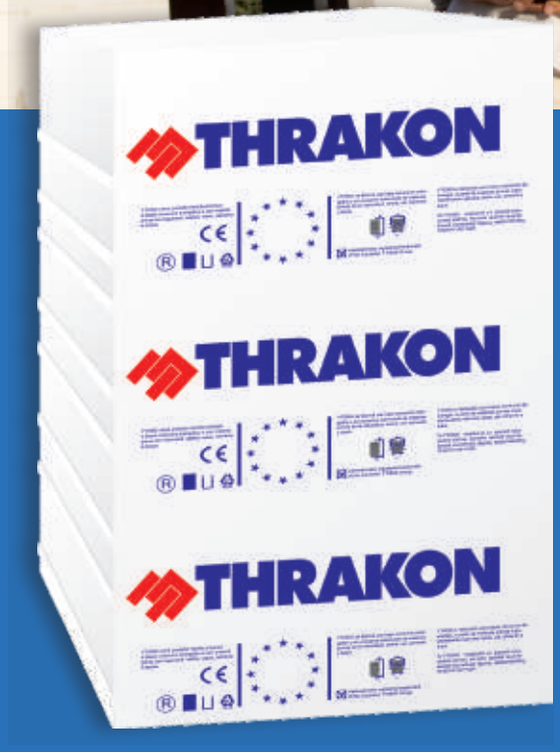
THRAKON



24 YEARS IN GREECE

EASY AND FAST

Thermal insulation | Energy saving |
Anti-seismic protection |
Quick brickwork | Lightweight |
Fire resistance | Environmental product |
Ideal solution for industrial facilities

MORE THAN 8.000.000m³ WALLS ARE BUILT WITH THRAKON BLOCKS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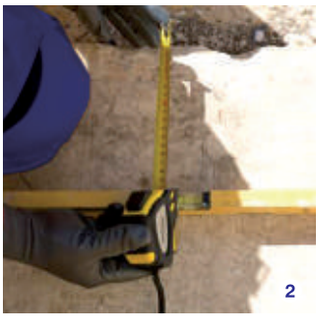
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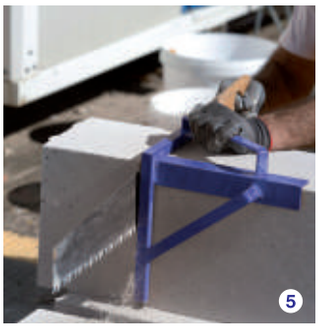
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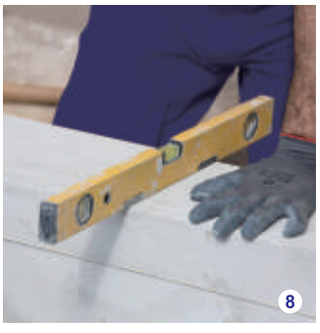
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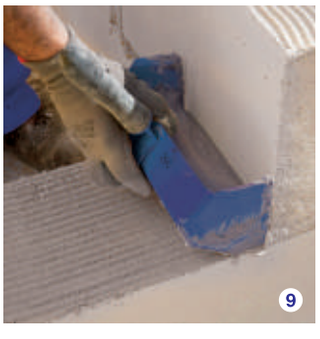
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CONSTRUCTION METHODS

THRAKON block is used as a material for building walls, in all kinds of construction projects, from **load-bearing walls** (see Image 1), to two- floor buildings, or as an **additional wall** without restrictions.
Masonry built with **THRAKON** blocks is **easy and fast,** since they can be easily cut and chased due to their light material and **precise dimensions**.

It is worth mentioning that only 6,6 pieces of **THRAKON** blocks are sufficient for 1m^2 wall of any thickness.

BUILDING WITH THRAKON BLOCKS

Clean and moisten the placement surfaces on the wall from materials and bumps. Due to the fact that floor surfaces are usually not smooth, the application of the first layer of **THRAKON** blocks is done with the cement-based mortar **MIX 280**. After marking the exterior walls (see Image 2), first a layer of the waterproofing material and then the cement-based mortar are placed (see Image 3), so as to prevent **ingress of moisture** in the wall built with **THRAKON** blocks.

After that, the blocks are put in place and carefully levelled (see Image 8). For safe and quick work,**THRAKON PAW 290** is recommended, because of its high durability and adhesion strength.

