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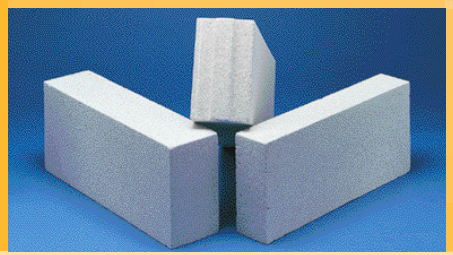

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Ytong meets all the requirements of our modern age

The Best Choice

Authorized Dealer

YTONG

THE TRADENAME YTONG WILL ALWAYS STAND FOR THE BEST QUALITY AND TECHNOLOGY IN THE FIELD OF BUILDING MATERIALS

Around sixty years ago, a Swedish architect named Johan Axel Eriksson invented a new building material in 1924 which he called YTONG. It combined all the important properties for the energy-saving and simple construction of residential and industrial buildings. Since then, YTONG has become increasingly popular. Its properties meet the demands of both today and tomorrow in three major ways. It provides:

- Good thermal insulation
- Simple construction
- Universal application from the basement to the roof in both residental and industrial bulidings.

YTONG, as a building system, has been used successfully in all climatic conditions throughout the world. Its properties ensure a building material that outperforms all others.

YTONG IN TURKEY AND WORLDWIDE

Ytong is the largest group in the world, that produces and sells autoclaved aerated concrete (AAC). Ytong, being the leader in AAC industry today, is producing and marketing 10 million m^3/y of Ytong in 51 factories and in 28 countries worldwide.

Türk Ytong Sanayi A.Ş. was founded in November 4th 1963 with Ytong Int. license. With the erection of Pendik Plant in 1966, Turkey has joined the countries producing Ytong. The 2nd Ytong factory was established in Gebze in 1993, the 3rd in November 1997 in Trakya; the 4th Ytong factory started production in March 1998 in Antalya and the 5th Ytong factory in June 1998 in Gaziantep.

Ytong in Turkey which has been developing through the years has also been the leader of the contemporary construction in the Turkish Construction Sector and taken its place among the countries having the biggest production capacity. By 1995, Ytong International GmbH had acquired 25% share of Türk Ytong and consequently new investments and developments have been accelerated.

After the establishment of new factories and investments, Türk Ytong's annual production capacity has reached 1.260.000 m^3 and Turkey has become the second biggest Ytong producer following Germany.

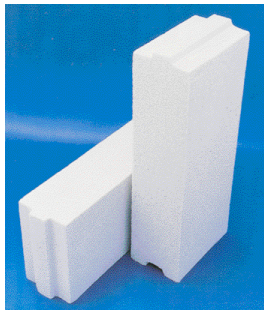
With the increasing Ytong demand and production, more than 10 million m^3 of Ytong building materials have been produced and supplied to the Turkish Construction Sector since 1963.

Considering the current capacity of Ytong, a quantity of material necessary for about 550.000 houses will be produced and thus, important contributions will be provided to Turkish Construction activity each year.

WHAT IS YTONG?

YTONG is a porous construction material and obtained by hardening the mixture composed of quartzite, cement, lime, aluminium powder and water, and compressed steam. The 84% of this material is composed of pores containing stable air. Thanks to this porous nature, YTONG is a construction material which best "insulates heat" and is non flammable, extremely light and usable.

The inventor Johan Axel Eriksson was looking for a building material which had the properties of wood -good thermal insulation, solid structure, easy to work and handle- but without the disadvantages of combustibility and decay. At that time there were only small, heavy building blocks with poor insulating properties. It seemed to be an impossible task to produce large building blocks combining good thermal insulation, light weight and high compressive strength, but Eriksson succeeded. He produced a highly cellular material from quartzite,



lime and water –natural raw materials which can be found in large quantities all over the world.

The superior properties of YTONG are given by the millions of small pores and the firm structure of calcium silicate hydrates. Because of its cellular structure, the material is known as AAC (aerated autoclaved concrete) or cellular concrete.

Industrial production of this versatile building material was started in 1929 and it has been produced and used for construction under YTONG trademark ever since. First in Europe and now world-wide.

