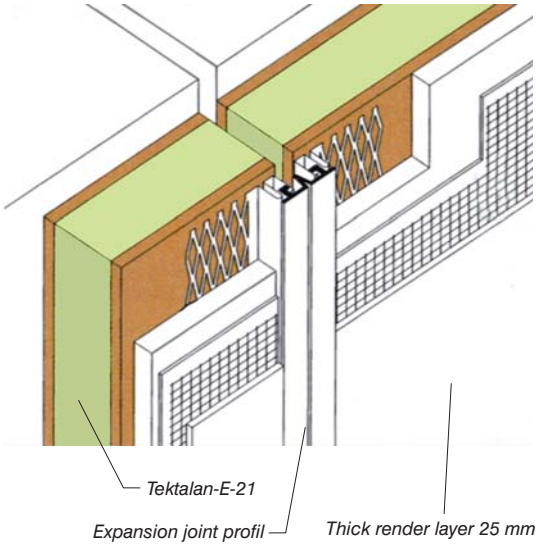


Details

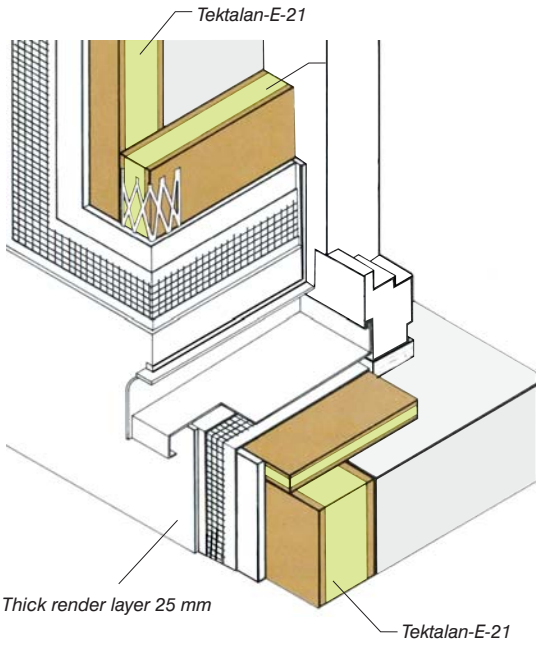
Details

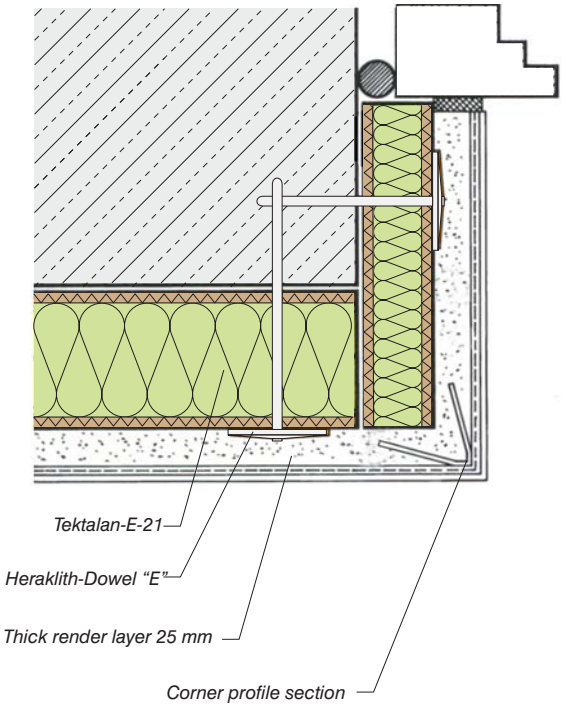
Expansion joint profile





Reveal building





Thermal Insulation system

Installation of boards

The base trough profile is used to form the base terminator. It is aligned using a string and fastened to the masonry with dowels.

The first Tektalan-E-21 board is placed on the base trough profile and fastened with a Heraklith "E" dowel in the middle of the board.

Cutting with handsaw

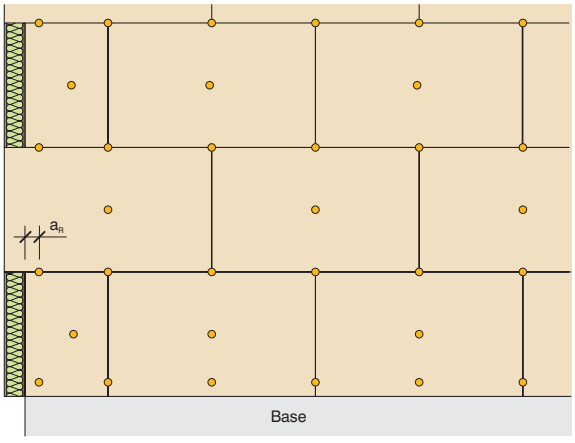
Information:

