THE METHOD OF ASSESSING THE QUALITY OF SNAGGING TIRES OF AUTOMOBILE

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ABSTRACT

Analysis of the methods of assessment of the quality of adhesion of car tires with asphalt and concrete pavements, requirements for the implementation of the introduction of a new tire model.

Keywords: Tire, asphalt-concrete, car, road, notex, kilometer, model, coating.

The tire industry has been cooperating with research institutes. During additional work, our team worked on improving the methods and means of controlling the grip quality of car tires and road surfaces.

During this period, more than 200 models and modifications of car tires intended for installation on all models of passenger cars produced in those years were tested.In order to achieve the maximum accuracy of the obtained results, our efforts were aimed at improving both the measurement technique and the technique used for testing. The requirements for accuracy are the main ones when testing prototype models of automobile tires. The high accuracy of the test results allows tire design engineers to perform targeted searches and achieve optimal performance for a positive result. If the error in measuring a certain section of the road when evaluating the grip characteristics of road surfaces can affect only the cars passing through this section, then when evaluating the grip quality of newly created tire models, many of them given its production in the millions, it can reduce tire grip over hundreds of millions of kilometers.

The essence of the methodology developed during testing for more than ten years is as follows. Usually, when testing car tires, the task is to determine the grip characteristics of a newly created model or modification, which differs from serially produced tires by some parameters - the composition of the tread rubber, design, tread patterns, etc. Bearing in mind that different pavement designs have different effects on the adhesion and hysteresis components of friction, tests should be carried out on structures specific to the road network on which the tires being tested are used. Usually,

for this purpose, at least four road sections with different surface texture are selected. Based on this, it is appropriate to choose the following designs for testing.

1. Notex asphalt-concrete pavements are characterized by notexity on the sand point of 0.1-0.2 mm, adhesion coefficients from 0.15 to 0.25. These can be newly laid asphalt concrete of type B or the lower asphalt concrete layers of newly constructed roads.

2. Asphalt-concrete or cement-concrete pavements with a neck are 0.3 to 0.6 mm along the sand patch characterized by adhesion coefficients of 0.3 to 0.4 is non-textile. Most often, these parameters are characteristic of type A asphalt-concrete with a short service

3. Low microtexture wet rough coatings are characterized by viscosity coefficients from 0.35 to 0.45 and notexture from 0.6 to 2 mm. These can be high-life SMA coatings, mobile polished surface coatings or finely ground river stone treatments.

4. Coefficient macro and micro rough coatings clutch size from 0.5 to 0.6. These proportions are usually determined Short service life or high-quality surface treatment. 6-7 specific locations are selected on the surface, where further measurements of longitudinal adhesion coefficients are carried out in the wheel blocking mode or partial longitudinal slip and transverse adhesion coefficients, which in sliding mode it’s going to happen. the wheels are turned at an angle The measurement areas should have a uniform notex finish, good flatness and no defects. Sections with length are selected for measurements, their beginnings and ends are marked with columns. There should be a distance of at least 300 m between the measuring points, which is necessary for pressurizing the laboratory compressors, cooling the brake system and tires. When testing car tires, measurements were usually made at speeds of 30, 50, 70, 90 km/h or 40, 60, 80, 100 km/h.

To determine the feasibility of introducing a new tire model, the following assumptions should be followed.

1. Damages from traffic accidents are proportional to their number. As small as the number of accidents, the severity of each individual accident affects the total losses. However, since automobile tires are typically produced in the millions, the number of vehicles equipped with a single tire model is always significant, so total losses do not significantly depend on the severity of a single accident.

2. Compared buses operating in the same network are characterized by the same values of branch cohesion coefficients. Not used for every tire off the factory line. A large number of paths with grip qualities similar to those obtained in the calculation. Some cars operate in a limited network, for example, within a city. In this case, of course, the adhesion qualities of the surfaces with which the tires of these vehicles

interact do not always correspond to the distribution adopted for the calculations. However, with the large number of tires produced and their widespread distribution across the country, it is safe to assume that the tires are used on roads where the average grip quality fits the accepted distribution.

3. Improving the grip quality of tires with a wet surface does not increase the level of accidents in other road conditions - with a dry surface and in cold periods of the year. On dry surfaces, the coefficients of adhesion of the wheel to the road are usually in the range of 0.75 - 1.2. With such high coefficients, traffic accidents usually do not occur due to the smoothness. In the cold seasons of the year, most motorists today use winter tires, which differ from summer tires in both the tread form and the composition of the processor rubber.

4. The law of the distribution of grip properties of the road surface is valid for one of the compared tire models, taken as a reference, and the amount of annual damage caused by accidents due to skidding for cars of this tire size is equal to the damage expected when using the reference tire equal to. This assumption cannot significantly affect the accuracy of the calculation for the following reasons. Let's imagine that the distribution graph of the road network was obtained using a tire that was inferior to the model accepted as a standard in comparative tests. In this case, the smooth crash losses are smaller for the reference tires than those used for network validation. Therefore, when they are equated, the economic losses from accidents for the reference tires are overestimated. Next, the expected economic losses for the new, compared to the reference, are determined from the sum of the losses for the reference tires, taking into account the difference in the grip qualities of the tires. Therefore, they are also overvalued by the same amount. Because the value of the difference in economic losses for tires, reference and compared models is important. Their overestimation or underestimation by the same amount does not affect the accuracy of the calculation.

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