



WHAT ARE THE PROPERTIES OF THE GLASS USED FOR STAINED GLASS

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Annotatsiya: *Vitraj san'ati nafaqat yorug'lik va ranglarning uyg'unligi, balki o'ziga xos materiallar majmuasidan ham tashkil topgan. Vitraj yaratishda ishlatiladigan materiallar va ularning xossalari bu san'at asarining sifatini, chidamliligini hamda estetik qiyofasini belgilaydi. Ushbu maqolada vitrajda keng qo'llaniladigan asosiy materiallar, ularning xususiyatlari, afzalliklari va kamchiliklari haqida ma'lumotlar berilgan.*

Kalit so'zlar: *vitraj, materiallar, rang-barang materiallar, shisha, yorug'lik, maxsus pigmentlar, bezak elementi.*

Аннотация: *Витражное искусство — это не только сочетание света и цвета, но и уникальный набор материалов. Материалы, используемые при создании витража, и их свойства определяют качество, долговечность и эстетичный вид этого произведения искусства. В статье представлена информация об основных материалах, широко используемых в витраже, их свойствах, преимуществах и недостатках.*

Ключевые слова: *витраж, материалы, красочные материалы, стекло, свет, специальные пигменты, декоративный элемент.*

Abstract: *Stained glass art is not only a combination of light and color, but also a unique set of materials. The materials used in creating stained glass and their properties determine the quality, durability and aesthetic appearance of this work of art. This article provides information about the main materials widely used in stained glass, their properties, advantages and disadvantages.*



Keywords: *stained glass, materials, colorful materials, glass, light, special pigments, decorative element.*

INTRODUCTION

The most basic and widely used material in stained glass is glass. Glass is distinguished by its brightness, colorfulness and light-passing property. Glass can be of different colors and thicknesses, allowing artists to make their works rich and colorful. The glass material has the ability to transfer light, which makes it possible for the stained glass to play with light in the interior. There are different types of glass, among which species stand out, such as colored glass, white glass, matte glass, as well as textured glass. Colored glass is produced using special pigments, and their color can vary depending on the light. Matte glass softens the light, giving the eye a pleasant and delicate look, while textured glass diffuses light with patterns on its surface and gives the stained glass a unique decoration. The main properties of glass are its strength, the degree of Light transfer and the accuracy of colors. At the same time, Glass has the property of fragility, that is, it can be more resistant to external influences, especially shocks. For this reason, special frames and metal profiles are used to protect and strengthen stained glass works.

MATERIALS AND METHODS

Another important material used in stained glass is metal profiles. They are mainly made of iron, copper, tin or copper-tin alloy. Metal profiles act as a combination of glass pieces in the stained glass and keep them strong. The strength and ductility of the metal are important in maintaining the shape of the stained glass. Iron profiles are often thick and durable, and are used in heavy and large stained glass. Copper, on the other hand, is characterized by its corrosion resistance and aesthetic appearance, it is also often used as decorative elements. Metal profiles can be easily bent and brought into different shapes, which makes it convenient to create complex patterns. At the same time, special paints or coatings are used to protect metal profiles from Rust. Another important component used in stained glass is additional decorative materials. These materials include colored films, a special film that can be glued to pieces of glass, and enriched pigments. Colored films are used to give the



glass additional color and texture. They change the nature of light transmission and give the stained glass a more lively look. Special pigments, on the other hand, are applied to or added to the surface of the bottle, increasing the stability and brightness of the colors. Such pigments do not lose their color for a long time and resist the harmful effects of sunlight.[1]

There are other materials used in the stained glass. For example, to increase the strength of the stained glass, special layers are sometimes placed between the pieces of glass. These layers make the glass more resistant and protect it against shocks. Also, silicone and other adhesives used in stained glass play an important role in firmly attaching glass fragments to metal profiles. They are elastic and long-lasting, so the durability and strength of the stained glass increases.[2]

RESULTS AND DISCUSSIONS

The properties of the materials used in stained glass determine their technical and aesthetic aspects. Glass has basic properties such as light conduction, color reflection, and strength, while metal profiles are important in giving structural strength and shape. Additional decorative materials, on the other hand, enhance the splendor of the stained glass and give it originality. Each material has its own advantages and disadvantages, so when creating a stained glass, it is very important to choose them correctly and adapt them to each other.[3]

Modern technologies have expanded the quality and capabilities of the materials used in the stained glass. Currently, special sturdy glass types are produced for stained glass, which are highly shock-resistant and long-lasting. Also, with the help of new pigments and films, it is ensured that the colors are more vibrant and stable. For metal profiles, however, anti-corrosion coatings and light alloys are being developed, which will extend the service life of the stained glass. The environmental aspects of the materials used in stained glass art are also considered important. Many modern manufacturers are focusing on the use of environmentally friendly, recyclable and non-toxic materials. This ensures that the stained glass is not only aesthetically and technically, but also environmentally sustainable. Glass used for stained glass art has its own characteristics that ensure its quality and aesthetic aspects. Stained glass



should be mainly capable of passing light. This feature serves the main purpose of the stained glass, since it is necessary that the light passed through the stained glass looks colorful and vibrant, radiating a beautiful and original light into the interior. The passage of light through the glass, its colors and saturation determine the overall appearance of the stained glass. The glass used for stained glass is of different colors, these colors are added to the glass itself using special pigments. The depth and brightness of the colors depends on the quality of the bottle, and it is important that it retains its color for a long time. Colors can vary depending on the light and create different effects, which increases the beauty of stained glass art. Sometimes a special texture or pattern is applied on the glass, which further enriches the light distribution and lighting effects.[4]

The thickness and strength of the bottle are also important for the stained glass. Since stained glass is usually fragile, special frames and metal profiles are used to protect it. These frames protect the glass from external shocks, temperature changes and other mechanical influences. The thickness of the bottle ensures its durability and strength, and also determines the overall weight of the stained glass. When the glass is too thin, it can absorb quickly, while when it is too thick, the ability to pass light decreases. Glass intended for stained glass is of high quality, does not lose its color in the long term and is resistant to light. It should be able to withstand external influences such as sunlight, temperature changes and humidity. Also, special coatings can be applied on the surface of the glass, which increases its durability and protects it from dust, moisture and other harmful factors. Aesthetic aspects of glass are also important. The glass used for the stained glass should be of different shapes and sizes, making them easy to cut and shape. It helps artists create intricate and delicate patterns. Also, the flatness or texture of the glass surface affects the overall appearance of the stained glass. Textured glass softens the light and creates subtle effects, which ensures that the stained glass is original and unique. In general, glass used for stained glass should have properties such as light transfer, variety, strength, durability and aesthetic appearance. These properties ensure that the stained glass retains its elegance and beauty for a long time. Also, when creating complex and



delicate patterns of stained glass art, it is important that the glass is of good quality and fit. Therefore, when choosing glass for stained glass, it will be necessary to pay attention to all its technical and aesthetic parameters.[5]

CONCLUSION

In conclusion, the materials used in the stained glass form the basis of this work of art. Glass material plays an important role in conducting light and providing variety, while metal profiles serve to strengthen the structure of the stained glass. Additional decorative materials, on the other hand, give the stained glass originality and beauty. Given modern technologies and environmental requirements, the quality and capabilities of the materials used in the stained glass are constantly increasing. Therefore, in the art of stained glass, it is important to correctly select materials and deeply understand their properties. This ensures not only aesthetic beauty, but also the long service life of the stained glass.

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