

## THE ROLE OF POLYMER MATERIALS USED IN THE DEVELOPMENT OF AUTOMOBILE INDUSTRY

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### ABSTRACT

*The article analyzes the method of physical and mechanical properties of car balloons made of local polymeric materials. The share of public debt is relatively low. has managed to maintain a stable reputation as a country that fully meets its obligations. At the same time, new investments are being created and new jobs are being created.*

**KEYWORDS:** Polyvinyl Chloride, Polyurethane, ABS Plastic Polyethylene, Phenoplast, Polypropylene, Polyamide.

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### INTRODUCTION

It is safe to say that the economic stability of our country is growing from year to year. At the same time, we can be proud of the achievements of all industrial, manufacturing and service enterprises in our country.

Today, at a time when many countries around the world continue to face problems with the growth of public debt, as a result of a well-thought-out policy of borrowing from abroad, the share of public debt is relatively low. has managed to maintain a stable reputation as a country that fully meets its obligations. At the same time, new investments are being created and new jobs are being created.

Of course, the increase in car production will also affect the growth of car components. Especially in order to reduce the mass of modern cars, some parts are made of plastics, composite materials. The durability, corrosion resistance and quality of these parts are tested to various standards and a full series of production is underway. The production of plastic, composite-based parts has developed rapidly in a short period of time. The history of these materials is also somewhat interesting. [11]

It is difficult to imagine any design of a tractor and a car without a polymer material. They reduce the cost and labor costs of the structure, as well as reduce its weight and ensure its reliable operation.

It imposes a number of goals and objectives in the manufacture of car parts from composite materials. The fact that plastics can replace, and sometimes surpass, many expensive and rare materials and wood has led to their widespread use. Their use is also economically viable, for example, reduces the cost of materials, labor costs for the manufacture of parts, significantly

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reduces the cost of parts, reduces capital expenditures and operating costs (lubrication, repairs), and so on. If the parts are made of metal by casting, heat and mechanical processing, the plastic can be obtained only by one operation, casting or extrusion. Material loss in the manufacture of plastic products does not exceed 5-10%, and in the manufacture of metals the loss is much higher (60-70%). [10]

The development of the automotive industry creates a need for new, durable, durable construction materials. The creation of new composite materials has raised the quality of aircraft construction by one step. High quality composites were used to create cars. The use of such materials in the automotive industry has made it possible to reduce the fuel consumption of a vehicle by reducing its mass. [12]

The demand for new materials is growing so fast that there is no time to create new material and study its properties to meet this demand.

Therefore, at a time when the plastics industry is developing, we need to pay special attention to their quality, corrosion resistance, temperature resistance, especially for young students to strengthen their knowledge in this area.

Students will be able to study the composition of plastic materials (polymers), rubber materials, paints, interior materials and other types of chemicals used in all parts of cars, the technology of production of parts and their application. Cars available in our country (Jiguli, Muscovite, UAZ) and cars imported from abroad, as well as Nexia, Damas, Matiz, Lacetti, Cobalt, Cobalt, Types of plastics, rubbers and paints used in cars, such as "Spark", the main focus is on the creation of new types of plastic parts on the basis of local raw materials.

The parts used in cars are made of different plastics. For example, Fiat (Italy) - 125 cars

Polyvinyl chloride - PVC - 19.5 kg

Polyurethane 6.0 kg

ABS plastic 6-8 kg

Polyethylene - PE- 4-5 kg

Phenoplast 2-3 kg

Polypropylene - PP 1-2 kg

Polyamide 0-1 kg

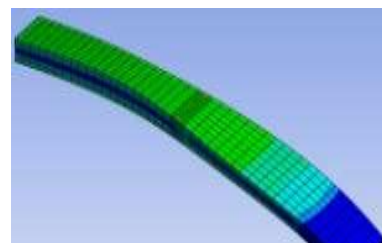
We can see car parts made of different composite materials.

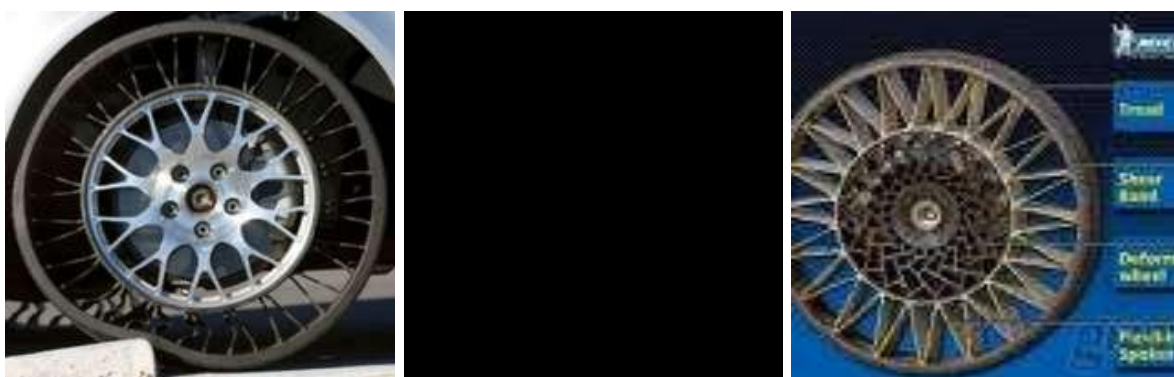


a)



b)





c)

**Figure 1. Car parts made of composite materials**

A-gas balloon; b- ressor; c- car balloons

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

- ✓ ☐ Improves appearance;
- ✓ ☐ the mass of the car decreases;
- ✓ ☐ noise is reduced during movement;
- ✓ ☐ The shape of the details is improved
- ✓ ☐ their service life increases;
- ✓ ☐ reduced fuel consumption;

The cost of preparing them is reduced.

Let's look at the types of plastics used in the automotive industry and their applications.

Polyvinyl chloride (PVC) is mainly used for car hoses, electrical insulation, various pens and buttons.

Polyurethane foam (PPU) - car seats, instrument panels, interior door panels, distribution shaft belts, steering wheel sliding bearings.

ABS plastic is mainly used for ventilation grilles, wheel covers, and seat covers. [11]

Polypropylene (PP) -cooling pipes, details of interior panels of doors, car bumpers are made.

Details of polymethyl methacrylate lighting fixtures, protective covers for lighting fixtures are made.

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

Phenoplast - electrical insulation of the combustion system.

Polyethylene - fuel tanks, adhesives, various types of buttons and pens.

According to scientists, each kg of plastic reduces the mass of the car by 1.2 kg, and a 10% reduction in mass will save up to 20% of fuel in a timely manner.

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