- Tektalan-E-21 boards are placed in the lattice horizontally and pressed together. They are integrated alternately using the corner.
- Fitting pieces must be at least 20 cm wide.
- Additional gluing of the boards to the subsurface is not necessary

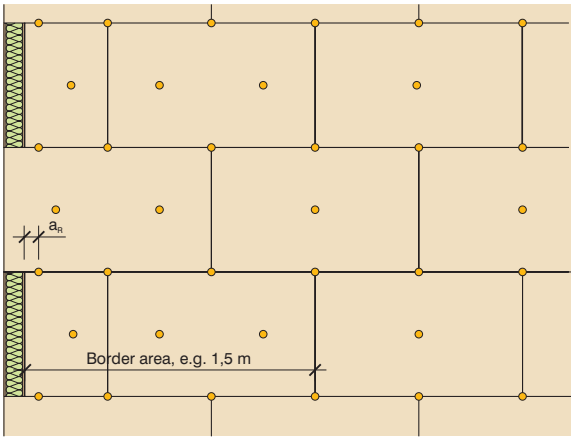
The number of dowels is dependent on the type of dowels, the subsurface, the height of the building, the shape of the terrain, and the wind load (observe dowel statics).

Edge distance: $a_R \geq$ 5 cm for concrete
$a_R \geq$ 10 cm for masonry

Laying System in the Board Lattice



Building heights up to 10 meters



Building heights from 10 to 20 m

Thermal Insulation system

Plastering System

Applying the plaster undercoat

Applying the reinforcement layer

Plaster Base Inspection

The boards must be positioned horizontally in the lattice and the board joints must be in the tolerance range of 5 mm (± 2.5 mm). Steps in the boards must be compensated for with a plaster undercoat before plastering. Seams between the board connections must be filled or foam packed

Plaster Undercoat

For the first layer, a plaster undercoat is applied either by machine or manually (for manual work, a cement pre-spray is required in addition). The plaster undercoat is ready to use and only has to be mixed with water. An additional bonding agent is not permitted under any circumstances. A typical construction rotary-drum mixer or alternatively a compulsory mixer or a plastering machine with a screw conveyor is suitable.

The plaster undercoat is a rough plaster and should only be screed with a moistened lath. Under no circumstances smooth or shake down. Do not work in direct sunlight, in the effects of rain, and never at temperatures below +5°C or on a frozen subsurface. For each centimeter of plaster thickness, let the plaster stand for 1 week, with a minimum of 14 days.

Formation of Corners and Connections

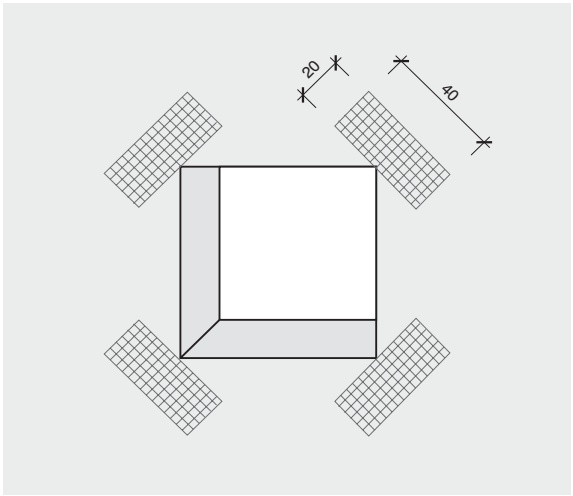
An edge plastering profile is used to screed the plaster undercoat. The setting plaster is pasted on the Tektalan-E-21 boards and then they are aligned on all wall corners and soffit edges of building openings.

The base plastering profile serves as a plaster terminator against the base. The connection joints on windows and doors should be sealed with the plastering strip. The expansion joint profiles are used to bridge long plastered surfaces after a maximum of 15 m or alternatively on connections to existing structural elements

Reinforcing Filler with Glass Fiber Mesh

The filler can be applied manually or by machine. The glass fiber mesh is embedded in the filler and smoothed with the smooth side of a trowel. The covering must be at least 0.5 mm. If necessary, apply additional filler. The strips of glass fiber mesh must overlap by at least 10 cm.

The reinforcing layer must be allowed to dry for at least 7 days.



Diagonal Reinforcing

In order to prevent fatigue stress cracks at building openings, it is necessary to apply additional diagonal reinforcing (woven piece at least 20 x 40 cm) close to the opening corners.

