

HOW CAR MANUFACTURERS TAKE CARE OF THE ENVIRONMENT

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Pollution of the environment by harmful substances emitted by cars is considered the most urgent and serious problem in the modern world. A car is a very convenient, comfortable and fast means of transportation both in the vicinity of a small town and over long distances. But using them in such large quantities brings great harm to the environment.

One of the main causes of environmental pollution is the release of harmful substances into the atmosphere, such as nitrogen oxides, hydrocarbons, carbon dioxide and others. All these substances are very dangerous for both animals and plants, as well as for humans. Such substances pollute the air very much, contribute to the formation of acid rain and smog. All this has a great impact on human health, in particular on the respiratory and cardiovascular systems, can cause allergic reactions of the body, as well as other serious diseases.

One of the most harmful and dangerous substances that a car emits into the atmosphere when the engine is running is nitrogen dioxide. There are very few nitrogenous compounds in the fuel itself, but at high engine operating temperatures, oxygen begins to react with nitrogen in the atmospheric air, and harmful substances are released during their reaction, they are also called exhaust gases. This problem is typical for diesel engines. But chemical engineers took care of this problem and found a way out how to protect nature from such dangerous substances.

The AdBlue reagent is an additional liquid that is used to clean exhaust gases. This liquid colorless reagent is an aqueous solution consisting of high-quality and purified urea, namely 32.5%, and demineralized water by 67.5%. It is manufactured according to the requirements of the ISO 22241 standard [1].

What is urea? It is an organic chemical, its chemical formula is $\text{CH}_4\text{N}_2\text{O}$. Urea consists of carbon, nitrogen, oxygen and hydrogen atoms. It is a colorless crystals or white powder, very soluble in water.

AdBlue is a modern environmental lifesaver. It is a liquid additive used to reduce emissions of hazardous substances released by diesel engines.

AdBlue reduces nitrogen oxides in diesel exhaust by more than 90%. This reagent is fed into the exhaust gases using a complex SCR system. When reacting with nitrogen oxides, this liquid creates pure nitrogen and water vapor.

Over time, the car gets rid of the purified exhaust gases.

This technology, using urea neutralization of nitrogen oxides, is called Selective Catalytic Reduction (SCR). It is known to be actively used by a large number of large automotive companies, both for trucks and passenger cars.

There is a separate tank in the car for AdBlue, which is located next to the fuel tank. It is important to know that in order to simply start the car engine, the tank is to be always filled with AdBlue of the required licensed quality.

The use of licensed quality is justified by very serious requirements for the purity of the product since the SCR technology is very sensitive to minimal contamination. And because of this, the slightest impurities will cause the entire system to fail. In this case, the car engine cannot even be started. To do this, the exhaust gas purification system continuously monitors the level in the tank, the amount and dosage of AdBlue.

AdBlue and SCR technology are an easy solution to a modern and urgent problem. Only the joint efforts of many large automotive companies and chemical engineers will make it possible to cope with the vehicle air pollution problem and ensure a healthy and safe environment for future generations.

It is also necessary to improve and modernize technologies so that cars in the future are considered to be the most environmentally friendly means of transportation.

References

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