RAKE TERM

RAKETERM CLADDING SYSTEM

30
years in construction business

25
years of researche and development

200 000 m^2
of façade installed

1000
executed projects

200
different finishes

WHAT IS RAKE?

RAKE IS THE CREATOR AND DEVELOPER OF THE RAKETERM CLADDING FACADE SYSTEM.

RAKE STARTED in northern Estonia in 1988. The local climate, with its four distinct seasons, poses great challenges in building houses in Estonia. You need to be ready for extreme cold, snowstorms, excessive humidity, as well as hot or rainy summers. Energy-efficient and visually good-looking homes are very important for Estonians, which is why Rake became focused on establishing the best facade system possible. We started our co-operation with the researchers of Tallinn University of Technology and Finnish engineers in 1996. Within a few years, Raketerm was developed: an energy-efficient and eco-friendly facade system which is durable as well as aesthetically pleasing.

RAKETERM 25
Innovation in Tradition

By 2019, Raketerm had been installed onto about 200,000 square metres in the Baltic states, Scandinavia, and Great Britain, where Raketerm made its entrance in 2015.

Little Estonia has been internationally acknowledged as an IT-country, but we are also famous in the construction sector - Estonia is by far the largest exporter of wooden houses in Europe. The success of Estonians in the building business is based on our skill to combine centuries of traditions with the most modern innovative technologies. Up to 90% of the wooden houses produced in Estonia are sold in foreign markets.

WHAT IS RAKETERM?

RAKETERM IS a system of finishing and insulation based on reinforced composite panels with thermal layer and mineral covered surface. It is affordable and ideal solution for updating wooden, brick and panelled houses and external insulation, combining the benefits of various well-known construction materials.

The covering layer of the panel is made of clinker slips jointed with cement mortar. The surface of the panel is made of clinker slips jointed with cement mortar. The covering layer gives the panel its fire and weather resistance properties and mechanical strength. The clinker slip cover has a low water absorptsion level, is acid and alkali proof.

The insulation layer of the panel consists of polyurethane foam with glass fiber mesh reinforcement on the back-facing side. The expanded polystyrene is used as a filler for the thermal insulation layer to minimise weight and increase stability of the panel. Our standard facade is indistinguishable from clean joint masonry.

Three in one:

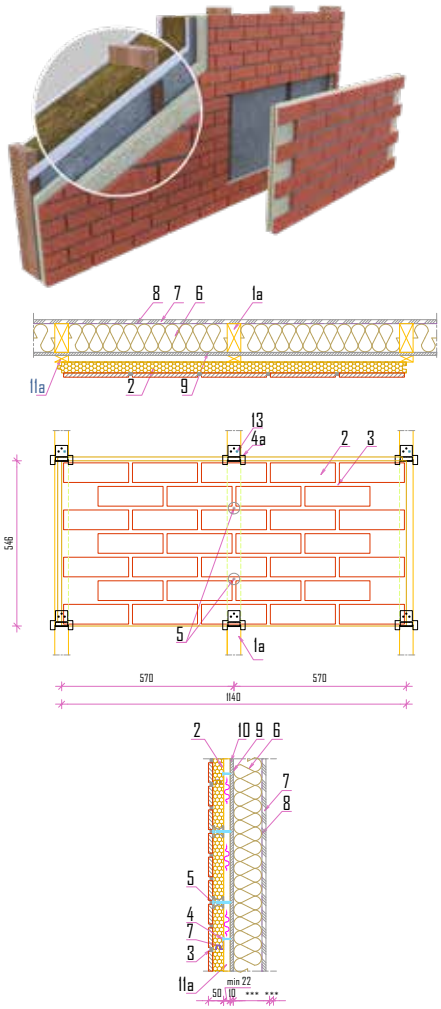
- stone lining
- thermal isolation
- wind barrier