Builders, architects and contractors not only appreciate the excellent properties of YTONG, but also the energy saving and pollution-free techniques used its production. In fact, the YTONG manufacturing process produces no polluting waste gases nor dangerous residues, and there is no waste of costly raw materials.

YTONG saves energy as a result of its excellent thermal insulation properties. Its production also ensures savings in energy because the steamcuring process is carried out at comparatively low temperatures and excess heat is recovered.

l. When necessary, the blocks can be used in smaller dimensions by cutting off. The cutting off of the blocks must be made by Ytong saw and set-square.

m. If necessary, level the blocks with a plane in order to get them levelled with horizontal joints.

Building Ytong Wall Blocks with Conventional Mortar

1. Preparing the mortar

Mixing proportions of mortar groups: Group D = 1 measure of Cement: 2 measures of Hydrated Lime Powder: 8 measures of Sand

- Mortars of Group D must be used either in the formation of all load bearing or load unbearing walls.
- The mortar must be adhesive and hold the water it contains. For this reason, the sand must be in appropriate particularity.

2. Building the wall

a. Before starting to build the wall, be sure that the ground is smooth and levelled. In order to get this, apply levelling covering of cement mortar on the cleaned and sweeped ground (1 measure of cement: 4 measures of sand).

b. Temporarily place Ytong blocks in every corner and apply guide rope.

c. Complete the first file of wall on the levelled ground starting to apply the Ytong blocks from a corner.

d. When using the plain blocks, apply mortar in the cross joints. (The joint thickness must be of 1 cm.)

e. There is no application of mortar in cross joints when using blocks with tongue and groove.

f. After placing the Ytong wall block fix it with small gum hammer beats and level it by placing it alongside the other block.

g. Form horizontal joints by applying mortar on the blocks. The joint thickness must be of 1 cm.

Caution: It's necessary to wet the Ytong Wall Blocks superficially when applying with mortar. To wet simply dabble some water with a brush. After completing each file, be sure to check the wall's levelling with the help of a water gauge.

h. In building the walls, overlapping portions of the blocks must be minimum 15 cm.

i. When necessary, the blocks can be used in smaller dimensions by cutting off. The cutting off the blocks must be made by Ytong hand -saw and set-square.

j. If necessary, level the blocks with a plane in order to get them levelled with horizontal joints.

Points of Intersection and Joint

1. Points of Intersection

In the intersection points of walls, build the blocks by locking them to each other. Make all the surfaces of the blocks that contact stuck with thinbed mortar or conventional mortar.

2. Points of Joint

a. Formation of Wall – Column Joint
Never leave a gap between the wall and the column, fill this with thinbed mortar and mortar.

b. Formation of Wall – Beam Joint
In the wall-beam joint leave a gap of 1-2 cm between the upper surface of the wall and the beam or the floor. If the height of the wall blocks does not allow the formation of this gap, cut some part of the blocks off with saw and obtain the necessary gap.

Fill this gap with styropor, filler mortar or foam.

3. Ytong Lintel Applications

Place Ytong lintels that are reinforced and used on door and windows with the same overlapping portion on both sides.

The opposite walls the lintels are on must be at the same height. The overlapping portion must be of minimum 15 cm.

Lintels must never be placed on door or window frames.

4. Jamb Linings

Jamb linings which are produced for aesthetic reasons on window borders can be easily mounted to the side walls and lintels by use of nails. On application, lintels must be mounted after levelling.

5. Mounting of Door and Window Frames

In mounting of door and window frames onto the Ytong wall, spiral nails, inserts or foam.

6. Installation Channels and Distribution Boxes

Installation channels must be made by chase opener. The channel width must be the same with the pipe to be placed in. Distribution boxes, power socket and swith places must be made by a low circuit drill.

THE PROPERTIES OF YTONG

The millions of very small air bubbles and the extremely stable structure of calcium silicate hydrates around these bubbles give YTONG its superior physical properties and technical features.

Compressive strength
YTONG is solid and extremely pressure-resistant in relation to its low weight. It can be produced in all grades of strength suitable for construction use.