PAW 290 is a polymer modified cement-based adhesive recommended for **THRAKON** blocks. It has very strong adhesion on all common substrates, as well as resistance to frost and moisture. It contains aggregates with thin grains and therefore guarantees further heat insulation of structural elements obstructing the formation of heat channels.
It is also the only adhesive suitable for porous concrete that **offers protection from sulfates**. The formation of sulfates is particularly harmful to the construction and reduces adhesion capacity, increases volume and thus destroys the mortar. In addition, the use of **PAW 290** provides the opportunity to build high walls without losing the levelling.

In cases where the floor is flat, the **first layer** can be placed with adhesion. The coating of the entire surface of the wall with an adhesive for porous concrete is not appropriate.

The adhesive is placed horizontally on THRAKON blocks with no more than 1-2 mm layer thickness, in order to cover the entire surface between the blocks. In order to control the amount of the adhesive, a special **THRAKON trowel** is used, depending on the thickness of the wall to be built (see Image 11). Also **THRAKON grater** is used where surface smoothing is necessary (see Image 6).


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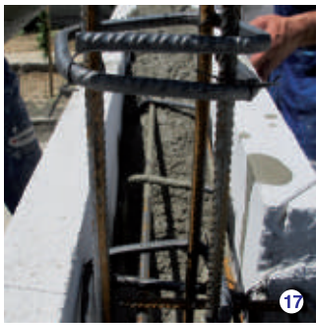
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On the **corner and side wall bindings**, masonry should be cross-sectional, so the walls can have better mutual support (see Images 11, 12). The **vertical joints** are not bonded to each other when they have groove (male-female), but there is a need for bonding where **THRAKON** blocks are cut (see image 9).

THRAKON blocks are easily cut. First mark horizontally and vertically with **special THRAKON winkle** and then cut the block with a **special saw** (see image 5). In large-scale projects, the use of **electric** saws or **rasp** is recommended (see image 16).

When there is need for lintels, **THRAKON lintels** (with specific size) that are installed with minimum laying length (left and right) 15cm (see Images 13, 14) are used. Our company has produced lintels for up to 20cm thickness. If you want to use them for larger wall thicknesses, you need to use two lintels that will be bonded with **THRAKON** adhesives.

For walls with a surface larger than $9m^2$, **construction with reinforcement** (see image 17) **is considered indispensable** for internal and external surfaces. **THRAKON** has ready-made elements **(U-FORM)**, with 20, 25 and 30cm thickness for reinforcement of **exterior walls.** We only need to embed the reinforcement and add concrete (see image 18), so as to avoid the **heat bridges** that are created with traditional reinforcement.

The wall needs to be **strengthened with THRAKON polyurethane foam** on the upper end surfaces (see images 19, 20). Strengthening should be done two days after the construction of the wall, when the adhesive becomes sufficiently strong, so that the foam spreads across the entire thickness of **THRAKON** blocks without interruptions and gaps. The thickness of the foam **should not exceed 2cm** between the wall and the pillar or beam (Images 19, 20).

The placement of wedges along the length of the wall is recommended in order to make it stable, during application of the polyurethane foam.

The surface that comes in contact with the foam needs **to be cleaned and moistened** before the application, while the application of the polyurethane foam should be done at least one day after the placement of **THRAKON** blocks so as to avoid cracks.

The placement of wedges along the length of the surface is also considered as useful, in order to **control** the filling with the polyurethane foam. The wedges must be removed one to two days after the application of the foam and the gaps created by the wedges must be filled with foam.


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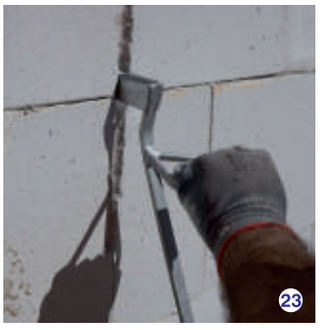
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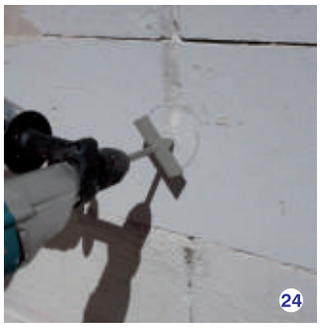
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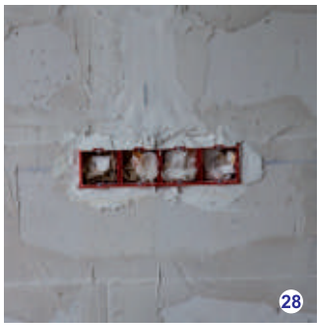
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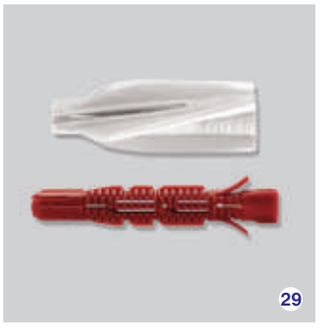
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PREPARATION OF THRAKON BONDING MORTAR

