

THE USE OF THERMAL INSULATION BUILDING MATERIALS IN BUILDING COMPONENTS

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Annotation: This article discusses the technologies of heat-insulating building materials, their properties, application and innovative developments. The purpose of the article is to show modern approaches in the field of thermal insulation and their impact on the construction industry.

Keywords: building, architectural monument thermal insulation, mineral cotton, foam plastic, inorganic and organic, mats, expanded perlite.

The depletion of energy resources on Earth necessitates a significant increase in energy efficiency in building construction. In Uzbekistan, nearly 50% of the energy produced, or approximately 17 million tons of oil equivalent per year, is consumed by buildings. Similarly, 40% of greenhouse gas emissions are associated with building-related processes.

In this regard, the “O‘zsanoatqurilishmateriallari” Association of Uzbekistan, in cooperation with the United Nations Development Programme and the Global Environment Facility, is implementing priority programs to address energy efficiency issues in buildings. These programs focus on improving the energy efficiency of residential and public buildings, such as schools, kindergartens, and hospitals. Higher education institutions specializing in architecture and construction, research and design institutes, and construction organizations have been involved in implementing these programs.

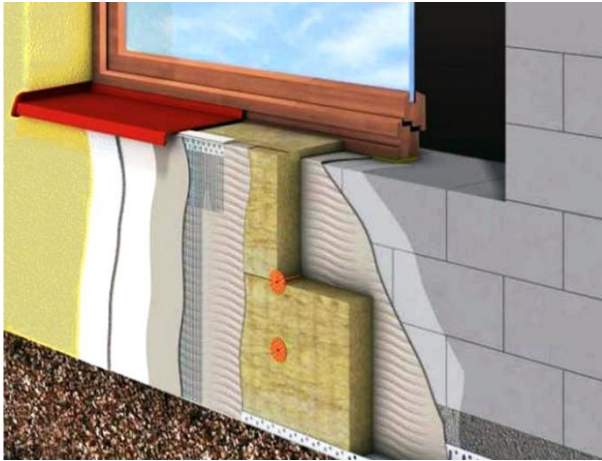
Thermal insulation materials play a crucial role in the construction sector, as they ensure the energy efficiency of buildings and structures. The development and application of insulation materials that meet modern construction standards, provide long-term performance, and are environmentally safe remain urgent issues. Thermal insulation is primarily aimed at reducing energy consumption, creating a comfortable indoor environment, and minimizing environmental impact. Such materials, including polymers, mineral fibers, and other innovative materials, each have unique physical and chemical properties.

The choice of insulation method varies. Wall insulation can be either external or internal, with external insulation being preferable and more effective. However, in some cases, external wall insulation is not possible. If materials and walls become saturated with moisture, the insulating effect is reduced to zero, and the building's walls gradually deteriorate due to fungal infections.

For example, if a building is an architectural monument, altering its exterior appearance is not recommended. Similarly, if there is an unheated workspace behind a wall, insulating



the wall from the outside may not be possible. In such cases, internal wall insulation using various types of insulation materials becomes an ideal solution.



External wall insulation using mineral wool or fiberglass is significantly more effective than insulating the interior surface of a room with these materials.

Choosing the right insulation requires a responsible approach, studying the characteristics of each type, and selecting materials based on the construction materials used for your home's walls.

Incorrectly chosen insulation material will not achieve the desired results and may even worsen the situation. For example, improper installation of insulation can cause the wall to

lose its ability to retain heat and freeze even more in winter than before.

In many cases, if a wall is not properly sealed, condensation can form over time, posing a risk to both the insulation material and the wall itself.

If materials and walls become saturated with moisture, the insulating effect is reduced to zero, and the building's walls gradually deteriorate due to fungal infections.



Improper installation and inadequate sealing of the structure are among the main causes of heat loss in a room and surface contamination with fungi.

To avoid these issues for many years after repairs and surface insulation, it is essential to strictly follow the technical installation recommendations.

Equally important is properly sealing the joints of the home's interior walls and correctly adhering the insulation boards to the wall surface, ensuring tight connections between

them.

Conclusion: These technologies provide an effective method of energy saving, especially in the context of climate change and limited energy resources. Thermal insulation enhances the ability of buildings to withstand temperature fluctuations in winter and summer, significantly reducing overall energy consumption.

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