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The Role And Importance Of Modern Composite Materials In The Development Of Automobile Industry

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Abstract: the article analyses the process of using modern composite materials in automobile industry and the efficiency from their usage. As we know, the most important factors in the production of modern cars are reduction in its mass. Some parts are made from plastics and composite materials in order to reduce the mass of vehicles. The author searched efficiency of plastic materials in producing modern cars.

Key words: plastic, automobile industry, composite materials, chemical.

It would be not wrong, if we say our country is growing from year to year with economic stability. We can proud with the successes of all industry, manufacturing, and service companies.

Today, with the wise policy of the President of the country attracting new investments and the introduction of new technologies is a clear example of this.

This has been reflected in the increase in car production, especially in the automobile component parts due to the great attention to the automobile industry.

One of the most important factors in the production of modern cars is reduction in its mass. Some parts are made from plastics and composite materials in order to reduce the mass of vehicles. The durability, corrosion resistance and quality of these parts are tested by various standards and production of complete series is being developed.

Manufacturing of plastic, composite-based details in a short period of time has progressed dramatically.

At present, it is difficult to imagine any design of tractors and cars without polymeric materials. They provide a reliable design by reducing the cost and labor costs of the design.

It has a number of goals and objectives in making automobile parts from composite materials. Plastics can replace many expensive and rare materials and wood, and sometimes their superiority has led to their wide use. Their use is economically effective, as costs of material, labor costs for detailing, details became lighter, reduces capital expenditures and operating costs (lubrication, repair), and so on. If the details are made by pouring metal, thermal and mechanical machining processes, only of the plastics can be separated by operation, pouring or compression. In the manufacture of plastics, the waste of the material does not exceed 5-10%, and the metal waste is much more (60-70%).

The development of the automobile industry creates a demand for new, durable, resistant construction materials. The creation of new composite materials has elevated the automobile industry to a qualitatively new level. High quality composites have been used to create cars. The use of such materials in the automobile industry has made it possible to reduce fuel consumption by reducing vehicle mass.

The demand for new materials is growing at such a pace that it has not yet been able to create new material and learn the features needed to meet this need.

Therefore, with the development of plastics, we need to pay particular attention to their quality, resistance, and temperature; especially we need to strengthen the knowledge of young students in this area.

Students will be taught about the composition, production, manufacture technology and details of rubber materials, paints, interior coatings and other types of chemicals used in all parts of automobiles. This discipline focuses on domestic

cars (jigules, mosqviches, UAZs) and cars imported from abroad, as well as the types of plastics, rubber and varnish materials used in automobiles produced by the Uz-AutoMotros Joint-Stock Company, mainly from plastic. Parts used in cars are made of different plastics.

Parts used in cars are made of different plastics. For example, in the car manufactured by Uz AutoMotros can be approximately

Polyvinyl chloride - PVC - 19.5 kg

Polyurethane 6.0 kg

ABS plastic 6-8 kg

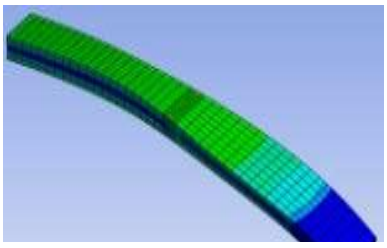
Polyethylene - PE- 4-5 kg

Phenoloplast 2-3 kg

Polypropylene - PP 1-2 kg

Polyamide 0-1 kg

We can see car parts made of different composite materials.



a) b)

c)

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Figure 1 Car parts made of composite materials

a-gas balloon; b- spring; c- car balloon

Figure 2. Car parts made of composite materials

1-side window, 2-power switch, 3-radiator grille, 4-buffers, 5- bulbs, 6-belts, 7-door handles, 8-sidewall belts, 9-wheel flange, 10-lamp, 11-door cover.

The use of plastics in car parts has the following advantages:

- improves outward appearance;
- the mass of the vehicle reduces;
- noise is reduced during movement;
- the shape of the details is improved
- their working life increases;
- reduce fuel consumption;
- their costs for preparation are reduced.

Essentially, we will examine the types of plastics used in the automobile industry and the scope of their application.

Polyvinyl chloride (PVC) - mainly made of automobile hoses, electrical insulation, different handles and buttons.

Penopolyurethane (PPU) - car seat, instrument bars, internal door panels, distribution shaft belts, steering wheel bearings are prepared.

ABS plastic - mainly cooling ventilation units, wheel covers and seat covers are prepared.

Polypropylene (PP) - Refrigeration pipes, details of door inner panels, car bumpers.

Polymethylmethacrylate - details of lighting devices, protective covers for lighting devices are manufactured.

Polyamide - various types of bearings, details of door locks.

Phenoplast – is used for preparing electrical insulation of ignition system.

Polyethylene - fuel tanks, binders, different handles and buttons.

Butadiene- is used for the production of shock absorbers, and for the production of power-efficient parts (disks, screws, and blocks) suitable for use in the air.

Chlorprenyl- is used for compaction of cabin windows and other details, for production of compressors suitable for use in petroleum products, for the manufacture of oil valve details, for the production of oil shock absorbers, and for the manufacture of oil-transferable power supplies.

Dimethyl siloxane- is used for the manufacture of compressors (rings, seals, cuffs, etc.) suitable for use in low-temperature solutions of air, water, acid and alkalis.

Fluoride Rubber- is used for the manufacture of compressors that are suitable for use in petroleum products and for the manufacture of valve details suitable for use in petroleum products;

According to scientists, every kg of plastic reduces the car's mass by 1.2 kg, while a 10% reduction in the mass will save fuel by up to 20%. This in turn reduces the release of excess toxic substances into the atmosphere.

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