Basic technical parameters

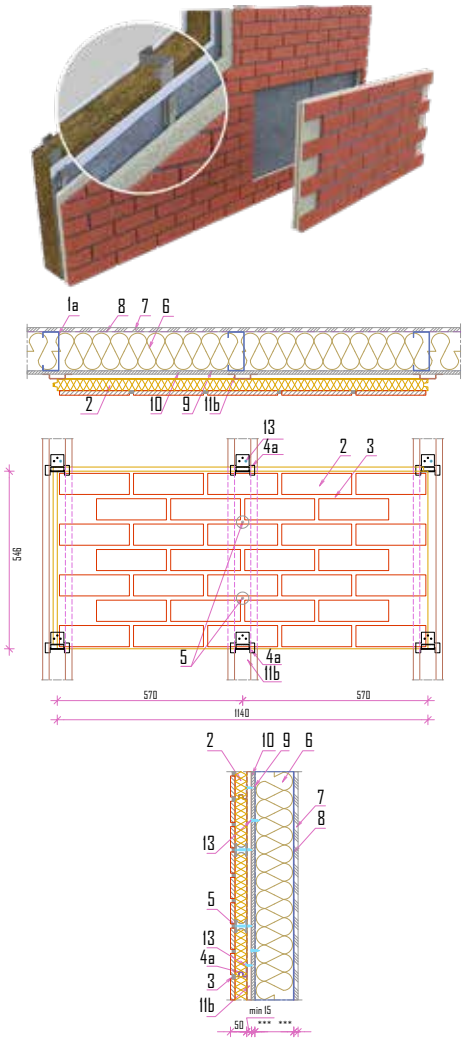
No.	Name of the test	Standard method	Unit	Value
1.	Capillary water absorbency	EN12087	%	< 3
2.	Thermal conductivity of the insulation layer	EN12667	$\lambda_{declared}$	0,038
3.	Thermal transmittance of the mounted panel	EN6946	$W/m^2 \cdot K$	0,96
4.	Water vapour permeability of the panel	EN12086	$kg/(MsPa) \cdot 10^{-12}$	1,91
5.	Reaction to fire	EN13823		B-s1, d0
6.	Air permeability in pressure 100 Pa	EN12114	$m^3/m^2/h$	0,13
7.	Airborne sound reduction index Rw	EN 140-3:1995	dB	37
8.	Coefficient of linear thermal expansion		$1/^oC$	9×10^{-6}
9.	Adhesion strength of clinker tiles	ETAG004	MPa	> 0,2
10.	Pull through strength of the fastenings	ETAG017	kN	> 1,2
11.	Watertightness	ETAG017	1365 Pa	No leaks
12.	Wind uplift	ETAG017	kPa	> 5,0
13.	Soft body impact	ETAG017	400 J	No damage
14.	Dead load deflection	ETAG017	mm	< 0,09