YTONG products are quite resistant and ideal for floors, walls and roofs in terms of strength and static features. A Ytong wall block of 25x60 cm can support a load of 30 to 60 tons. Ytong blocks are produced in two categories of strength: G2 and G4. Reinforced wall panels are produced in G3 class whereas reinforced roof and floor slabs are produced in G4 class.

Thermal insulation
The exceptionally good thermal insulation of YTONG sets the standard for energy-saving construction.
In cold climates the expensive heat stays inside the house. And in hot countries the rooms stay pleasantly cool, so air conditioning can be used economically.

The thermal insulation provided by YTONG materials and components, is respectively 13 and 2-4 times stronger than the one provided by concrete and brick. Thus, it helps the reduction of heating expenses. Buildings of YTONG are cool in summer and warm in winter.

Indoor climate
YTONG ensures a pleasantly healthy room temperature. Its thermal insulation and heat retention offer a good protection against rapid cooling when the temperature outside is low, and against heating up too much when the weather is hot.

In addition, YTONG is permeable to diffusion and is made from natural raw materials.

Resistance to fire
YTONG is resistant to fire up to 1200°C and this provides security. YTONG makes easy the solution of fire resistant walls. YTONG is purely mineral in composition and is therefore non-combustible. This is an important life-saving feature in the case of fire.

Resistance to earthquake
YTONG is 6 and 3 times lighter than concrete and brick respectively. This reduces the transportation, cement and iron costs. The lightness of the materials increases resistance against earthquake.

Can be easily processed and has precise dimensions
Though classified in the concrete category Ytong building elements, can be worked on as easily as wood. They can be sawn, drilled, shaped, screwed and chased for installation channels with conventional tools.

Sound insulation
YTONG meets the appropriate standards for sound insulation in house building, and helps to protect against production noise in industrial construction.

Environment – Friendly
YTONG is made of quartzite, cement, lime and water which are 100 % natural materials. It also carries the logo of EC Environment-Friendly Building Material Work Group.

YTONG – THE COMPLETE BUILDING SYSTEM

YTONG PRODUCTS
Over a period of more than 50 years, high-grade YTONG building material has proved its quality in all areas of residential and industrial construction, and in virtually all climatic conditions.
YTONG is available in several different forms:

Ytong Production Line

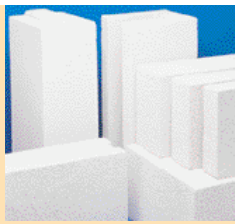
Block Building Materials
Wall Blocks
- Plain Blocks
- Blocks with tongue and groove

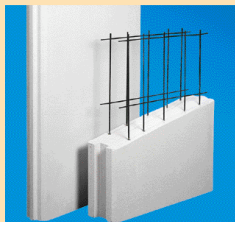
U Blocks
Stabfill Blocks
Insulation Panels

Reinforced Building Elements
Load Bearing Elements
- Floor Slabs
- Roof Slabs
- Vertical Wall Panels
- Lintels

Reinforced Unbearing Panels
- Horizontal Wall Panels
- Vertical Wall Panels
- Partition Panels
- Lintels

Ytong Thinbed Mortar
Alsecco Readymix Plaster
Ytong Housing System





YTONG is not only a building material with excellent physical properties, it is also a complete building system for efficient house and industrial construction.

It eliminates the problems caused by using building materials with different characteristics. The construction team handles only one building material for the entire structure, so work can be considerably simplified. The result is a one-piece dwelling. The achitect has freedom of design, the building contractor can produce good quality work efficiently, and the owner has a building which retains its value and combines all the fine properties of YTONG.

YTONG UNITS IN INDUSTRIAL BUILDINGS
When buildings for industry, trade and commerce are constructed, YTONG units combine the advantages of mass production with individual design requirements.

Reinforced YTONG units, in a few basic types, but with different lengths, make it possible to use the same types of element for a variety of different building projects – rather like a modular system.

YTONG units can be adapted to all types of loadbearing structures such as steel or reinforced concrete, crosswall construction, or combined systems.

