ASPECTS OF EFFECTIVE USE OF WASTE GENERATED WHEN PROCESSING POLYMER COMPOSITIONS

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АННОТАТСИЯ

Ушбу мақолада полимерлар ишлаб чиқариш ҳамда уларнинг қайта ишлашдан ҳосил бўладиган чиқиндилар ва улардан самарали фойдаланиш жиҳатлари кўриб чиқилади. Полимерланиш жараёни ва полимер чиқиндиларининг турлари, уларнинг ҳосил бўлиш манбалари ва қайта ишлаш имкониятлари ҳам тасвирланган.

Калит сўзлар: Полимер, қайта ишлаш, чиқинди, самарали фойдаланиш, жиҳат, жараёни

АСПЕКТЫ ЭФФЕКТИВНОГО ИСПОЛЬЗОВАНИЯ ОТХОДОВ, ОБРАЗУЮЩИХСЯ ПРИ ПЕРЕРАБОТКЕ ПОЛИМЕРНЫХ КОМПОЗИЦИЙ

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АННОТАТСИЯ

В этой статье будет рассмотрено производство полимеров, а также отходы, образующиеся при их переработке, и аспекты их эффективного использования. Также описаны протсесс полимеризатсии и виды полимерных отходов, источники их образования и возможности переработки.

Ключевые слова: Полимер, переработка, отходы, эффективное использование, аспект, протсесс

SCIENTIFIC TESTING AND QUALITY CONTROL CENTER OF UZBEKISTAN

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ABSTRACT

This article will look at the production of polymers as well as the waste generated from their processing and the aspects of their effective use. The polymerization process

and the types of polymer waste, the sources of their formation and the possibilities of processing are also described.

Keywords: Polymer, processing, waste, efficient use, aspect, process

Introduction: as you know, the economic development of each country and the well-being of the people depend on the types of energy produced and the quality and quantity of work-resistant polymer compositional materials.Today, the chemical and oil and gas industry with high production, raw materials and scientific and technical potential, Uzbekistan is one of the leading base sectors of the economy. The chemical and oil and gas industry has been dramatically increasing the export potential, as well as adding a decent share to the development of the Republic's economy.

The complex use of Natural Resources and industrial waste, the introduction of the latest, modern technologies and the production of new, competitive goods, deep processing and coordination of domestic raw materials and other issues are separately noted in the development strategy of the Republic of Uzbekistan for 2022-2026.

In recent years, the chemical industry of Uzbekistan has changed radically - a full-fledged reform has been carried out, in which the production of a high value-added product based on deep processing of local raw materials resources is made the main goal. Of particular importance in this direction is the production of a new, imported substitute chemical product based on the processing of hydrocarbon raw materials that are in the Republic. Great attention is paid by the leadership of the country to the creation of new high-tech chemical industrial facilities, such as gas chemical complexes Shurtan and Ustyurt. These gas chemical complexes allowed the Republic to occupy the leading positions in the production of polymer products in Central Asia.

Deep natural gas processing and rational disposal of technological waste into petroleum products with improved environmental indicators are one of the priorities for the further development of oil and gas processing enterprises.

The growth of the need for hydrocarbons and the environmental crisis that occurs on earth require an in-depth study of the possibility of effective and rational use of hydrocarbon sources. The environmental requirements for hydrocarbons make it possible to process the secondary products of the chemical industry and oil and gas processing enterprises.

Today, the production of polymer metals, taking into account the need of mankind, is growing very quickly in pictures. The use of polymers (plastics)in bulsa, which in 1950 amounted to 0.5 million tons, today increased to 280 million tons. With a high strength of polymeric substances and resistance to absorption, its waste leads to contamination of the surrounding mucite in the long run. Therefore, it is required to develop measures to get ahead of environmental pollution.Polymer waste poses aesthetic problems as well as a risk to marine activities such as fishing and tourism.