TYPICAL RANGE OF CONSTRUCTION DETAILS

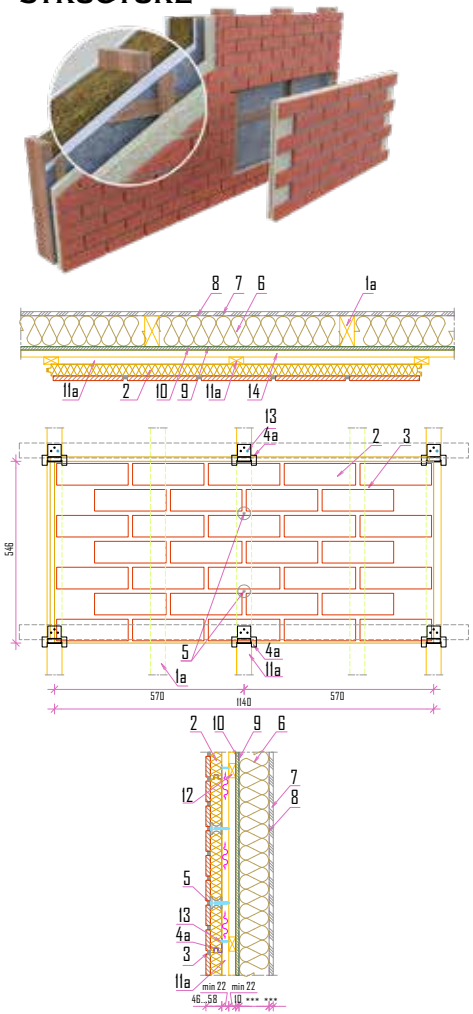
VERTICAL TIMBER FRAME STRUCTURE



VERTICAL LIGHTWEIGHT STEEL FRAME STRUCTURE



VERTICAL-HORIZONTAL BATTEN TIMBER FRAME STRUCTURE



1a	Timber frame	5.	Stainless steel screws through sockets	10	Sheathing board min. 10mm
1b	Ligtweight steel frame	6.	Insulation	11a	Ventilated / drained cavity min.22mm / vertical batten min.22x45mm
2.	Raketerm facade panel	7	Internal lining	11b	Vertical galvanized steel top hat profile hmin. 15 mm
3.	Grouting joint mortar	8	Vapour check membrane	12.	Horizontal batten min 22x45 mm
4a.	Stainless steel screw	9	Breather membrane	13.	Stainless steel screw

„**RAKETERM IS** a simple system and easy to use for quick and clean onsite installation. It would have been very costly and time consuming to receive and unload many lorries bringing just bricks on the site.“

Adrian Mannion
Director & owner of W&M Property Services Ltd.

DURABLE CLAY brick has been intrinsic to building culture for centuries. The Raketerm facade system is lightweight, forms a whole with the building's insulation system, is not very thick or expensive. Considering the planning constraints, the thickness is a crucial factor because compared to a traditional brick wall, about 5% or even more is saved inside the building. Moreover, to the untrained eye, it still looks like a brick wall."

Rein Murula
Architect

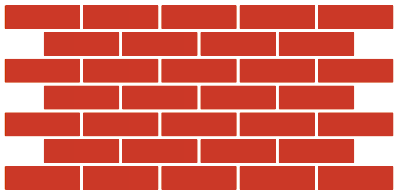

LILLE

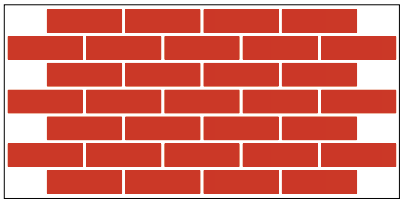
WHERE AND HOW ARE PANELS INSTALLED?

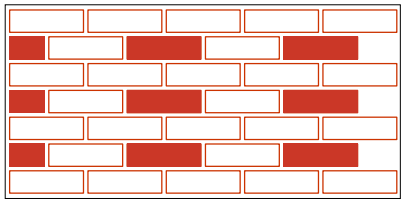
THANKS TO their lightness and resistance, the panels can be used for covering almost any façade. Instead of being mounted on the foundation, they are hung on a supporting wall or frame. The panels are fastened with special clamps onto frame or by driving a screw through it directly on the wall. Tongue-and-groove joints between panels are filled with a thin layer of silicone to achieve the necessary hermetic quality. After mounting panels brick slips are glued on panel junctions on every other panel ensuring the absolutely solid appearance of the entire external surface. When necessary, an additional layer of insulation with the required thickness can be added beneath the product to increase the thermal insulation of the façade.

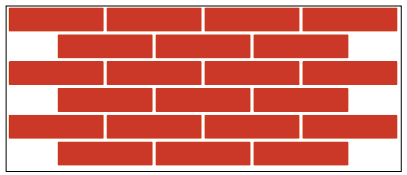
- Installation is easy and quick, can be done all-year-round
- Façade cladding made of standard product is indistinguishably similar to clean joint brickwork / masonry.
- Can be used for covering almost every façade.

