

WALL FROM BRICKS, AERATED CONCRETE BLOCKS AND THEIR QUALITIES

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ANNOTATION

The perfect material is difficult to create. If at all possible. Each of the existing ones has its own advantages and disadvantages. But with skillful use, you can mix the shortcomings, and the advantages are fully beneficial. Brick is the oldest building material that is still popular worldwide. At the beginning of the 19th century, bricks were made of burnt clay - first in wood, then coal, and today they are produced in gas furnaces. However, until now, the Hoffmann coal ring furnace - one of the oldest brick manufacturers, Wienerberger - burns hand-molded facing bricks. By the way, the approach is the same as 108 years ago.

KEYWORDS: brick, gas block, construction, facade, comparison, mortar, brick masonry, gas block masonry.

АННОТАЦИЯ

Идеальный материал трудно создать. Если вообще возможно. Каждый из существующих имеет свои достоинства и недостатки. Но при умелом использовании можно смешать недостатки, и преимущества в полной мере выгодны. Кирпич является старейшим строительным материалом, который до сих пор популярен во всем мире. В начале XIX века кирпичи делали из обожженной глины - сначала в древесине, потом угле, а сегодня их производят в газовых печах. Однако до сих пор угольная кольцевая печь Гофмана - одного из старейших производителей кирпича, компании Wienerberger - сжигает облицовочный кирпич ручной формовки. Кстати, подход такой же, как и 108 лет назад.

Ключевые слова: кирпич, газоблок, строительство, фасад, сравнение, раствор, кладка кирпича, кладка газоблока.

INTRODUCTION

Let's not open the Americas, listing the unconditional advantages of ceramic building materials: they are durable, frost-resistant, resistant to moisture and wind and, as a result, especially durable. Their service life is from 100 years or more.

Brick has a huge number of advantages. Firstly, the brick facade is respectable, thorough and for a long time. Secondly, the brick is resistant to atmospheric precipitation and other adverse factors. And finally, it is designed for long-term defect-free operation, "Braer, a European-quality ceramics company, emphasized to us.

Aerated concrete - compared to brick, quite young material. This is artificially created limestone. The technology of its production has been known for only eight decades. It was first born in Sweden. Then it was intercepted by German manufacturers. In Russia, aerated concrete begins to be produced after World War II. True, in the Soviet years he failed to seriously master the construction market. Real recognition came to him only in recent decades.



1-picture. Brick in samples

At the moment, the technology of aerated concrete production has gone far ahead. Its performance is greatly improved. Now it is produced on specialized lines with very high geometric accuracy of blocks. At the most advanced factories - such as, for example, a manufacturer with many years of experience, the XELLA company (YTONG brand) - product manufacturing accuracy: $\pm 1-2$ mm. This makes it possible to mount aerated concrete blocks not on cement-sand mortar, but on specialized glue.



2-picture. Compromise between heat and strength

Aerated concrete is, in fact, the designer of the LEGO. Even geometric surfaces allow you to mount aerated concrete blocks manually, even without the use of construction equipment. There is a special laying technology - the so-called thin-seam, which ensures the minimization of "cold bridges" due to minimal seams.

Due to the high geometric accuracy of aerated concrete blocks, the walls are very even.

- And here begins the second economic effect - minimization of finishing costs, on obviously even surfaces you can apply plaster compositions with a thinner layer. It is impossible not to note the high

thermal insulation properties of this material. Due to the fact that aerated concrete is foamed (it contains a large number of pores), it turns out to be warmer. True, plus in this case risks becoming a minus. And here the aerated concrete passes the baton to the brick.

Let's take a closer look at the problem. Aerated concrete is a very light and warm material. Two-thirds of aerated concrete is filled with pores. If we take a stone and replace two-thirds of its volume with air, this will improve the heat engineering of the stone. But at the same time, alas, strength will fall. That is why during the construction of load-bearing walls from aerated concrete, the so-called armobelts are used - special expansion joints. According to experts, a loss in strength is a fee for heat engineering (high thermal insulation properties of aerated concrete).