By combining various YTONG units, a building of individual architectural design, shape and colour can be constructed.

Technical Properties of Ytong Reinforced Construction Elements

Type	Density kg/m³	Compressive Strength kg/cm²	Thermal Insulation λh (W/mK)
G3	500	35	0,16
G4	600	50	0,19

Technical Properties of Ytong Block Construction Materials

Type	Density kg/m³	Compressive Strength kg/cm²	Thermal Insulation λh (W/mK)		
			Tongue & Groove		
			With Ytong Thin Bed Mortar	With Conventional Mortar	With Insulation Mortar
G2	400	25	0,13	0,20	0,13
G4	600	50	0,19	0,24	0,19

HOW TO APPLY YTONG

Unloading and Storage of Ytong Wall Blocks on Site

- Unloading of Ytong wall blocks on site should never be made by damping mechanism or by throwing.
- Ytong wall blocks shipped with palettes and packing can be landed on site either by forklift and crane or by uncovering the packings and carrying by manpower.
- It's best not to storage the materials overlapped more than 3 palettes.
- For the unpacked materials to be stored on site, it's appropriate to cover them to protect from rain and freeze.
- To avoid the ground humidity penetrate into the materials, palettes should be placed underneath the materials without palettes and packings.

How to apply Ytong Wall Blocks?

Ytong wall blocks can be built up either with mortar or with "Ytong Thinbed Mortar" which is produced especially for this reason.

"Ytong Thinbed Mortar" is mostly preferred and used for the convenience that it provides in the application, for its aesthetical contribution, for diminishing the joint thickness and for its contribution in the heat insulation.

Building Ytong Wall Blocks with Ytong Thinbed Mortar

Using Ytong Thinbed Mortar to build the walls with Ytong blocks provides application convenience and it eliminates the possible troubles in the conventional application with mortar.

1. Preparing Ytong Thinbed Mortar

Ytong Thinbed Mortar is being offered in packages of 25 kg. into the market. It's a powder deriving from cement and has a gray color.

a. Put some water in a clean washbowl.

b. Mix it constantly while adding Ytong Thinbed Mortar rather slowly.

c. Leave the mixture that gets a dense viscosity for 20 minutes and then use it.

d. The thinbed mortar hardens up 8 hours after being used and then it does not get influenced by the humidity.

e. For storing and using Ytong Thinbed Mortar, the same care shown for cement must be shown and it must be protected from humidity and the packages should be kept covered.

f. With the addition of grain alcohol into the mixing water, walls can be built in all weather conditions up to -15ºC.

The quantity of grain alcohol to be added into the mixing water is as follows:

Temperature - °C	Volume	
	Grain Alcohol (measure)	Water (measure)
0 - 5	1	10
5 - 10	1	7
10 - 15	1	5

The necessary quantity of Thinbed Mortar for building the walls is as follows:

Wall thickness (cm)	Plain Blocks (kg/m²)	Blocks with tongue and groove (kg/m²)
7.5	1.35	-
8.5	1.53	-
10.0	1.80	-
12.5	2.25	-
13.5	2.43	1.76
15.0	2.70	2.00
17.5	3.15	2.30
19.0	3.42	2.47
20.0	3.60	2.60
22.5	4.05	2.93
25.0	4.50	3.25
27.5	4.95	3.58
30.0	5.40	3.90

Caution: Prepare the thinbed mortar in small amounts. Always be sure to prepare the thinbed mortar in the quantity needed, mix it often but do not dilute it by adding water and do not combine unknown substances.

2. Building the Wall

a. Before starting to build the wall, be sure that the ground is smooth and levelled. In order to get this, apply levelling covering of cement mortar on the cleaned and sweeped ground (1 measure of cement: 4 measures of sand).