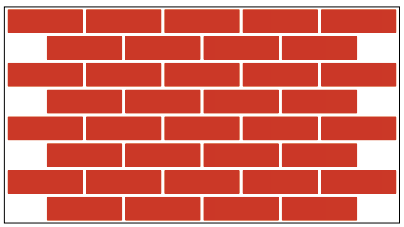
TYPICAL BONDS OF BRICKS


RAKETERM AA (Stretcher bond)


RAKETERM AB (Stretcher bond)


RAKETERM AA - - (Stretcher bond)


RAKETERM DA (Stretcher bond)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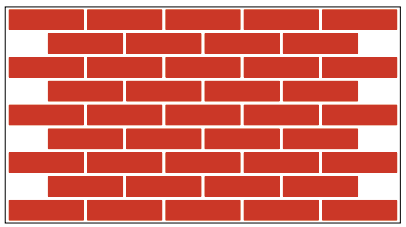
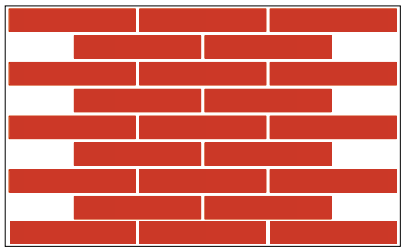
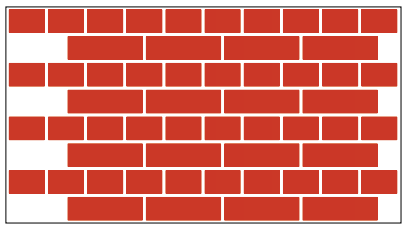
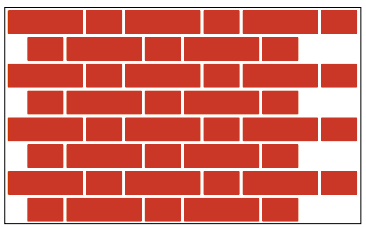
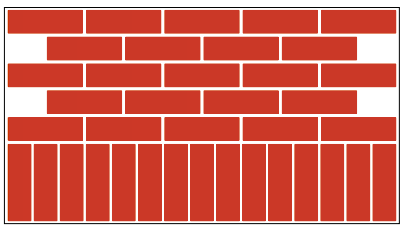
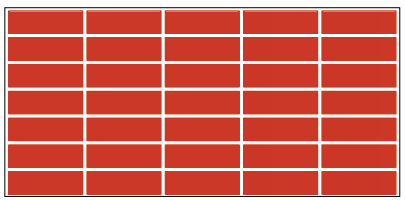

RAKETERM CA (Stretcher bond)

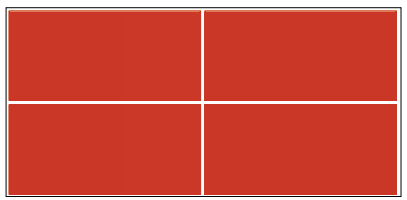

RAKETERM GA (Stretcher bond)

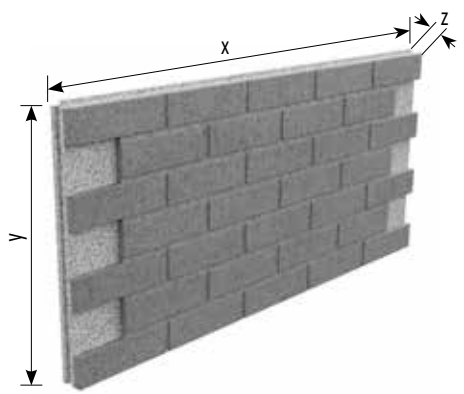

RAKETERM IA (English bond)


RAKETERM JA (Flemish bond)


RAKETERM BAL (Stretcher lintel)


RAKETERM AA 1/1 (Stack bond)


RAKETERM KA (Stack bond)



