



CHARACTERISTICS OF THE MATERIAL USED IN THE TENSILE AND COMPRESSIVE STRENGTH OF LIGHT VEHICLE DISC MATERIALS

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According to the type of production, wheels are divided into stamped, cast, forged and assembled. The first two types are the absolute leaders of the spread, the third is the choice of enthusiasts, the fourth is actually exotic, but we will say a few words about them within the scope of the material.

Sealed Discs- Sealed discs are the cheapest and easiest type to manufacture. Such discs are made of rolled carbon ("black") steel, the edge and face of which must be stamped separately and then joined by welding. After production, the disks are painted with enamel, which protects them from the aggressive external environment.

The main purpose of sealed disks is to be cheap and simple. It is these disks that are installed in the basic configuration of new cars, and it is not the appearance of the disks that will be purchased by the owners of the disk, but only its functionality.

The main advantages of a sealed disc are its aforementioned low cost, as well as softness and durability. Softness and maintenance are interrelated features: the fact is that, due to the material used and the production technology, stamped discs retain the plasticity inherent in metal. Thus, when impacted, such discs are crushed, absorb and extinguish part of the impact energy, and the damaged disc can be restored later, while maintaining its operational characteristics. Another plus in this situation is the partial attenuation of the impact on the suspension: "stamping" with deformation softens the impact a little and in some cases can save the suspension without damage at the expense of its integrity.

Even a sealed disc has enough disadvantages. Partially well-known softness can be located among them, but the main claims of the owners are related to the high weight and utilitarian design of such products, as well as weak protection from the external environment. Weight is really the main disaster of "stamps": it exceeds that of a cast wheel by an average of 15-30 percent. This is more important than it may seem, after all, a small mass leads to a slight deterioration in dynamics and an increase in fuel consumption.

The appearance of stamped wheels should be considered their features, not their disadvantages - although there are stamped wheels with design instructions, this is only useful. Those who care about appearance can cover it with decorative wheel covers worn in "stamping". This is also relevant because stamped wheels, as a rule, easily lose their appearance: color defects and damage to the enamel lead to rusting of the disc, and the aggressive external environment aggravates this process.



Summary: Stamped discs are cheap, heavy and maintainable, and should be chosen if the appearance of the disc is not important to you, but you need to spend as little money as possible in both purchase and use.

Alloy Wheels- Alloy wheels, as the name suggests, are manufactured by casting into a pre-formed matrix. Such discs are also called light-alloy wheels - this is correct, because, unlike stamped ones, they are made not of steel, but of lighter alloys: as a rule, aluminum, and in expensive products - magnesium and titanium. After production, the discs can be additionally painted, polished or varnished.

The main advantages of the disc compared to "stamping" are less weight, significantly greater strength, corrosion resistance, as well as a very aesthetic and diverse design. In this case, everything is clear with the mass: it is smaller due to the use of lighter material. High strength and corrosion resistance are also the result of the materials used and production technology: the cast disc can withstand very high loads without deformation and does not rust even if the surface is damaged. Well, the appearance depends only on the matrix used, and this allows you to create thousands of options for the disk appearance. The appearance is complemented by coloring: often the disc of the same design is available in different colors.

The disadvantages of the disk are low plasticity and consequently fragility, high cost and complexity of repair, as well as the high price of the disk itself. Brittleness is the opposite of strength: a cast disc has a stronger impact than a stamped one, but if the impact force exceeds the capabilities of the disc, it will not only crumble, but also have a high probability of cracking or cracking. In addition, the strength of the alloy wheel means that the shock is transferred to the suspension of the entire car.

The technology of repairing such discs is certainly mastered, but this repair itself is not allowed due to the presence of cracks in the rims of the discs and wheels, traces of their destruction by welding. This is a completely reasonable measurement: the loss of performance during a potential repair is significant, and it is not known how the repaired disk will behave in the future.

Conclusion: Alloy wheels are beautiful, light and durable, and worth choosing if you want the optimal balance of performance for a reasonable price.

Composite discs-Composite discs are the most rare and exotic discs. Their main feature is that they consist of several parts. Structurally, this is not all: for example, in the assembly of discs there are blocks that correct the edge of the wheel and tires that prevent the disassembly of the wheel. The ones used in modular wheels must have very high strength and are usually made of titanium alloy.

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