IMPACT ON THE PROPERTIES OF RUBBER IN SULFUR VULCANIZATION

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Abstract: Rubber benzene, gasoline, carbon sulfide and chloroformdz dissolve well. Pure rubber products cannot be made because its elasticity and durability are not high enough. At low temperatures it becomes brittle, and at high temperatures it becomes soft and fluffy. That is why the industrial use of rubber began from 1839, when the vulcanization process was discovered, which led to a sharp improvement in the mechanical-chemical properties of rubber. Rubber is an elastic material that does not conduct liquids and gases, is himically stable, well insulates heat and electric current. The most basic and important property of rubber is elasticity[1].

Keywords: Rubber, benzene, vulcanization, gasoline, elastomeric composition, sulfur, natural.

Introduction: Currently, 95-98% of the structure has captured sis 1.4 zvenos (98% of natural rubber has sis1.4 zvenos), with longitudinal ganetereoregular synthetic isoprene rubber (SKI-3) industrial machineries very similar in structure and properties to natural rubber.

Academic B. in 1956. A. Dolgoplosky polymerized Divinyl with a stereoregular structure in the presence of catalysts applied in obtaining KI-Z.

This Divinyl rubber, which holds up to 96% is 1.4 zvenos in its macromolecules, has a higher elasticity than that of natural rubber and is used in the manufacture of tires, cables and shoes.

Polysulfide rubbers (thiocols). Obtained by polycondensation of natriypolysulfide with digalogenic derivatives of hydrocarbons: Thiocols are highly stable to the effects of light, oxygen, ozone, oil, and solvents, and are used to make items that do not require mechanical thoroughness. Silicon organic (siloxane) rubbers are a polycondensation product of dimethylsilanediol[2].

Silicon organic rubbers are characterized by being extremely resistant to heat and cold, that is, being able to maintain elasticity properties at high and low temperatures[1].

Methods: The refore, they can be easily used to make details that work in a wide temperature range (from -70° to + 250°C). The process of vulcanization is significant in the structuring of elastomeric compositions, which is carried out in the “sulfur-free” and “sulfur-free” methods (i.e., sernaya and bezsernaya vulcanization), as well as in the presence of some perexis. The role of the vulcanization system in the implementation of the vulcanization process is large.

The vulcanization system includes a vulcanizing agent, activator, and accelerator. In turn, there are also several types of each of these. In sulfur vulcanization, the properties of rubber change, change dramatically in the initial process, then slow down[3].

Changes in properties include:

1. the elasticity and strength of the rubber to the stretch increases sharply, the plasticity of the rubber disappears.

2. heat tolerance and wear resistance increase.

3. the rubber loses its solubility, decays with a limited presence in solvents.

4. in the process of vulcanization, the relative elongation at the discontinuity time decreases.

Volcanism Optimum and Plateau. When natural rubber is vulcanized, its physical and mechanical properties are improved to the limit, which is determined by the maximum or minimum indicators. The best physico-mechanical indicators of vulcanization, the duration of vulcanization to one after the onset, are achieved between close Times. The time of the smallest vulcanization, which ensures the best quality of the physical and mechanical and technical properties of vulcanization, is called the optimum of vulcanization. The vulcanization Optimum is often determined by changes in the elongation tolerance of the vulcanization. Providing the best strength to the stretch, there will be a minimum time of vulcanization, vulcanization optimum. After the subsequent vulcanization in the optimum, the physicochemical properties deteriorate, this condition is called excessive vulcanization (perevulcanization).

Results: The vulcanization Optimum of natural rubber can also be determined by discontinuity resistance (posoprotivleniyu razdiru), with resistance having the highest indication when reaching optimum. It is also determined when the amount of optimum chloroform extract and the bite indicators are minimal. The vulcanization Optimum of synthetic rubbers is several more difficult to determine-especially those based on sodium-butadiene and butadiene-styrene. In the process of vulcanization when the change in durability is stretched, butadiene-styrene becomes a monotone appearance of rubber. In this case, the vulcanization optimum corresponds to the time of the end of rapid growth of endurance in stretching. The change then continues to slow down. Indications for consideration in determining the vulcanization Optimum of synthetic rubbers are: relative stress, given elongation, relative and residual elongation, synthetic rubbers optimum can also be determined depending on the modular change in compression. At the Optimum point, the modulus change curve produces a sharp bend, after which the modulus change slows down. Once the physico-mechanical properties of vulcanizate have reached the optimal indicators, the next state does not deteriorate at once. The period in which high physicochemical properties in the vulcanization optimum remain is known as the vulcanization plateau. From the point of view of practice, it is of great importance that the result of high Properties is preserved for some time. In this case, the risk of transferring rubber to excessive vulcanization is reduced. A wide plateau and a narrow plateau can be observed in volcanism. The volcanic plateau, like the optimum, depends on the temperature of the vulcanization, the nature of the rubber, the nature of the accelerator and other rubber mixture ingredients. Thick, heavy products are observed uneven heating in vulcanization. Synthetic rubbers will have a wide volcanic plateau of sufficient degree. Theory of volcanism. Molecular chains participate in the spatial structure of vulcanizate. As a result of its spatial structure, the solubility of vulcanizate disappears. As a result of the formation of puddle bonds between macromolecules and with an increase in intermolecular interaction, plastic deformations weaken the process and vulcanizate becomes elastic. In spatial species, molecular inter-chain sulfur vulcanizate contains the following types of chemical bonds: Monosulfide-C-s - C disulfide,-C-s-S - C polysulfide,- C-S N-C carbon bonds-accelerators used in the C-C vulcanization process greatly affect chemical bonds in vulcanization. For example, when trisulfide is added, mainly monosulfide and carbon-carbon bonds are formed, and they have a high thermal tolerance[4].

Our accelerator will consist of the sulfur-containing Vulcanizates obtained, mainly polysulfide bonds. The formation of cross-chain chemical cross-linkages of molecules in the vulcanization of rubber with sulfur can be established as follows:

1. sulfur deposition by sulfur:

... $–SN_2 – SN = CH – CH_2$ -… + 2Sx ... $–SN_2 – SN - CH – CH_2$ -… Sx SX ... $–SN_2 – SN - CH – CH_2$ -…

2. sulfur – containing α-methylene is attached to the group and the serovodorod

is released:

... $–SN_2 – SN = CH – CH_2$ -… + Sx ... $–SN_2 – SN = CH – CH$-… + H_2S ... $–SN_2 – SN = CH – CH$-…

3. attachment of sulfur to rubber when the persulfidehydryl group is released in the range:

(-Sx H) ... $–SN_2 – SN = CH – CH_2$ -… + SN_2 ... $–SN_2 – SN = CH – CH$-… + ... $–SN_2 – SN = CH – CH_2$ -… SXN... $–SN_2 – SN = CH – CH$-… SXN...$–SN_2 – SN - CH – CH_2$ -…

Conclusion: The rubber technology industry is a branch of the petrochemical industry. At Network Enterprises, various rubber products are made on the basis of synthetic and natural rubber. Main products: automobile, motorcycle, tractor, bicycle and other machinery include tires, rubber handlebars, transporters, carrying tapes, transmission tapes, casting and non-woven details for machinery and various mechanisms, heat and electrical insulation materials, etc. In addition, at enterprises of the rubber technology industry, cars and agricultural machinery tires are restored, rubber shoes, rubber compound gaskets, sanitary and hygienic equipment, sporting goods, toys, etc.are produced. Products of the rubber technology industry are used in Mechanical Engineering, Chemical, coal, metallurgy and other industries, transportation and military equipment[5].

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