

ном удалении (8 км) – спаржевые (23,0 шт./м²), бобовые (7,0 шт./м²), гераниевые (7,0 шт./м²), настоящие папоротники (6,0 шт./м²).

Наибольшая численность вблизи объекта характерна для подмаренника цепкого, сныти обыкновенной, вьюнка полевого. Для других видов растений численность, как правило, не зависела от этого удаления от ТЭЦ.

УТИЛИЗАЦИЯ И ВТОРИЧНОЕ ИСПОЛЬЗОВАНИЕ ОТХОДОВ НЕФТЕДОБЫЧИ И НЕФТЕПЕРЕРАБОТКИ В ПРОИЗВОДСТВЕ РЕЗИН

UTILIZATION AND SECONDARY USE OF WASTE OIL AND OIL REFINING IN THE PRODUCTION OF RUBBER

Г. Ж. Пусурманова, С. А. Сакибаева, Г. З. Туребекова, Г. Ф. Сагитова
G. Pusurmanova, S. Sakibayeva, G. Turebekova, G. Sagitova

*Южно-Казахстанский государственный университет им. М. Ауезова,
г. Шымкент, Республика Казахстан
g.ture@mail.ru*

M. Auezov named South Kazakhstan State University, Shymkent, Kazakhstan

При добыче и переработке нефти Тенгизского месторождения образуется много отходов серы, которые хранятся на открытых площадках. Под воздействием атмосферы, высокой температуры (летом до 45–50 °С) и др. факторов образуется много соединений серы, вредных для здоровья человека и окружающей среды. В работе показана возможность использования серы в виде вулканизирующего агента резиновых смесей.

During the extraction and processing of oil from the Tengiz field, a lot of sulfur waste is generated, which is stored in open fields. Under the influence of the atmosphere, high temperatures (in the summer to 45–500 °C), etc., many sulfur compounds are formed that are harmful to human health and the environment. The work shows the possibility of using sulfur as a vulcanizing agent of rubber compounds.

Keywords: waste management, recycling, oil production waste and oil refining, rubber production.

Ключевые слова: утилизация, вторичное использование, отходы нефтедобычи и нефтепереработки, производство резин.

In the process of extraction and processing of oil from the Tengiz field, a lot of elemental sulfur is formed from hydrogen sulphide, which is stored in an open area and is the cause of environmental problems in the region. Many elemental sulfur consumes the rubber industry for the vulcanization of rubbers. Sulfur vulcanizing agents included in the group, ensures the vulcanization, i.e., the transformation of plastic and viscoelastic rubber compounds in highly elastic rubber due to the formation of a uniform spatial with the sulfur atoms linking the individual chemical bonds of the macromolecules rubber. Previously, we have carried out work on the application of purified sulphur in the Tengiz brekina and tread rubber compounds that have shown promise for the future. However, the manufacture of frame rubber compounds using purified Tengiz sulfur is not justified, because rubber was hard. In this work, we have conducted research and presented the results of experiments on the possibility of application of polymeric sulfur, obtained from purified Tengiz sulfur. The use of polymeric sulfur can also adjust the elastic properties of the resulting rubbers. Polymeric sulfur was introduced on a laboratory mill at the end of mixing, in a second stage, in order to prevent premature vulcanization. In the process of cleaning crude oil from hydrogen sulfide produced many elemental sulfur, which is in Tengiz a result of processing of sour oil and gas, indicating the content of hydrogen sulfide. Sulfur vulcanizing agents included in the group, ensures the vulcanization, i.e., the transformation of plastic and viscoelastic rubber compounds in highly elastic rubber due to the formation of a uniform spatial with the sulfur atoms linking the individual chemical bonds of the macromolecules rubber. Particular attention is paid to development of curing agents. Previously, we have carried out work on the application of purified sulphur in the Tengiz brekina and tread rubber compounds that have shown promise for the future. However, the manufacture of frame rubber compounds using purified Tengiz sulfur is not justified, because rubber was hard. The experiments have shown that the technology of mixing, processing of rubber mixtures and vulcanization is virtually indistinguishable from the standard mode, used in normal practice. As can be seen in figure 1 when using cengizkoy purified sulfur a decrease in abrasion of the rubber frame, which shows an improvement of elastic properties. From the experimental data shown in figure 2, with the addition of polymeric sulfur in the compounding of the mixture is observed a significant increase lasting properties characterized by conventional tensile strength and bond strength between rubber and textile cord carcass rubber. Thus, the results of studies have shown that the use of Tengiz sulfur leads to improved physical and mechanical properties and quality of rubbers. A secondary use of sulfur - a waste of oil production can improve the ecology of Kazakhstan.