

Technical Catalogue

Buildings Creating Difference with AAC





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What is Autoclaved Aerated Concrete?



Autoclaved Aerated Concrete (AAC) is a porous construction material procured by solidifying a mortar contsisting of silica sand (pure quartz), cement, lime and water under high pressured steam.

85% of Autoclaved Aerated Concrete consists of pores containing still air. This dry air stuck in small pores providing high heat insulation and lightweight character to autoclaved aerated concrete.

Gross Density Dry (Kg/m³)	Compressive Strength (N/mm²)	Thermal Conductivity Value λ _h (W/mK)
350	2,5	0,11
400	2,5	0,11
400	2,5	0,13
500	3,5	0,16
600	5,0	0,19

AAC, produced using natural raw materials and environment friendly production technology, is a lightweight material than concrete and other conventional masonry materials. Moreover, due to its porous composition AAC provides high heat insulation. It is also known as lightweight concrete. The reason taking the name of autoclaved aerated concrete is coming from this porous character. In international documents it is referred as AAC (Autoclaved Aerated Concrete).

AAC is a construction material that has proven and approved its absolute superiority all over the world, especially in Europe. AAC sector in Turkey has international technological experience and knowledge. Being well-equiped sector establishes naturally trust both for the manufacturer and the user.

Increasing in AAC sales in every year bringing further investment, employment and economic benefits. High heat insulation gained by using AAC in buildings results in energy saving for our country. Furthermore, AAC as being a light-weight wall component reduces the earthquake load and this is especially crucial for our country as being in earthquake zone, Additionally, AAC is an A1 class non-combustible construction material, therefore it provides fire safety in buildings.



Technical Features of

AAC

Eco-Friendly

As an eco-friendly construction material, AAC has "Environmental Product Decleration" (EPD), an international eco-label. Investors who are willing to obtain international certificates for green building design and construction prefer AAC because of being a reference construction material in terms of sustainability requirements.

AAC is also produced in compliance with TS EN 771-4 and TS EN 12602: 2008 + A1 standards. Raw materials used in AAC production are silica sand (pure quartz), cement and lime. These are fully natural materials. These raw materials constitute most of the Earth's crust and are almost endless. The AAC industry mines and processed these materials while protecting the environment. Utmost attention is paid in order to never harm the nature's balance.

High Heat Insulation

85% of AAC consists of pores containing still air which provides high heat insulation, keeping the construction warm in winters, cool in summers.

Earthquake Safety

Being a lightweight material, AAC reduces the total mass of the building, giving the result on reduction of earthquake load affecting the building. Due to its lightweightness, it provides saving on reinforcement stell and concrete for RC structures, in addition to cost reduction for shipment.

A study conducted by the Middle East Technical University (METU) Civil Engineering Department shows that an 8 storey RC frame building used AAC walls in, provides saving 7% of concrete and 12% of reinforcement steel in structural design.

A1 Class Non-combustible Material

AAC products are classified as A1 class "non-combustible" construction material. With heat resistance up to 1,200 °C, AAC provides fire safety in structures.

"Fire resistance test of AAC walls" conducted in England by an accredited laboratory shows that; after 4 hours, with a fire mean temperature reaching 1.200°C, the temperature on the back side of the AAC wall was measured as 57°C.

Durable

AAC construction materials and components can be produced with various strength classes depending on the requirements of the construction market. Floor slabs, walls and roof slabs constructed with AAC panels are highly durable and perfect on statical solutions.

Healthy

AAC has the properties to store heat. When used in exterior walls, it protects the building from heat fluctuations and maintains a healthy and comfortable interior environment.

Sound Insulation

AAC fulfills the sound insulation values required by regulations with various thickness and material classes.

• Easy Handling

Produced with millimetric sensitivity, AAC is an easy handling material like wood. Processes like forming installation channels or junction holes, drilling and cutting can be easily done on AAC products.

• Economic Solutions

AAC is produced by using special equipment for dimensioning with millimetric sensitivity. Due to its smooth surface, it reduces the plaster thickness and costs.

Recyclable

All potential waste occurring within the life cycle of AAC can be recycled. Therefore, the amount of waste is minimized.

In both construction and demolition sites, segregated and classified AAC wastes can be collected and recycled.

Thermal Comfort

Millions of pores in AAC enable the material to breath and therefore the whole building; while preventing to gather moisture and promoting the comfort level.



Products

| Construction Materials

a. Wall Blocks

Plain-end Wall Blocks

used in both interior and exterior walls of buildings constructed by any type of structural systems such as reinforced concrete, steel, wooden, prefabricated or masonry constructions.



Tongue-and-Groove Wall Blocks

These materials can be used in both interior and exterior walls of buildings constructed by any type of structural systems such as reinforced concrete, steel, wooden, prefabricated or masonry constructions.



b. Floor Filling Blocks

Floor Filling Blocks

These are filler materials that can be used in floor slabs.



c. U Blocks

These U section materials can be used casting bond beams and girders providing visual continuity and eliminating the need for formwork.

