



Indian Green Building Council

litecon

Lighter Faster Stronger

Autoclaved Aerated Concrete Blocks



LIGHTER, FASTER, STRONGER



BUILDING INDIA STRONGER...

AN ISO 9001 : 2008 CERTIFIED COMPANY

Product History at a Glance

AAC (Autoclaved Aerated Concrete) Blocks, though largely new to many parts of India, it's not a new building material. It was developed in SWEDEN in 1920, in response to increasing demands of timber supplies. AAC is a lightweight building stone, comprised of all natural raw materials. AAC block is used in a wide range of commercial, industrial and residential application and has been in use in EUROPE over 90 years, the Middle East for the past 40 years and in America and Australia for 25 years. It's an estimate that AAC now account for over 40% of all construction in UK and more than 60% of construction in Germany. In India production of AAC block started in 1972. AAC is a lightweight, high strength building material and is produced in a variety of forms from blocks, to structural floors and wall panels.

AAC is credited by LEED (Leadership in Energy and Environmental Design) and USGBC (US Green Building Council) as a "green" alternative to traditional construction materials. Indian Green Building Council (IGBC) recommends its use in India.



AAC consists of 80% of air. It is manufactured by combining silica in the form of sand or recycled flyash, cement, lime, water and an expansion agent – aluminium powder and paving it into a mold. When added to concrete, the aluminium powder reacts with the silica, resulting in the formation of millions of microscopic hydrogen bubbles. The hydrogen bubbles cause the concrete to expand to roughly five times its original volume. The hydrogen evaporates and leaving a highly closed cell aerated concrete. It is then cut into blocks or panels which are then steam and pressure cured in an autoclaved. Using AAC is very advantageous because it is environmentally friendly qualifies as a 'green' building material from manufacturing to recycling.

AAC is so lightweight, it weighs 1/5th of the weight of the standard concrete, which results in lower transportation costs, faster work-flow lower material handling costs etc. AAC is in 'ready to build' material, requiring no onsite curing time. It has unparalleled workability because it can be sown, drilled, nailed, screwed and milled with common hand tools.

The accurate panels are finished with a very thin mortar joint producing a surface that requires minimum rendering. AAC possesses excellent structural integrity, resisting moisture penetration.

AAC has outstanding durability qualities over traditional materials, like humidity, freeze/thaw cycles and chemical attack. AAC is non-combustible. It offers the greatest fire resistance than any building material.

The use of AAC eliminates the need for applying costly fire proofing materials. AAC has extraordinary thermal insulating qualities and because of its unique physical structure. AAC provides much greater thermal insulation than conventional masonry.

Its relatively low consumption of low materials, excellent durability, relative cost effectiveness and the ability to be recycled. AAC has been aptly called the 'Superhero' of building materials.

One of the major advantages of AAC over other cementitious construction materials is its lower impact on environment. It has no efflorescence emission (white salt appearance) at large.

It is highly thermal insulating product used for both internal and external construction. It is easy and quick to install since the material can be routed, sanded, and cut to size on site using standard carbon steel band saws, hand saws, and drills. Major application of AAC products include light weight partition walls, protection of steel structure and lintels. The common sizes are (LxWxH) 625mm x 240mm x 200mm; 625mm x 240mm x 100mm; 625mm x 240mm x 150mm etc.



Technical Aspects

| NO. | PARAMETER | AAC BLOCK | CLAY BRICK |
|-----|------------------------|--|---|
| 1 | Size(LxHxT) | 625 x 240 x (75 to 225) mm | 230 X 75 X 115 mm |
| 2 | Precision in Size | 1.5 mm (+/-) | 05 to 15 mm (±) |
| 3 | Compressive Strength | 3.5 N/mm ² & above (as per 15:2185) | 2.5 to 3.5 N/mm ² (as per IS:1077) |
| 4 | Dry Density | 550-650 Kg/Cum (oven dry) | 1950 Kg/Cum |
| 5 | Fire Resistance | 02 to 06 hours (depending upon thickness) | 02 hours |
| 6 | Sound Insulation Index | 45db for 200 mm thick wall | 50 db for 230 mm thick wall |
| 7 | Thermal Conductivity | 0.24 (w / k-rn) | 0.81 (w/ k-rn) |

General Aspects

| NO. | PARAMETER | AAC BLOCK | CLAY BRICK |
|-----|-------------------------------------|--|--|
| 1 | Structural Cost | steel saving up to 15 % | no such saving |
| 2 | Cement Mortar for Plaster & Masonry | requires less due to flat, even surfaces & less number of joints | requires more due to irregular surface & more number of joints |
| 3 | Breakage & Utilization | negligible breakage almost 100% utilization is possible | average 10 to 12% breakage, so 100% utilization is not possible |
| 4 | Construction Speed | speedy construction due to it's big size, light weight & ease to cut in any size or shape | comparatively slow |
| 5 | Labour output | approximately double of conventional brick | comparatively low |
| 6 | Quality | uniform & consistent | normally varies |
| 7 | Efflorescence | no such chance, which improves the durability of wall along with plaster & paint in a long run | most chances are there |
| 8 | Fitting & Chasing | all kind of fitting & chasing possible (as per IS:1905) | all kind of fitting/chasing possible |
| 9 | Carpet Area | more due to less thickness of walling material | comparatively low |
| 10 | Storage | readily available at any time & any season in a short notice so no storage required | particularly in monsoon, stock at site is compulsory which block large working space |
| 11 | Water Required | requires less in wetting & curing, hence saving in electricity bill & labour cost. | need more curing resulted to higher amount of electricity bill & labour cost. |
| 12 | Energy Saving | approximately 30% reduction in air-conditioned load for both heating & cooling | no such saving |
| 13 | Maintanance | less due to its superior properties | comparatively high |