The preparation of the masonry mortar (THRAKON PAW 290) is made in a clean bucket, in which there is certain amount of water. Then the adhesive is added, and with the use of an electric mixer drill at low speed, and by stirring, the mortar is made (see image 22). Following the stirring, the mortar workability (open time) lasts for about 3-4 hours. The addition of water into the adhesive is prohibited when it clots, because it loses its effectiveness and becomes unusable. For load-bearing walls THRAKON recommends bonding mortar M10.

ELECTRICAL AND PLUMBING INSTALLATION

The work of the electrician and the plumber is performed with ordinary tools, available by THRAKON (see images 21, 23, 25) as well as with ordinary electric drills and electric milling machines for digging of channels (see images 24, 26). These tasks are very simple, because the material is easily applied and processed and is not damaged by special tools and compressors.

LOAD PINNING - WINDOW FRAMES

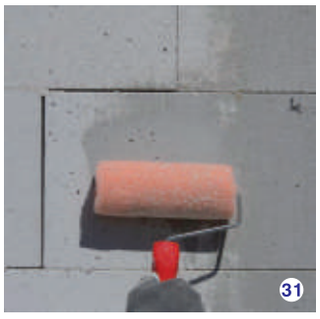
Attaching load on **THRAKON** walls (curtain rods, windows, radiators) is done in the same way as on ordinary walls. We use **screw cover caps** (see image 29) for porous concrete (HILTI, FISCHER, UPAT etc.) in different sizes according to the size of the load which will be attached to the wall.

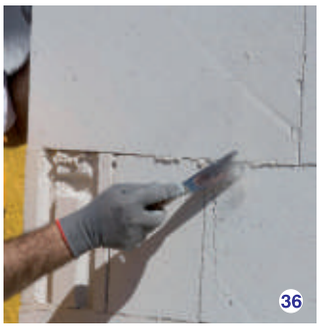
In the same way, we support the windows as well as the wooden or metal frames on **THRAKON** blocks walls (see image 27).

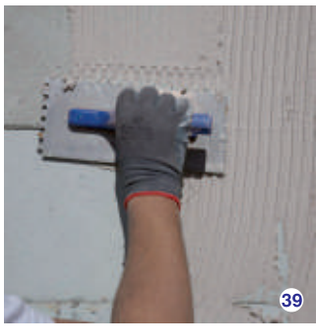
SELECTING THRAKON BLOCKS DIMENSIONS

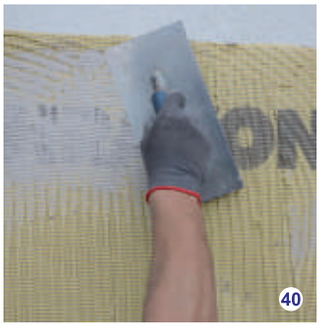
In the following table, THRAKON block thicknesses that are most commonly used in masonry are listed. For other cases, please contact the technical department of the company.

	THICKNESS OF THRAKON BLOCKS						
TYPE OF WALL	7.5	10	12.5	17.5	20	25	30
Standard external wall					■		
Bearing wall (density PP4)						■	■
Internal wall		■					
Walls for sliding windows	■		■				
High thermal insulation criteria						■	■
Industrial buildings				■	■	■	■









TECHNICAL GUIDELINES FOR PLASTERING

Plastering walls with **THRAKON** blocks has significant advantages and low cost, because the surface of **THRAKON** walls is extremely smooth and as a result it requires small amount of plaster for coating.

The surface of the wall must be coated with a **layer of GLX 292 FLEX PRIM,** which is diluted with water 1:4 and is applied with brush or roller. Otherwise, due to the porous surface of **THRAKON** block (see image 32), the mortar is quickly absorbed, thus it weakens and cracks.

In the corners of the openings (doors, windows) insert a tape of a **grid** (see images 33, 34, 36) in order to avoid future cracks in the plaster.

All joints that have polyurethane foam or where **THRAKON** blocks come in contact with different materials (concrete as well as electrician and plumber channels) should be equipped with **adhesive-fiberglass-adhesive** system with the use of **adhesive for porous concrete** and **THRAKON Fiberglass 222 g/m²** (see image 35).

The minimum recommended thickness of the mortar of walls with THRAKON blocks should be 25mm in the outer part and 20mm in the inner part.