Thermal Insulation system

Plastering System

Applying the primer

Types of covering plaster

Priming
The primer is dependent on the subsequent final coating and must be applied to the reinforcing layer with a roller or brush.

Covering Plaster
Mineral-bonded synthetic resin plaster, silicate plaster, silicon resin plaster or synthetic resin modified plaster may be used. Mineral-bonded finishing plaster may only be used together with silicate or silicon paint.

General Information
Only use dry boards.
Make pre-cut parts by hand or with a hand-operated circular saw. Always cut out small pieces of board from a whole board and work into the surface.
The additional number of dowels is dependent on the type of masonry, the height of the building, the wind load, or alternatively the weight of the plaster (observe dowel statics).

Furthermore, the applicable standards must be observed in the applicable version in each case, and the directions on the packaging of the system elements must also be observed.

Plaster Thickness

Plaster undercoat	at least 20 mm
Reinforcing layer	2 3 mm
Covering plaster	grain size of at least 2 mm

Suppliere	Plaster Undercoat	Reinforcement layer	Covering plaster
baumit	Baumit GrundPutz Leicht	Baumit HaftMörtel Baumit TextilglasGitter	Baumit SilikatPutz Baumit SilikonPutz Baumit EdelPutz Extra
CAPATECT	Capatect Haftmörtel grob	Capatect Haftmörtel grob mit Capatect Glasgewebe-Einlage	Capatect SI-Strukturputz Capatect SH-Strukturputz Capatect MK-Strukturputz
MOLDAN maxit HEIDELBERGCEMENT Group	maxit ip 18E Ergiebiger Kalk-Zement Leichtgrundputz	maxit multi 270 Ausgleichs- u. Armierungsputz Putzarmierungsgewebe	maxit Oberputze
RÖFIX Bauen mit System	RÖFIX 866 Kalk-Zement- Leichtgrundputz	RÖFIX RENOSTAR Universalspachtel RÖFIX P50 Armierungsgewebe	RÖFIX SiSi-Putz RÖFIX Silikonharzputz RÖFIX Silikatputz RÖFIX 715 - Edelputz spezial
weber terranova	terranova- Leichtgrundputz	terra-Klebespachtel terratherm-Textilglasgittergewebe	terrasol-Silikonharzputz terrasol-Extra Clean terrasil Silikatputz terramin Edelputze

Thermal Insulation system, Plastered

Plastering System

Construction-ready, mineral plaster

Place the first band of Tektalan-E-21 boards on the base trough profile and fasten it with the Heraklith special dowel "P". Fasten the plaster reinforcing mesh with a joint overlap of approx. 10 cm by bending the dowel flaps.

Applying the cement pre-spray through the reinforcing mesh.

Information:

- With regard to doweling, the doweling schemes and information on page 9 must be observed.

To accommodate notch stress, arrange the reinforcing strips (size approx. 40 x 100 cm) at an angle of approx. 45° in the corner area and tack the underlying wire mesh.

The cement mortar must be mixed with sand (0 7 mm) with a mixing ratio of 1:3 with a slight addition of masonry binder. Throw it through the reinforcing mesh onto the Tektalan-E-21 insulating element to fully cover it. In order to accommodate notch stress, the reinforcing must be in the coarse plaster (if necessary, pull the reinforcing mesh out of the freshly sprayed coat of plaster). Let the sprayed coat of plaster harden as long as possible, but for at least 7 days and tear it out if necessary.

Coarse Plaster (base plaster)

1. **Lime cement mortar consisting of:**
   - 1.0 portion of cement
   - 1.5 portions of lime paste or 2.0 portions of hydrated lime
   - 8.0 portions of sand, e.g. 0 5 mm
2. **Ready to use plaster:**

Use according to the manufacturer's guidelines, which will also specify the type of plaster reinforcement.

Finishing Plaster Coat

Apply in the form of rubbed or stippled plaster onto hardened (possibly showing cracks) and well moistened coarse plaster. Finishing plaster coats with a rough surface are preferable. Smooth plasters are not recommended on a highly insulating subsurface.
Finishing plasters (ready-to-use plaster) are to be used according to the manufacturer's guidelines.

Basic Rule

For multi-layer, mineral plaster structures, the hardness of the individual layers of plaster must diminish as they progress to the outside.

Adress

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TÜV CERT EN ISO 9001

www.heraklith.com

Heraklith®

Supplied by:

All technical data given in the following chapters was produced conscientiously and to the best of our knowledge. It must be adapted to the specific construction situation. The planner and construction personnel are responsible for technically proper installation and compliance with construction regulations. No legal liability may be derived from the information in these technical specifications. Furthermore, the applicable standards and recognized rules of the technology are in force. JB-05/2004.