SIZES OF TYPICAL PANELS	PUR/ EPS (mm)*	Brick slip dimensions (mm)** Length	Height	Thickness	Panel size (mm)* Length (x)	Height (y)	Thickness (z)	Weight (kg/m²)
Raketerm DF10/14/17/20/24 CA/CB	36	240	52	10/14/17/20/22	1262	578	46/50/53/56/58	< 28/35/40/45/50
Raketerm LDF10/14/17/20/24 EA/EB	36	290	52	10/14/17/20/22	1211	578	46/50/53/56/58	< 28/35/40/45/50
Raketerm WDF10/14/17/20/24 AA/AB	36	215	65	10/14/17/20/22	1140	545	46/50/53/56/58	< 28/35/40/45/50
Raketerm WDF10/14/17/20/24 BA/BB	36	215	65	10/14/17/20/22	1124	599	46/50/53/56/58	< 28/35/40/45/50
Raketerm NF10/14/17/20/24 AA/AB	36	240	71	10/14/17/20/22	1262	570	46/50/53/56/58	< 28/35/40/45/50
Raketerm FIN10/14/17/20/24 DA/DB	36	285	85	10/14/17/20/22	1199	599	46/50/53/56/58	< 28/35/40/45/50

* with tolerances ± 1,5 mm **with tolerances ± 2,0 mm (lenght/height) and 1,5 mm thickness Other sizes are available on request

TYPICAL CORNERS & WINDOW JAMBS

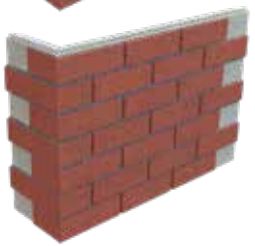
Corners are factory made by cutting standard panels and bonding with polyurethane foam and mastic sealant between brick-slips, or covered with bonded special corner brick slips. Big corners are for external corners of the building, small corners for corners, windows, lintels, jambs.


AA/AB 1


AA/AB 2


AA/AB 7


AA/AB 8


AA/AB 3


AA/AB 4


AA/AB 9


AA/AB 10

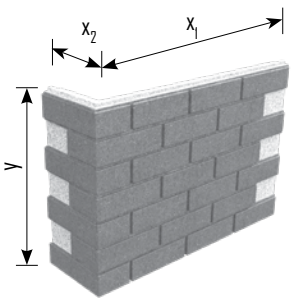

AA/AB 5


AA/AB 6


AA/AB 11


AA/AB 12

SIZES OF TYPICAL CORNERS	Big corners (mm)*				Small corners (mm)*			
	Lenght (x_1)	Lenght (x_2)	Height (y)	Weight (kg)	Lenght (x_1)	Lenght (x_2)	Height (y)	Weight (kg)
Raketerm DF10/14/17/20/24 CA/CB	877	245	578	< 19/23/26/30/33	245	245	578	< 8/10/12/13/15
Raketerm WDF10/14/17/20/24 AA/AB	790	220	545	< 16/20/22/25/28	220	220	545	< 7/9/10/11/12
Raketerm WDF10/14/17/20/24 BA/BB	779	219	599	< 17/21/24/27/30	219	219	599	< 8/10/11/12/14
Raketerm NF10/14/17/20/24 AA/AB	877	245	570	< 18/23/26/29/32	245	245	570	< 8/10/12/13/14
Raketerm FIN10/14/17/20/24 DA/DB	872	272	599	< 20/24/28/31/35	272	272	599	< 10/12/13/15/17



* tolerances ± 2,5 mm (lenght 1 and lenght 2) and ± 1,5 mm (height) Other sizes are available on request