TRIPLE LAYER SYSTEM			
1st LAYER	BASIC LAYER	FINAL LAYER	
SHP 205	GHP 210	*FHP 225	WHITE PLASTER WITH MARBLE
SHP 205	GHP 210	*FHP 221	WHITE PLASTER WITH QUARTZ SAND
SHP 205	GHP 210	DEC 424	DEC 424WHITE DECORATIVE PLASTER TYPE SCRATCH - 2,0mm
SHP 205	GHP 210	DEC 425	DEC 425WHITE DECORATIVE PLASTER TYPE RILLEN - 2,0mm to 3,5mm
SHP 205	GHP 210	DEC 440	WHITE DECORATIVE PLASTER TYPE ROLLER

DOUBLE LAYER SYSTEM		
1st LAYER	SINGLE MORTAR COATING	
SHP 205	*NHP 250	WHITE, GREY WITH QUARTZ SAND
SHP 205	*NHP 255	WHITE WITH MARBLE
SHP 205	NHP 260	STUCCO (indoor use only)

ELASTIC REINFORCED SYSTEM			
REINFORCED BASIC LAYER	TOOL	LAYER	ORGANIC PLASTER
THC 410	GLASS GRID Clima- PLUS 160gr/m²	Status Acrylic Primer	DEC 428 ACRYLIC TYPE SCATCH & RILLEN VARIOUS GRAIN SIZES

* Specific mortars for final layer are produced as waterproof with WR prefix, e.g. NHP 250-1 WR

TECHNICAL CHARACTERISTICS OF THRAKON BLOCKS

BASIC TECHNICAL CHARACTERISTICS OF THRAKON BLOCKS

DENSITY	DRY NET WEIGHT (kg/m^3)	WEIGHT kg/m^3	COEFFICIENT OF THERMAL CONDUCTIVITY λ(W/mK)	SPECIFIC HEAT c(J/kgK)	RESISTANCE TO STEAM - PERMEABILITY μμ	SHRINKAGE EXTENSION mm/m
PP2	420	600	0,11	1000	5 - 10	0,2
PP4	600	760	0,136	1000	5 - 10	0,2

DENSITY	MEASURE FOR ELASTICITY N/mm²	DURABILITY OF PRESSURE N/mm²	DURABILITY OF WRAPPING N/mm²	DURABILITY OF TIGHTENING N/mm²
PP2	1300	≥ 2,8	1,2	0,8
PP4	2600	≥ 5,0	1,6	1,2

CHARACTERISTICS

Fire resistance (Euroclass A1 - Non flammable)

TYPE OF ELEMENT	PERFORMANCE	F 30 min A	F 60 min A	F 90 min A	F 120 min A	F 180 min A
REQUIRED THICKNESS IN cm						
THRAKON BLOCK PP2	Without plaster	7,5	7,5	10	12,5	15
	Plaster inside outside	5	7,5	7,5	7,5	12,5
THRAKON LINTEL PP4	Without plaster	7,5	7,5	10	12,5	15
	Plaster inside outside	7,5	7,5	10	10	12,5

Thermal insulation

COEFFICIENTS OF THERMAL PERMEABILITY OF THE ELEMENT		MATERIAL	QUALITY	PERFORMANCE	PERFORMANCE										
					5cm	7,5cm	10cm	12,5cm	15cm	17,5cm	20cm	22,5cm	25cm	27,5cm	30cm
Uw	W/m^2K	BLOCKS	PP2	without plaster	1,60	1,17	0,93	0,77	0,65	0,57	0,50	0,45	0,41	0,37	0,35
				with plaster*	1,49	1,11	0,89	0,74	0,63	0,55	0,49	0,44	0,40	0,37	0,34
		BLOCKS & LINTELS	PP4	without plaster	1,86	1,39	1,10	0,92	0,79	0,69	0,61	0,55	0,50	0,46	0,42
				with plaster*	1,71	1,30	1,05	0,88	0,76	0,67	0,59	0,53	0,49	0,45	0,41

* λ plaster: 0,87 W/mK, thickness of the plaster: 2cm on both sides

Sound insulation

MEASUREMENT INDICATOR OF SOUND REDUCTION	MATERIAL (Without plaster)	QUALITY	THICKNESS								
			10cm	12,5cm	15cm	17,5cm	20cm	22,5cm	25cm	27,5cm	30cm
R'W (dB)	BLOCKS	PP2	34	36	38	40	42	46	48	50	52
	BLOCKS / LINTELS	PP4	37	39	42	43	44	46	48	49	51

THRAKON- COMPLETE RANGE OF PRODUCTS

THRAKON BLOCKS (PP2 - PP4)

