USE OF WASTE PAINT MATERIALS.

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Abstract: The utilization of waste from paint and varnish materials is a crucial topic in the context of sustainable waste management and environmental protection. Paint and varnish materials often contain harmful substances that, when improperly disposed of, can cause significant pollution. This paper explores methods for recycling and reusing waste from these materials, focusing on the potential for reducing environmental impact and creating new materials or products. Emphasis is placed on innovative approaches in the treatment of paint waste, including the development of eco-friendly technologies and alternative materials.

Keywords: Waste management, paint materials, varnish materials, recycling, environmental protection, sustainability, eco-friendly technologies, pollution prevention.

Introduction: High rates of industrial development lead to the formation of large amounts of waste. In this regard, the problem of waste disposal is currently the most important task and its solution can undoubtedly have both an economic and environmental effect.

According to statistics, in the Republic of Uzbekistan in 2023 there were about 114.9 million tons of waste, of which 40.5 million tons were toxic waste subject to mandatory recycling. Therefore, the country is consistently working in the field of environmental protection, improving the sanitary and environmental situation.

At the same time, work is underway in the Republic of Uzbekistan to process waste to obtain secondary raw materials, in particular, this is waste from a gas chemical plant, a tire factory, paint and varnish industries, etc.It is known that the issue of recycling paint and varnish waste has not been sufficiently studied to date and the available materials in domestic and foreign literature do not provide sufficient information on their use. Although there are some technologies used for recycling paint and varnish waste, such as those of General Motors, which involve pyrolysis, and the technology of Haden, which involves dehydrating the waste, drying it and then crushing it.

Relevance of the study.Corrosion of metals is the most important problem associated with large losses of metals. Every year hundreds of tons of metals are irretrievably lost due to corrosion, so all studies aimed at anti-corrosion protection of metals are appropriate and relevant.

Purpose of the study.The purpose of this work is the use of waste paints and varnishes to obtain anti-corrosion coatings for metal parts. The object of the study is waste paints and varnishes obtained during painting of cars.

Methods: study of the physicochemical properties of waste; selection of a composition for dissolving waste paints and varnishes.

Analysis of the chemical composition of the waste showed the presence of the following chemical compounds in it:

Al_2O_3 – 1,0 %, ZnO – 1,6 %, SiO_2 – 5,7 %, TiO_2 – 5,65 %, Fe_2O_3 – 0,19 %, FeO – 1,44 %, MgO – 7,4 %, MnO – 0,07 %, CaO – 15,7 %, Na_2O – 0,14 %, BaO – 0,17 %, K_2O – 0,05 %, P_2O_5 – 11,54 %, H_2O – 4,8 %, CO_2 – 4,95 %, SO_3 – 0,85 %, S – 0,7 %.

1. According to known data, about 30-35 kg of paint is used to paint one car. Losses during painting amount to 50% in the form of waste. Considering that the plant annually produces an average of 4,000 different models of cars, these losses will amount to more than 35-50 tons, which are not processed, not utilized, but buried in a burial ground, while a huge area of land is contaminated, the restoration of which will require huge costs.
2. Disposal of paints and varnishes is done in five ways, which is determined depending on their type.Рекуперация.
3. Burning in furnaces.
4. Burial.
5. Utilization of paint and varnish materials in a plasma reactor.
6. Regeneration.

- Recovery. Solvent processing is a separate type. The most commonly used recovery method is based on adsorption. In simple terms, this is when the concentration of one substance increases on the surface of another. Silica gel and activated carbon act as adsorbents.
- Incineration in furnaces. The waste generated when using paints and varnishes is first carefully examined. Then the required temperature is selected. However, not all paint waste can be 100% utilized by this method. Burial. It is done exclusively in areas specially designated for this purpose. It is important that burial does not pollute the atmosphere. The downside of this method is the hassle with permits and the likelihood of waste being de-mothballed.
- Disposal of paint and varnish materials in a plasma reactor. The equipment consists of two reaction chambers and special baths. Everything is built on boiling metal. Waste is poured onto it. The gas cleaning system immediately absorbs the resulting gas. It is then used as fuel. This is a big plus of this disposal method.

Conclusion: Regeneration. At the first stage, the paint and varnish waste is partially dissolved in a mixer together with a solvent (approximately 5 hours). Then the mixture passes through a filter mesh to get rid of large pieces. This process is repeated twice, only the second time the mesh cell is an order of magnitude smaller. Then a coating and solvent are used. With their help, the required consistency is achieved and the paint is packaged. The disadvantage is that this method of processing does not lend itself to paint with oils.

In Uzbekistan, burial methods are used.

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