BRICK SLIP FINISHES


F835


S230


F800


S238


F680


S140


F100


F116


F140


F692


F691

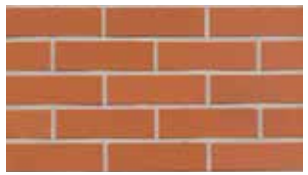

S371


F688

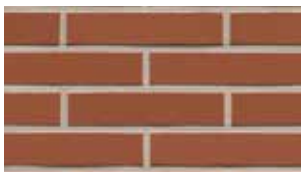

F764


F286


F690


F480


S215


F400


S356


F335


F689


F752


F356


F386


F745


F739


F749


F500


F540


F567


S319

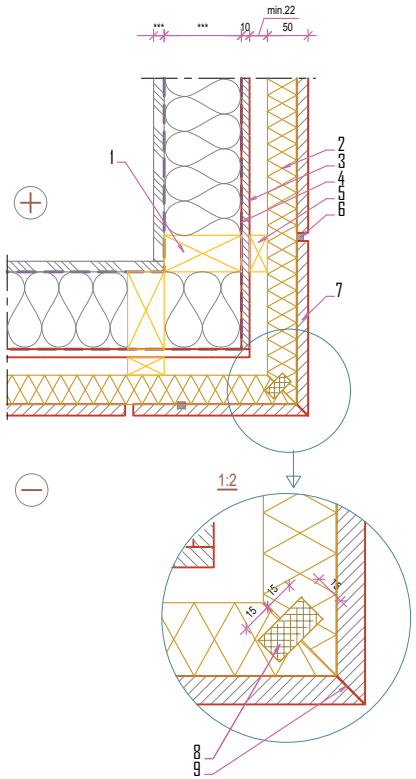

S360


S336


S330

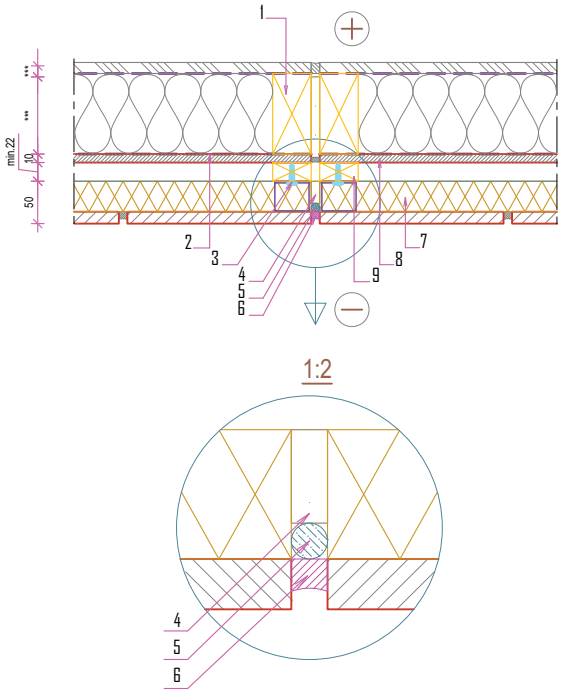

S325

TYPICAL DETAILS



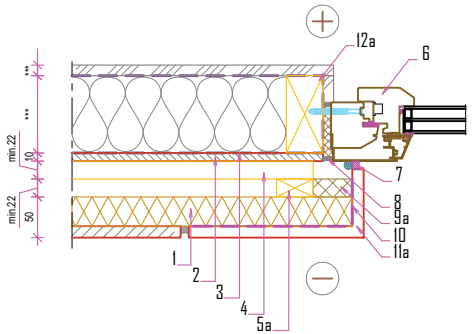
VERTICAL TIMBER FRAME EXTERNAL CORNER CUT AND BONDED

1. TIMBER FRAME
2. RAKETERM FACADE PANEL
3. SHEATHING BOARD min.10mm
4. BREATHER MEMBRANE
5. VENTILATED / DRAINED CAVITY min.22mm / BATTEN min.22x45mm
6. MORTAR
7. CERAMIC TILE, CUT
8. INSULATION CHAMBER 15x30mm FILLED WITH PUR FOAM
9. MASTIC SEALANT