3-picture. Construction cost: expensive - rich or cheap-budget

Brick varies in many respects, among them, such as: method of manufacture, composition and shape. Everyone can have their own functional purpose. Today, the most popular is the front, ordinary brick of various formats and ceramic stone.

- Previously, low costs for heating a house made it possible to build a wall one and a half or two bricks thick. Over time, gas and electricity tariffs have increased, and the requirements for heat engineering have become tougher.

Aerated concrete, additional insulation, in fact, is not required. It is of a larger format than brick and is faster to mount. The weight of the walls is less, which means that the load on the foundation is less - with competent design, you can save not only on decoration, but also on the foundation.



4-picture. Decoration bricks

True, in fairness, we note: ceramic blocks that have appeared in recent years have solved a number of problems related to the availability of ceramics, in principle.

Construction time: aerated concrete is several times less, but the brick will last longer. Brick, as mentioned above, is a heavy building material. The weight of a square meter of a wall with a thickness of 380 mm is 3-5 times the weight of a similar wall made of autoclave aerated concrete. Heavy walls significantly increase the actual cost of the building - most often due to additional transportation costs, land and foundation work. Currently, only qualified specialists can build a brick house, and everyone can build a house made of cellular concrete blocks. Due to the small size and use of mortar, it is necessary to level almost every brick, which greatly delays the construction process.

And then the "ball" again goes to aerated concrete. With large and even blocks of aerated concrete, when using a simple tool and an affordable adhesive mixture, it takes no more than five days to erect one floor.

The process of laying aerated concrete blocks for glue is quite simple, its consumption is about 25 kg per m³ of masonry. Does not cause problems and kneading the mixture with a drill with a mixer, as well as lifting and moving the glue. Masonry of ceramics in modern realities can be carried out only on a mortar, it is important to understand here that the use of any type of mortar entails a great deal of labor in the preparation and subsequent movement of it along the perimeter of the house under construction. And the thermal characteristics of the erected walls are very dependent on the type of masonry mortar used and the thickness of the seam. Only due to poor performance of masonry seams, heat loss through seams can be more than 30%.

Ceramic processing is also difficult. Sharpening is almost impossible. For cutting, you have to buy expensive tools and consumables that wear out quickly. Blocks often split during sawing, the formation of openings and finishing elements is very difficult.

The listed moments lengthen the construction time from ceramics.

In the case of aerated concrete, everything is done much easier and more practical, cutting is carried out with a long-term hacksaw without scrap and waste. Environmental friendliness: ceramics do not "dust" and do not contain impurities and harmful slags, aerated concrete is very trying to be safe. True, ceramics are not equal in environmental friendliness - it is not for nothing that it has been used for centuries. And then the "pass" again takes ceramics.

In ceramic (as in wooden) houses it breathes especially well - this is a fact. Firstly, this is an absolutely natural material (clay + water + sawdust), and secondly, in decorated ceramic blocks, for example, optimal vapor permeability - the walls "breathe," absorbing excess moisture and giving it away at low humidity indoors. Thus, the house always maintains comfortable humidity for a person. Walls made of ceramics do not accumulate moisture, so there is no risk of fungal formation and mold on the walls.

An additional advantage is the complete hypoallergenicity of ceramic blocks - they do not "dust," do not contain slag impurities and do not release harmful volatile organic compounds into the air.

Ceramics have a high index of sound insulation. This indicator depends on the mass of the walls and the surface density of the masonry layers. Ceramic blocks have a high density - 700-1000 kg/m³ and a high surface density of ceramic shard - 1600 kg/m³. And mortar seams and plaster increase the surface density of the masonry. These factors allow you to meet the highest requirements for sound insulation of walls in rooms.

Manufacturers of aerated concrete have also been trying to comply with environmental standards in recent years.

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