

EPOXY RESIN AND ITS APPLICATIONS

Kozickaya V.A., student
Shtykalova A. E., student
Scientific supervisor – Lichevskaya S. P., senior lecturer
English language department №1
Belarusian National University of Technology
Minsk, Republic of Belarus

The use of epoxy resin has become a real know-how in the work of modern designers and carpenters. The unique properties of this material open up new horizons for creativity and allow you to create exclusive, unusual products. Now many people work with it, as they did in their time with polymer clay, felting or decoupage [1].

High-strength compounds were discovered in 1908 by the Ukrainian chemist N.A. Prilezhaev. At first they were used in industry, but over time they found application in everyday life [2].

Applications include:

- **Construction:** Used as an adhesive for bonding structural elements, for sealing joints, and as a component in poured floors.
- **Industry:** Applied in the manufacturing of varnishes, paints, sealants, and adhesives.
- **Crafts and Repairs:** Popular in hobbies and crafts, for example, for creating jewelry and interior items.
- **Shipbuilding:** Utilized in the construction of ship and boat hulls.
- **Automotive Industry:** Used for repairing car bodies [3].

On the eve of World War II, after research conducted in the United States and Europe, the production of epoxy resins began. In 1947, the first resins were produced on an industrial scale. More than 13.6 thousand tons of resin were produced in 10 years. In the future, the production level will only increase [4].

Today, epoxy resin is used to create jewelry, interior objects, and even as an artistic material for creating paintings and sculptures. It allows you to bring to life the most daring concepts of creative people thanks to its plasticity and transparency [5].

Types of Epoxy Resins are the following: 1) Aliphatic: These have good flexibility and resistance to ultraviolet light. 2) Bisphenol-based: The most common type, used to create strong and rigid polymers. 3) Novolac: Characterized by high temperature resistance. 4) Glycidyl: Used to produce electrical insulating materials. 5) Acrylic epoxy: Employed to improve adhesion to various surfaces [3].

Despite its unique properties, high-strength resin is a synthetic material that is difficult to biodegrade. Therefore, it is important to take a balanced approach to its use and disposal. Since in a liquid state it can be highly toxic, it is necessary to use protective gloves, a respirator and work in a well-ventilated area [2].

Epoxy resin is a versatile material that opens up endless possibilities for us from jewelry and accessories to countertops and decorative interior elements. However, it is necessary to take into account that working with epoxy resin requires attention to detail and a careful approach.

References

1. Проект «Применение эпоксидной смолы в изделиях декоративно-прикладного творчества» [Электронный ресурс] – Режим доступа: <https://infourok.ru/proekt-primenenie-epoksidnoj-smoly-v-izdeliyah-dekorativno-prikladnogo-tvorchestva> – Дата доступа: 09.02.2024.

2. Проект по технологии «Изделия из эпоксидной смолы» [Электронный ресурс] – Режим доступа: <https://infourok.ru/proekt-na-temu-izgotovlenie-ukrashenij-iz-epoksidnoj-smoly> – Дата доступа: 07.03.2024.

3. Эпоксидная смола: виды, свойства, состав и применение [Электронный ресурс] – Режим доступа: <https://stroitelinfo.ru/materialy/epoksidnaya-smola>. – Дата доступа: 09.03.2024.

4. Исследовательская работа «Секреты эпоксидной смолы» [Электронный ресурс] – Режим доступа: <https://infourok.ru/issledovatel'skaya-rabota-na-temu-sekrety-epoksidnoj-smoly-3-klass-6769346.html?ysclid=lu1k1knla1707482394>. – Дата доступа: 11.03.2024.

5. Проект на тему: «Изготовление украшений из эпоксидной смолы» [Электронный ресурс] – Режим доступа: <https://infourok.ru/proekt-na-temu-izgotovlenie-ukrashenij-iz-epoksidnoj-smoly-6277255.html>. – Дата доступа: 18.03.2024.