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## **THE IMPORTANCE OF SILICON ORGANIC HYDROPHOBIZERS IN THE FIELD OF CONSTRUCTION**

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### **Abstract**

Silicon organic hydrophobizers occupy an important place in the construction industry. Their main function is to protect materials from moisture. The role of hydrophobizers is considered great in ensuring long-term durability and quality of building materials. Silicon organic hydrophobizers reduce water intake while retaining the mechanical properties of the materials. This guarantees the strength and longevity of the buildings.

**Keywords:** silicon organic hydrophobizers, water, materials, moisture, Silicon, mechanical properties, gypsum, concrete.

Hydrophobizers are applied to the surface of concrete, brick, plaster and other building materials. They form a coating on the surface of the materials that does not absorb water. This coating prevents moisture from entering, thereby slowing or stopping the processes that cause material degradation. Silicon-based hydrophobizers are especially effective in increasing the water resistance of concrete. In the internal structure of concrete, the penetration of water reduces its strength and leads to the formation of cracks over time. Hydrophobizers are the main tool in preventing this process. In addition, Silicon organic hydrophobizers reduce the growth of microorganisms on the surface of materials. Mold and other harmful microorganisms can form in the presence of moisture, especially on concrete and brick surfaces. This negatively affects the sanitary condition of the building.



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Hydrophobizers reduce moisture and eliminate this problem. Thus, it also plays an important role in maintaining the interior and exterior of buildings.[1]

Another advantage of Silicon organic hydrophobizers is their environmental friendliness. While most hydrophobizers are made on the basis of synthetic chemicals, silicon-based hydrophobizers are relatively safe for humans and the environment. They do not emit harmful gases into the air, and when they interfere with water, their conversion to toxic substances is rare. This helps to ensure environmental safety in construction. Methods for applying Silicon organic hydrophobizers to materials can also vary. There are ways to spray them, apply them using a brush, or add them to the material. Each method has its own advantages and areas of application. For example, the surface spray method allows you to quickly cover large areas, while brushing is convenient for application in small and complex areas. Adding a hydrophobizer to the material, on the other hand, increases water resistance in its internal structure. As a result of the use of hydrophobizers in construction, the energy efficiency of buildings also increases. A decrease in humidity leads to an improvement in thermal insulation. This helps to maintain heat in winter and reduce cooling costs in summer. As a result, the operating costs of the building are reduced and living conditions are improved. Silicon organic hydrophobizers also help to improve the appearance of buildings. The processes of spots, mold and rot that appear on surfaces due to moisture are reduced with the help of hydrophobizers. This makes it possible to preserve the aesthetic appearance of the building for a long time. At the same time, hydrophobizers make it easier to clean surfaces and reduce maintenance costs.[2]

From a technological point of view, Silicon organic hydrophobizers simplify the construction process. They are often ready-made and do not require additional mixing or special conditions. This will speed up construction and reduce labor costs. Also, hydrophobizers provide long-term protection and extend the operational life of the building. In addition, the use of hydrophobizers has a positive effect on the mechanical properties of building materials. The decrease in moisture increases the hardness and strength of the materials. This increases the overall stability of the buildings. Water-resistant materials in particular are more preferred in construction because they have a long service life in large structures and buildings with complex



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architecture. Silicon organic hydrophobizers are also of great economic importance. Their application prolongs the service life of building materials, reduces the cost of repair and replacement. As a result, the total construction costs will decrease and the investment efficiency will increase. This is a huge advantage for construction companies and customers.[3]

### Conclusion

In conclusion, Silicon organic hydrophobizers have many positive effects in the construction industry, playing an important role in protecting materials from moisture, improving their mechanical properties, ensuring environmental safety and increasing economic efficiency. Their application serves to build high-quality and durable structures, ensuring the long-term durability of the premises. Therefore, the role of Silicon organic hydrophobizers in modern construction technologies is growing, and their importance is expected to increase even more in the future.

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