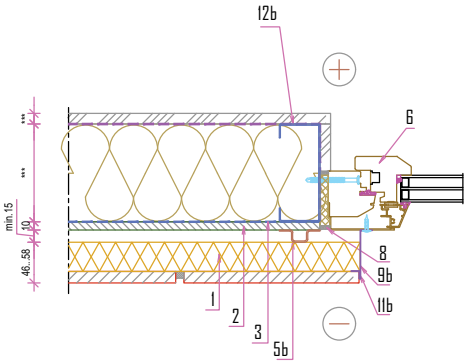


VERTICAL TIMBER FRAME VERTICAL AND HORIZONTAL MOVEMENT JOINT

1. TIMBER FRAME
2. BREATHER MEMBRANE
3. RAKETERM PANEL FIXING CLAMP
4. JOINT BASE
5. COMPRESSIBLE / EXPANDING SEALANT
6. FIRE RESISTANT MASTIC SEALANT
7. RAKETERM FACADE PANEL
8. SHEATHING BOARD min.10mm
9. VENTILATED / DRAINED CAVITY min.22mm / BATTEN min.22x45mm



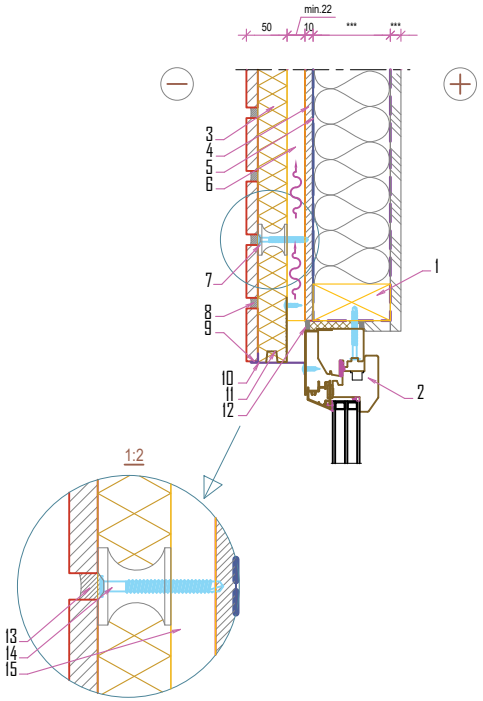
VERTICAL-HORISONTAL TIMBER FRAME WINDOW JAMB DETAIL WITH ANGLE TILES



VERTICAL STEEL FRAME WINDOW JAMB DETAIL WITH FLASHING

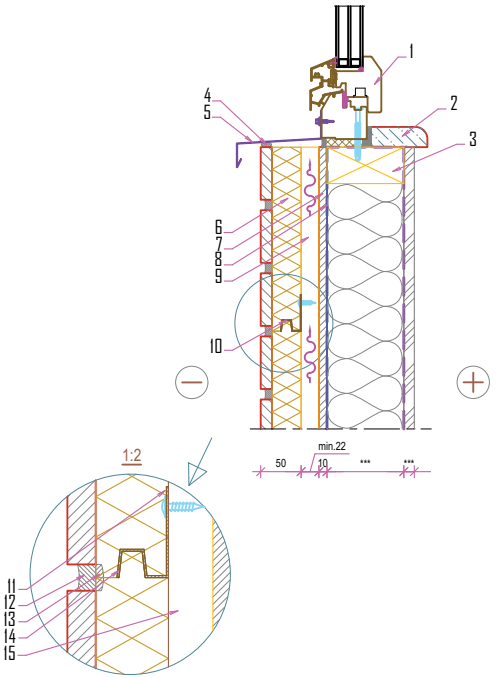
1. RAKETERM FACADE PANEL
2. SHEATHING BOARD min.10mm
3 BREATHER MEMBRANE
4 HORISONTAL BATTEN min.22x45mm
5a VENTILATED / DRAINED CAVITY min.22mm / BATTEN min.22x45mm
5b VERTICAL GALVANIZED STEEL TOP HAT PROFILE hmin 15 mm
6 WINDOW SYSTEM
7 JOINT BASE + FLEXIBLE SEALANT
8 FLEXIBLE SEALANT
9a EPS or PUR/PIR (min. Euroclass E)
9b ALUMINIUM / HOT TIP GALVANIZED STEEL PROFILE
10 ADHESIVE
11a BONDED ANGLE CERAMIC TILE
11b MASTIC SEALANT
12a TIMBER FRAME
12b STEEL FRAME

