RAIL GASKETS ARE MADE OF VARIOUS MATERIALS DEPENDING ON THE OPERATIONAL REQUIREMENTS.

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Annotation. An increase in the proportion of intermolecular and a decrease in the proportion of intra-molecular bonds. The main ingredients of elastomeric compositions are fillers, their purpose is to change the volume and properties of the composition and quality indicators in the right direction. Achieving this goal is primarily related to the nature of the combination of elastomer and filler, as well as the nature of their interaction.

Keywords: intermolecular, ingredients, elastomeric composition, elastomer, temperature, chemistry, oils, acids, deformation.

For many years, the development of railway transport and mechanical engineering around the world has been directly linked to the standard of living in the country and the development of the entire transport infrastructure. High-quality parts are required for its smooth operation. One of the important components in railway equipment is rubber products.

Rubber products are widely used in the field of transportation, especially on railways and in public transport systems. They have proven their advantages in terms of safety, comfort and efficiency and play an important role in the development of modern transport systems.

Rubber products have a beneficial effect on noise absorption, reduce the level of noise and vibrations caused by the movement of railway trains. Due to their reliability and slow wear, rubber products can avoid many breakdowns and disruptions in transport. Sealing rings reduce friction between surfaces, which increases the service life of the vehicle. Rubber gaskets reduce the risk of railway accidents by preventing leakage of liquids from the train's internal systems, they reduce the risk of fire and malfunction of other parts. Rubber cushions reduce noise and vibrations in the passenger car, under-

rail gaskets reduce dynamic loads on the track, reduce vibrations, reduce noise, which has a positive effect on passenger comfort.

Since railway transport in the territory of the Republic of Uzbekistan occupies an important place in the structure of production and logistics, as well as passenger transportation, it is necessary to monitor the serviceability of all parts and components of each rolling stock.

One of the important elements of ensuring the reliability of the track (roadbed) and the train is the use of rubber products. They improve the operation of rolling stock and traction, and extend the service life. The safety of people and the safety of material assets directly depends on this. Rubber products are used in all areas of the railway industry, and the railway industry cannot do without them. Rubber products are used as consumables and as basic parts. Similar products are also used in the manufacture and repair of railway tracks. Rubber products include such groups of components and spare parts as cuffs, seals, diaphragms, rings, bushings, shock absorbers, gaskets, oil seals, etc.

In the world practice of railway construction, one of the priority issues is the development of technologies and materials aimed at maximizing the dampening of vibration-dynamic effects arising from the movement of high-speed and high-speed trains, reducing their harmful effects on the railway track, as well as improving the safety and comfort of their movement. In developed countries such as the USA, Great Britain, France, Germany, and Japan, special attention is paid to the development of methods aimed at reducing and preventing various vibration-dynamic effects that have a detrimental effect on railway operation. In this context, the most important task is to develop new types of shock-absorbing elements of the upper structure of the track under the rail linings, providing a significant reduction in the vibration-dynamic effects resulting from heavy train traffic in the area of the rail junction. The residual deformations accumulated in this zone contribute to splashes of the roadbed, deterioration of the strength and geometry of the railway track, which perceives the vibro-dynamic load. The creation of new composite high-performance rubber gaskets

makes it possible to significantly improve the quality and reduce financial costs for the current maintenance of the track.

In the leading scientific centers of the world, work is being carried out aimed at developing various modifications of the shock-absorbing elements of the upper structure of the track. In particular, relief track linings with bulges of various geometries were proposed. To improve the damping properties, various materials were used for the manufacture of rail linings, used for sleeper linings, used ballast mats, etc. One of the most important tasks in this direction is to improve the damping properties of the shock-absorbing elements of the intermediate fasteners of the upper structure of the track, through the integrated use of new chemical modifiers and mineral fillers, which significantly improve the physical and mechanical properties of shock-absorbing materials in order to obtain the necessary parameters for a specific type of intermediate fastening. This issue is relevant all over the world, since the operating conditions for each region are individual.

The promotion of new technologies for shock-absorbing gaskets in the Republic of Uzbekistan is being held back due to the lack of production of almost all components for rail gaskets. Therefore, it is of scientific and practical interest to develop a rail gasket with preset physical and mechanical parameters for effective vibration protection of the rail base using local mineral fillers. Under the rail linings are an important element of the upper structure of the railway track, ensuring optimal interaction between the rail and the supporting structure (sleeper or concrete slab). Their main function is to evenly distribute loads, reduce dynamic impacts, and increase the service life of track elements.

Under the rail gaskets are made of various materials depending on the operational requirements. The most common are: rubber gaskets (natural and synthetic rubber); polymer materials (polyurethane, polyethylene); composite materials with additives to increase strength and wear resistance.

Design features include the presence of grooves or special protrusions that prevent the gasket from shifting under load, as well as special channels to improve drainage and

reduce residual deformation. The main physical and mechanical characteristics of under-rail gaskets include: compressive strength; elasticity and resilience; temperature stability (operating range from -50°C to +50°C); wear resistance; electrical resistance. These properties directly affect the operational reliability and durability of the railway track.

The requirements for under-rail gaskets are regulated by standards such as GOST and technical specifications of railway transport. The main parameters include: geometric accuracy; resistance to loads and deformations; durability; electrical insulation properties; environmental safety.

The use of high-quality under-rail gaskets can significantly increase the service life of the upper structure of the track, reduce noise and vibration, and increase passenger comfort. In addition, under-rail gaskets contribute to the safety of the ballast layer and sleepers, which reduces the cost of operating and repairing the track.

In the light of the above, this dissertation is devoted to the development of scientific foundations for the creation of import-substituting composite elastomeric materials and products for machine-building automotive and railway applications using local raw materials, which is a new promising area and solves an important national economic and environmental problem of the Republic.

To achieve this goal, the following main tasks are defined:

The study of the physico-chemical properties and structure of local and secondary raw materials, the development of technologies for their production and enrichment, and the effect of the obtained ingredients on the viscosity, stickiness and structure of elastomers used for special and general purposes;

Preparation of a standard composition based on elastomers used for special and general purposes in various conditions, with the addition of created organic and inorganic ingredients and the study of the kinetics of their vulcanization and structure formation;

Determination of the effect of the developed ingredients on plastoelastic, rheological, technological, physico-mechanical, dynamic, vibration-dampening, reduction of shock loads under pressure and operational properties of the formed composition based on elastomers of general and special purpose;

Development of compositions and technologies for the production of reinforced and non-reinforced, molded and unformatted special rubber products for use in mechanical engineering, automobile and railway structures and agricultural machinery, ingredients created on the basis of local and secondary raw materials and obtained organomineral compositions using them.

The state and development trends of currently available composite elastomeric materials with specific properties, rubbers and ingredients based on them, reinforced and non-reinforced products are analyzed.

Information is provided on the preparation of compositions based on high-molecular compounds, their composition, structure, properties, application, methods of modifying ingredients, and the main factors affecting the composition and technological performance of rubber products.

Based on a critical analysis of the literature and a study of the current state of the process of modifying ingredients and composite organomineral materials, the most promising direction in the creation of filled composites is the search for multifunctional ingredients based on local raw materials and the creation of a composition and technology for obtaining composite materials and products with unique properties based on them, and a dissertation plan has been drawn up.

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