U Blocks

These blocks reduce the damages on reinforced concrete surfaces caused by condensation and molding. Therefore, the risk of formation thermal bridges can be eliminated.



| Construction Elements (Reinforced)

a. Wall Elements

• Horizontal and Vertical Wall Elements

Horizontal and Vertical Wall Elements enhance the architectural facade variety with providing various fuctions and options. They can be easily and quickly assembled with the help of assembly apparatus and crane. Wall Elements are designed and produced providing the necessary strength against wind and earthquake forces.



Horizontal Wall Elements are reinforced wall elements that can be used both in interior and exterior wall frame gaps formed by reinforced concrete, steel, wooden or prefabricated structure framework. These elements can be mounted to the interior and exterior surfaces of the colomns as well as between the columns.



Vertical Wall Elements can be used as interior and exterior walls in structural frame gaps formed by the structural framework, or can be used as a partition wall independently from the framework.

• Load-Bearing Vertical Wall Elements

AAC Load-Bearing Vertical Wall Elements are used in masonry constructions. These elements are used as interior and exterior load-bearing walls in masonry constructions.



According to the Earthquake Regulation, masonry constructions can be built by using these load-bearing wall elements.

b. Roof Elements

AAC Roof Elements can be classified as reinforced, load-bearing and prefabricated construction materials for roof slabs especially for industrial and residential building types. AAC Roof Elements can be used in various roof types such as flat, pitched and vaulted roofs. In combination with other AAC Reinforced Elements and construction materials, they form a complete construction system.

They can easily be mounted on reinforced, steel, wooden and prefabricated structures. They don't require formwork, the only requirement for joints of panels and beams is concrete usage. With its high heat insulation properties, they also provide heat insulation in roofs.



c. Floor Deck Elements

AAC Floor Deck Elements are reinforced elements used for intermediate slabs and terraces. They can be easily and quickly assembled with the help of assembly apparatus and crane.

The thickness of the AAC Floor Deck Elements are specified according to building loads and span conditions.



d. Lintels and Surround Trims

Lintels

AAC Lintels are steel reinforced complementary elements for wall construction. They are used over door and window openings. When used with AAC wall blocks, they provide integrity in terms of resistance to heat and vapour permeability as well as preventing thermal bridges. They also prevent condensation and molding.



Lintel sizes are determined according to the size of wall blocks, therefore they don't have any fitting problems. During assembly, AAC Lintels must be placed upon adhesive mortar. Utmost attention shoud also be paid to keep the overlapping allowance not less than the assigned measures

• Surround Trims

AAC surround trims are steel reinforced complementary elements used in door and window openings to give architectural emphasis on building facades.



Surround trims can be used both horizontally and vertically. They are custom-made to size for a given application.

AAC Structural System

AAC Structural System is composed of steel reinforced construction elements and can be used in multi-storey masonry constructions. By using these system, long-lasting, healthy, high quality and highly-featured buildings can be constructed.

AAC Structural System is composed of;

- Load-Bearing Vertical Wall Elements,
- Floor Deck Elements.
- Roof Elements,
- Lintels.

AAC Structural System are used in masonry constructions up to 4 storeys in accordance with the earthquake zones stated in Earthquake Regulation.



AAC load-bearing vertical wall elements can be used as both interior and exterior walls in masonry constructions. AAC floor deck elements are used as slab, whereas in roofs, AAC roof elements are used.

Many buildings constructed with AAC Structural System have got over the hazardous earthquakes in our country without any damage.

A scientific study has started for "AAC Structural System" in 2014. Under the name of "AAC R&D Project" in cooperation with Civil Engineering Departments of METU (Middle East Technical University) and ITU (Istanbul Technical University), has been finalized nowadays and Earthquake Resistant Design Rules for Reinforced AAC Structural System are established.



Thermal Insulation Plates

It is produced by the member companies of Turkish AAC Association as a highly innovative product and has been obtained National Technical Approval (NTA) and European Technical Approval (ETA) certificates.

Production of this product is considered as a revolution in construction material market.



AAC Thermal Insulation Plate having a thermal conductivity value of 0,05 W/mK, is a mineral-based, massive and non-combustible thermal insulation material.

Gross	Compressive	Thermal Conductivity	Fire Class
Density Dry	Strength	Value	(in accordance with
(kg/m³)	(N/mm²)	λ _h (W/mK)	TS EN 13501-1)
130 - 160	≥ 0,35	0,05	A1



AAC Thermal Insulation plates are used for hea insulation of exterior facade, ceiling of basements and carparks as well as for heat insulation of terraces and roofs.

Specifications of Thermal Insulation Plate;

- Provides high thermal insulation. ($\lambda_h = 0.05 \text{ W/mK}$)
- Thermal performance doesn't change by the time
- A1 class "non-combustible" material
- Sound insulation properties are better than equivalent materials
- Massive material
- Appropriate properties for difusion (μ =3)
- Easy handling
- Quick application
- Recyclable and eco-friendly



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