COGNITIVE AND COMMUNICATIVE ASPECTS OF FOREIGN PROFESSIONAL COMMUNICATION

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THE STUDY OF ACTIVE SYSTEMS VULCANIZING ACCELERATORS WITH A SYNERGISTIC EFFECT

The curing process in which there is the binding of macromolecules of the rubber and formatting of three-dimensional spatial structure occupies a special place in the gum producing.

The modern development of technology and economy makes serious demands on the tire industry and rubber products. Creation of rubbers with a valuable combination of properties, intended for use in aggressive environments, in conditions of significant thermo acoustic influences and other conditions cannot be accomplished without the use of a number of ingredients. The opening of the new accelerators, which are used in the production of rubber, will accelerate the curing process, improve the physical-mechanical properties of rubber compounds, which will lead to consistent technological and economic improvements to the production process of rubber parts.

The aim of this work is: the reduction of energy consumption in the vulcanization of articles by reducing the temperature and duration of process which results the use of active systems vulcanizing accelerators with mutual activation.

In the work experimental research with the aim of establishing patterns of creation vulcanizing systems with synergistic effect, the selection of the activating impurities vulcanizing systems, the development of the optimal composition of vulcanizing systems with synergistic effect, the development of an optimal technological process of manufacturing of the mixture and parts of them are carried out.

Rubber compounds, the effects of combinations of two or more accelerators are widely used in modern formulations. With the right choice of a combination of accelerators does not only eliminate premature vulcanization, but are made of rubber with better physical and mechanical properties in a shorter time and at a lower temperature than in the case of each of the accelerator. In the course of work the mechanism of action of the active vulcanizing systems with a synergistic effect and the basic laws of their creation are studied. A search of available active impurities to create active vulcanizing systems is provided.

For further study the following active chemical compounds are selected:

- diphenyl guanidine (DPG);

- dioxcidinitrile – 2,4,6-trimethylbenzoyl-1,3-dicarbonate acid (DDTBC);
- polycarbozyne.

The influence of selected chemical compounds on physical-mechanical and vulcanization properties of rubber compounds are carried out on standard mixtures based on butadiene rubber, which is used most in the production of rubber products.

It has been established that activity of selected chemical compounds can be placed in the following order:

DDTBC > Polycarbozyne > DPG**.**

The use of small admixtures of these chemicals can reduce the cure time of rubber compound standard from 100 minutes to 15 minutes.

Considering the chemical structure of the selected accelerators and possible mechanism of formation of active complexes, developed a number of model systems, vulcanizing accelerators, reciprocal activation of various types of general purpose rubbers sobrenome, styrene, nitrile, divinely.

The analysis of serial formulations that are most widely used in the production is obtained. To adjust vulcanization systems the following recipe is selected:

- type 6190 – for the manufacture of moulded and non-moulded parts based on styrene-butadiene rubber;
- type 3826 – for the manufacture of oil-resistant parts based on butadiene-nitrile rubber;
- type 57-2001 for molded parts based on isoprene rubber;
- type 73-371 – for the manufacture of pipes and hoses on the basis of styrene-butadiene rubber.

Active system rubber vulcanizing accelerators with a synergistic effect for the selected serial recipes was developed.

Prototypes of rubbers on the basis of the developed formulations, conducted advanced physical – mechanical studies on the compliance of indicators with the requirements of normative-technical documentation.

According to the results of physical mechanical testing of the application vulcanization system boosters with a synergistic effect allows to accelerate the vulcanization and to reduce the cure time up to 2 times, which will reduce energy consumption per unit of production.

References

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