TYPICAL DETAILS



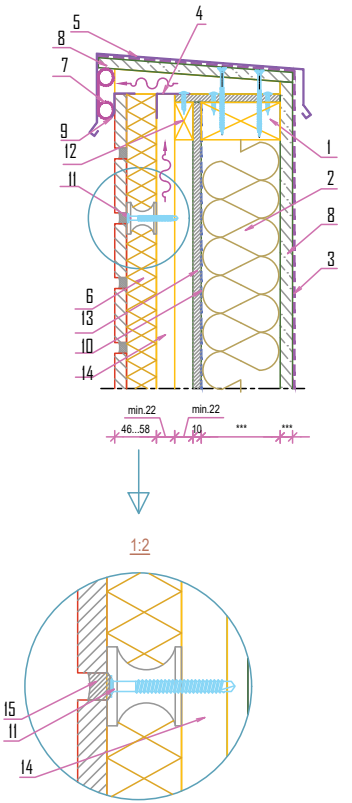
VERTICAL TIMBER FRAME WINDOW HEAD DETAIL WITH FLASHING

1. TIMBER FRAME
2. WINDOW SYSTEM
3. RAKETERM FACADE PANEL
4. SHEATHING BOARD min.10mm
5. BREATHER MEMBRANE
6. VENTILATED / DRAINED CAVITY min.22mm / BATTEN min.22x45mm
7. STAINLESS STEEL SCREWS THROUGH SOCKETS
8. MORTAR
9. MASTIC SEALANT
10. ALUMINIUM / HOT TIP GALVANIZED STEEL PROFILE
11. STAINLESS STEEL FASTENING CLAMP
12. FLEXIBLE SEALANT
13. ADDITIONAL MORTAR
14. STAINLESS STEEL SCREWS THROUGH SOCKETS
15. VENTILATED / DRAINED CAVITY min.22mm / VERTICAL BATTEN min.22x45mm



VERTICAL TIMBER FRAME CILL DETAIL

1. WINDOW SYSTEM
2. INTERNAL SILL BOARD
3. TIMBER FRAME
4. MASTIC SEALANT
5. FLASHING
6. RAKETERM FACADE PANEL
7. SHEATHING BOARD min.10mm
8. BREATHER MEMBRANE
9. VENTILATED / DRAINED CAVITY min.22mm / BATTEN min.22x45mm
10. STAINLESS STEEL FASTENING CLAMP
11. STAINLESS STEEL SREW
12. ADDITIONAL MORTAR
13. MORTAR BASE
14. STAINLESS STEEL FASTENING CLAMP
15. VENTILATED / DRAINED CAVITY min.22mm / VERTICAL BATTEN min.22x45mm



VERTICAL-HORIZONTAL TIMBER FRAME PARAPET DETAIL

1. TIMBER FRAME
2. INSULATION
3. ROOF COVERING UPSTAND
4. PERFORATED L-PROFILE, OPENING AREA: 500-1500 m^2
5. PARAPET FLASHING
6. RAKETERM FACADE PANEL
7. INSECT AND FIRE SEAL OR FIRETRAP MESH
8. WBP PLYWOOD
9. STORM CLIP
10. BREATHER MEMBRANE
11. STAINLESS STEEL SCREWS THROUGH SOCKETS
12. HORIZONTAL BATTEN min 22x45 mm
13. SHEATHING BOARD min. 10 mm
14. VENTILATED/DRAINED CAVITY min. 22 mm
15. ADDITIONAL MORTAR

RAKE TERM

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BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 20/5826

bre

EAS Enterprise Estonia
Investing in your future
European Union
European Regional Development Fund