AAC Blocks V/S Conventional Bricks

Savings in Cost of Structure

AAC blocks are one third lighter than conventional clay bricks, thereby reducing the dead weight of the structure drastically. Light weight structure decreases construction cost due to reducing steel, cement and excavation. On and average the reduction in steel is 15% due to light weight of AAC and reduction in cement is around 10%. Due to reduction in dead weight, reduction in consumption of steel and cement and lesser excavation for foundations, construction time is reduced which in turn results in savings in labor cost and overheads.

Savings in Mortar

AAC blocks are 7 times bigger than the size of the conventional bricks. Bigger size means less number of joints. Less joints results in lesser quantity of mortar for building. There is overall 60% reduction in use of Mortar.

Savings in Plaster

AAC blocks have uniform shape and texture, which gives even surface to the walls. There is overall 35% reduction in the cost of plastering.

Reduction in Wastage Due to Less Breakages

Breakage in Litecon block is negligible as compared to ordinary brick (Approximate 10 to 12%) It reduces wastage of the block and increases the percentage utilization Approximately (99.99%)

If any breakage in the blocks, it would be in - to two or three pieces which can be utilised in masonry as "brick bat".

Reduction in HVAC Load

AAC blocks are resistant to thermal variations. It reduces the total load of refrigeration and air conditioning. Though initial installation cost may remain same but AAC blocks reduces operation and maintenance cost drastically. There is over all 25% saving in operation cost.

Savings in Power Infrastructure

Due to lesser HVAC load, cost of power infrastructure i.e. is lesser capacity of transformer, DG set, and Cable etc also reduces considerably which in form results in savings in electrical charges.



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Details of Merits are Being Provided Here Under



HIGH THERMAL INSULATION

- These blocks have appx. 1/3rd density that of Conventional Building Blocks.
- It has very low specific conductivity. This makes heating or cooling (Air Conditioning) very efficient.
- Generates regular saving on energy and global warming.



LIGHT WEIGHT

With an approximate density of (500-550) Kg/M³ of AAC which is 1/3 times lighter than clay brick hence it reduce dead load of structure drastically resulting in to saving of steel up-to 15% and concrete up-to 7%. This saves construction time and the total materials required for the construction of the entire buildings.



SUPERIOR FIRE RESISTANCE

A 10 cm thick AAC Thermalite block provides a fire resistance value of 4 hours and 15 cm block 6 hours in accordance with BS-5628-3- approximately twice more protection than the normal concrete. Therefore, Litecon is particularly suited for fire walls and fire protection of structural steel.



COMPRESSIVE STRENGTH

The block has an average compressive strength of (28-35) kg/cm² which is superior to most types of light weight blocks, 25% more stronger than other products of the same density.



WORKABILITY

It can be sawed, nailed and drilled easier than wood, by suitable tools available for this purpose. It results in less wastage and keep the site clean.



ECONOMICAL, EASIER & QUICKER TO INSTALL

Construction time is substantially reduced while LITECON blocks are used. AAC blocks are larger and lighter than conventional blocks and hence can be installed at a quicker rate. Blocks are laid flush utilizing thin joint mortar hence reducing mortar and plastering cost and eliminating thermal bridging.



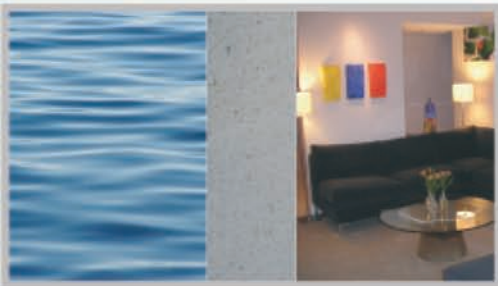
SOUND INSULATION AND ABSORPTION

The cellular structure of AAC Blocks provides superior sound absorption and insulation, both of which depend on density and porosity. The air porosity of the material will have significant effect on the performance of the wall. The aerated structure of thermalite consists of millions of very small non-interconnected air cells giving very low air porosity. This gives a high resistance to the passage of air borne sound relative to density.



BETTER EARTHQUAKE RESISTANCE

Due to the stability & light weight of AAC blocks the structure made from LITECON are more resistant to earthquake. AAC blocks are better choice in earthquake prone area of western part of India.



HIGH RESISTANCE TO AIR AND WATER PENETRATION

The AAC products, because of their cellular and discontinuous micro structure are superior to the normal concrete in resistance of water penetrability & thus the external surface of AAC walls provides superior resistance to air and moisture penetration than the traditional masonry products. AAC is manufactured from non-biodegradable materials, which neither rot nor attract mould, keeping interiors clean and durable.



DURABILITY & DIMENSIONAL STABILITY

The AAC products have been in use for nearly 70 years. Since then, the production has spread to most parts of the world and the material has proved its durability under extremely different climatic and chemical conditions. The linear expansion coefficient of Thermalite is approximately 0.02%



GO GREEN . . .

“ The earth is what we all have in common ” LITECON



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