Among the modern problems facing the world community, the problem of environmental degradation is the most relevant. It is of a global nature and is primarily associated with a steady increase in industrial production, and in addition to mineral waste, in modern production conditions, the amount of polymer waste also increases every year, which poses a greater risk to the environment than mineral waste. Polymer waste occupies one of the first places in the composition of solid household waste, in terms of the volume of formation they are inferior to paper and cardboard waste, but in annual growth they are 4% ahead. About 150 types of plastics are currently produced. 30% of this number is mixtures of different polymers. The practice of recent decades has shown that the market for large-capacity Polymers has formed. Standard thermoplastics – low pressure polyethylene (HDPE), polypropylene (PP), polystyrene (PS), polyvinyl chloride (PVC) - account for about 80% of the polymers produced. Structural Plastics – polycarbonates, polyamides, polyethylene terephthalate (PET), polymethylmethacrylate (PMMA), polyphenylene oxide-make up about 19%. The remaining 1% are polymers with unique properties: polyether ketones, polyimides, polyphenylene sulfide, etc. Currently, the problem of recycling polymer waste is of urgent importance not only from the point of view of Environmental Protection, but also from an economic point of view. Polymer waste, or rather secondary polymer raw materials, is formed from three sources: technological waste of production, waste of industrial consumption and waste of public consumption. Technological waste appears in the process of synthesis and processing polymers. They are divided into non-renewable and one-time technological waste. This is the waste that occurs during the cleaning of reactors, extruders and processing lines. In industries engaged in the production and processing of plastics, from 5 to 35% of such waste is formed. Non-recyclable waste, which is a high-quality raw material, does not differ in properties from the original primary polymer. Its processing into the product does not require special equipment and is carried out at the same enterprise. Disposable technological waste is formed when technological modes are not observed during synthesis and processing, that is, it is a technological defect that can be minimized or completely eliminated. Technological waste in production is processed into various products, used as an additive to raw materials, etc. The production of technological waste, polyolefins (PE, PP), pipes and sheets from PS and Structural Plastics (PVC, Pa, shock-resistant PS) from pressurized casting products, as well as manufacturing defects, is almost completely recycled. The industrial waste recycling rate from the production of PE and PP films is high (up to 80%) [8-11].

Analysis and results: industrial consumption waste is collected as a result of the failure of products made of polymer materials used in various sectors of the national economy (shock-absorbing tires, containers and packaging, machine parts, agricultural waste films, fertilizer bags, etc.). The most abundant type of polymer waste produced

for industrial consumption in total mass is polyethylene. Recycling, PE waste recycling 40%, the remaining 60% is exported in landfills. Polypropylene waste is the second largest in the volume of formation among industrial consumer waste. The processing of such waste is estimated at an average of 64.2%, the rest are exported to landfills. It should be borne in mind that the value of polymer waste is determined by their volume. The more waste generated, the more attractive it is to remove and recycle this waste. They make up more than 50% of all recycled polymers. This is the largest reserve of secondary polymers. However, it is this mixed waste that is most difficult to process and use. The processing of used plastics is an important issue for the polymer industry. While the content of plastic products in the waste is relatively low (about 7-8% by weight), the low specific gravity makes this waste clearly visible (about 18-20% by volume). Due to the high resistance to environmental influences, these materials remain in natural conditions for a long time. However, in terms of environmental impact, the elimination of polymer waste can be considered as an important economic factor as energy and materials are recycled. This reduces the use of natural resources, reduces waste and energy consumption to the environment and, in addition, provides economic benefits, while recycling technology allows you to obtain a clean and affordable product (energy or materials).

Conclusions and suggestions: various recycling strategies are being proposed and developed around the world. Currently, the greatest progress has been made in the mechanical and chemical processing of polymer waste. Mechanical processing with the help of appropriate devices provides simple reuse of the same materials, taking into account some losses in their properties. The recovery of materials through chemical processing produces products in the form of monomers, from which new polymer raw materials are produced, as well as chemicals and fuel; however, this method requires large resources and special equipment. Energy Recovery allows the material to be completely destroyed after releasing its energy content. In terms of the targeted use of all common plastics, PP and PET are in the first place today. In addition, PP is distinguished from all other polyolefins due to various impurities, alloys and composites.

The use of secondary polymer materials has a number of advantages. So, in most cases, they are sold at a price 20-25% lower than the cost of original analogues. The environmental factor is also important. The benefit is that less waste needs to be removed or activated. Less energy and raw materials are spent on the production of original plastics.

There is a good market for recycled PP products produced by pressure injection or extrusion. The main source of secondary materials are industrial waste, broken or worn containers, waste from spinning threads, car battery bodies and bumpers.

There are great opportunities for new applications of plastics that will benefit in the future, such as a new invention in medical applications, reducing the energy used in renewable energy production and transportation.

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