Particularly in the ground floor walls in order to avoid the penetration of the humidity into the wall, the levelling covering must be applied onto the ground.

b. Temporarily place Ytong blocks in every corner and apply guide rope.

c. Blocks must be purified from dust and dirt.

d. Complete the first file of wall on the levelled ground starting to apply the Ytong blocks from a corner. For the best results moisturize the blocks of the first file. There is no need to moisturize the blocks on other files.

e. When using the plain blocks, apply Ytong Thinbed Mortar in the cross joints. (The joint thickness must be of 1-3 mm.)

f. There is no application of thinbed mortar in cross joints when using blocks with tongue and groove.

g. Ytong Thinbed Mortar must be applied with the particular Ytong trowel.

h. After placing the Ytong wall block, the horizontal sliding causes the accumulation of thinbed mortar and thus leaving the cross joint with a gap. To prevent this, place the Ytong blocks all at once and level them with small hammer beats.

i. Form horizontal joints by applying Ytong thinbed mortar on the blocks. The joint thickness must be of 2-3 mm. The viscosity of the thinbed mortar must be in such a way that after taking the trowel off the block, the indent traces of the trowel must be left on the mortar. The excess of the mortar must be cleaned at all times.

j. The trowel mouth must be narrower than the width of the wall and its inclined borders must grab the two sides of the wall.

k. In building the walls, overlapping portions of the blocks must be minimum 15 cm.

QUALITY

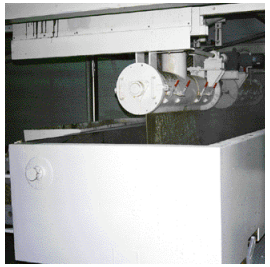
Ytong products are manufactured according to Turkish Standards (TSE 453). The quality control of every step of Ytong production which is implemented according to TSE 453 and European Standards (EN) is carefully done by Türk Ytong's Quality Control Laboratory, which owns the TS Laboratory Accreditation Certificate.

Türk Ytong, by applying contemporary and universal systems in allits activities -management, production, customer services- has registered its quality and has been the first organization in its sector to receive the Quality System Certificate - ISO 9002.

YTONG PRODUCTION METHOD

A mixture of finely ground quartzite sand, together with the lime and cement binding agents, water, and aluminium powder acting as a foaming agent, is tapped into oiled moulds to two-thirds of their depth. For large reinforced units, rust-protected reinforcement nets are positioned in the moulds before casting. The cake begins to rise until the mould is completely filled with a porous mass which is still soft. After 1 or 2 hours, as a result of the hydration of the unslaked lime and the cement, the mixture has set sufficiently to be cut.

To prepare the material for cutting to the required size before curing, the mould is turned through 90º. Three sides of the mould are then stripped off and the cake inside is positioned with its narrow side on one side of the mould which then acts as the curing plate. The soft, uncured YTONG remains on this curing plate during its further processing. Tipping the mould through 90º is a characteristic feature of the YTONG production process. This simple procedure makes it possible to shape all sides of the product. For example, to mill tongues and grooves into reinforced units or blocks.



It is particularly important that, during these shaping processes, the uncured YTONG always remains on a stable base support -the curing plate. In this way the material can be worked while it is still comparatively soft. This makes it possible to use only small amounts of the binding agents, so keeping the waiting periods short. Which is why the YTONG procedure is highly efficient.

The cake is precision-guided through the cutter. In a single computer-controlled operation the sides are trimmed and the profiles shaped. Horizontally-streched steel wires cut the cake into layers of the required thickness. Then the vertical cutter cuts the products to the required length. The trimmings are recirculated into the process by adding them to the starting mixture. In this way not a gramme of raw material is wasted. The cut YTONG cake is then transported into long autoclaves on a mould truck. When a heavy door of the autoclave is shut, the curing process begins with saturated steam of 12 bar, giving an equivalent temperature of 190 °C. This lasts for a total of 10-12 hours. After this treatment the material has acquired its final strength, depending on the quality class.

Once the steam-curing process is completed, the hot steam is transferred to steam accumulators ready to be reused for the next curing process. This not only saves valuable heating energy, but also protects the environment from the exhaust steam.

After steam-curing, the curing plates are automatically transported to the unloading station where the blocks or units are seperated by a special seperating crane. YTONG products are mechanically stacked onto wooden pallets and packaged in plastic foil, in a shrink oven, to protect them during storage and transportation.

Other kinds of packaging such as banding with metal straps could, of course be used instead.