DIMENSIONS	PACKING	DIMENSIONS OF PACKING	AMOUNT WALL/PALETTE	AMOUNT WALL/m³
62,5x25x5,0 cm + 62,5x25x15,0 cm	Palette with 96+8 pieces:	Height: 165 Length: 100 Width: 60	Dimension 5,0cm: 15,0 m²/Palette	17,33 m²
	96 pieces from 5,0 cm, Volume 0,75 m³ 8 pieces from 15,0 cm, Volume 0,19 m³		Dimension 15,0cm: 1,25 m²/Palette	
62,5x25x7,5 cm + 62,5x25x10,0 cm	Palette with 68+8 pieces:	Height: 162,5 Length: 100 Width: 60	Dimension 7,5cm: 10,625 m²/Palette	12,88 m²
	68 pieces from 7,5 cm, Volume 0,8 m³ 8 pieces from 10,0 cm, Volume 0,13 m³		Dimension 10,0cm: 1,25 m²/Palette	
62,5x25x10,0 cm	Palette with 60 pieces Volume of Palette 0,94 m³	Height: 165 Length: 100 Width: 60	9,375 m²/Palette	10,0 m²
62,5x25x12,5 cm	Palette with 48 pieces Volume of Palette 0,94 m³	Height: 165 Length: 100 Width: 60	7,5 m²/Palette	8,0 m²
62,5x25x15,0 cm	Palette with 40 pieces Volume of Palette 0,94 m³	Height: 165 Length: 100 Width: 60	6,25 m²/Palette	6,67 m²
62,5x25x17,5 cm	Palette with 32 pieces Volume of Palette 0,88 m³	Height: 155 Length: 100 Width: 60	5,0 m²/Palette	5,71 m²
62,5x25x20,0 cm	Palette with 28 pieces Volume of Palette 0,88 m³	Height: 155 Length: 100 Width: 60	4,375 m²/Palette	5,00 m²
62,5x25x22,5 cm	Palette with 24 pieces Volume of Palette 0,84m³	Height: 150 Length: 100 Width: 60	3,75 m²/Palette	4,44 m²
62,5x25x25,0 cm	Palette with 24 pieces Volume of Palette 0,94 m³	Height: 165 Length: 100 Width: 60	3,75 m²/Palette	4,00 m²
62,5x25x27,5 cm	Palette with 20 pieces Volume of Palette 0,86 m³	Height: 152,5 Length: 100 Width: 60	3,125 m²/Palette	3,64 m²
62,5x25x30,0 cm	Palette with 20 pieces Volume of Palette 0,94 m³	Height: 165 Length: 100 Width: 60	3,125 m²/Palette	3,33 m²

* The stated heights do not include the palette height of 15cm.

THRAKON ARMATURE U-FORM BLOCK

Recommended for avoiding heat bridges

THICKNESS	WEIGHT / PALETTE	m³/PALETTE	PIECES	DIMENSIONS
20 cm	350	0,60	20	60 x 25 x 20
25 cm	350	0,60	16	60 x 25 x 25
30 cm	350	0,54	12	60 x 25 x 30

THRAKON LINTEL

Working easily, fast and clean.

LENGTH	HEIGHT	THICKNESS	PACKING
(1,5 - 2,0 - 2,5 - 3,0) m	25 cm	10-20 cm (at 2,5 cm)	Palette 1,2 m³ & 1,35 m³

Note: lintels are produced with thickness up to 20 cm. In case you want to use them for thicknesses larger than 20 centimeters, you can use THRAKON adhesive to join the two pieces with each other and use them without any problem.

THRAKON

ADVANTAGES

1. **Greater usable space** in the building because of the smaller wall thickness compared to the standard version, with the same characteristics of thermal insulation that a standard wall with bricks and expanded polystyrene 5cm has.
2. **Easy and fast plastering**. The smooth, final **THRAKON Blocks** surface results in reduced cost and burden of mortar.
3. **Quick performance.** Greater productivity of installers.
4. **Reduced damage to building materials.** Less construction waste in the facility.
5. **Anti-seismic properties.** Reduced seismic force due to the low weight of the material. **THRAKON** block is 6 times lighter than cement and 3 times than the brick.
6. **Up to 15% more economical.** Masonry with THRAKON Blocks is the most efficient solution for construction. Up to 15% more economical than the traditional construction method.

BUSINESS ASSOCIATE SEAL

THRAKON

54th km. National Road Athens - Lamia, Inofyta Viotias, PC 32011

www.thrakon.gr/en, info@thrakon.gr