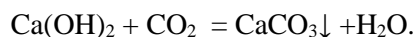


Used materials

According to the findings, the main CO₂ absorption process is provided by the converter's first battery, which has a fractional composition of Ca(OH)₂ at 94.5% and NaOH at 6.5%. The second battery fractional composition is Na₂O (8%), KOH activators, and a filter in the form of natural clay powder. The third battery contains zeolite SiO₂ (24%) with Al₂O₃ (1%), Fe₂O₃ (4%), and CaO (30%) with a 40% mass of volcanic slag for absorbing dry materials from exhaust gases.

The absorption process mainly occurs in the first battery of the converter based on the molecular network effect, according to the following chemical reaction:



The absorption process proceeds through the medium of activators in the converter's second and third batteries in accordance with the following chemical reactions:



Zeolite, dry clay powder, and volcanic slag were used as absorbent mineral materials. The total cost of the used materials is 3-5\$.

Discussion of CO₂ gas neutralization test results

Neutralization of CO₂ is because of the chemical reactions occurring in the converter, in which activators, volcanic slag and dry powdered clay are present.

The peculiarity of CO₂ neutralization among the existing methods is the absorption process, which occurs in the medium of mineral dry materials and is the only acceptable method for automobiles.

The study's limitation is the need to change periodically the converter's absorbent batteries.

The disadvantage of the study is the need for three different batteries in the converter, which can be eliminated by combining them into one common mass.

The further development of the study is to develop high-efficiency and productivity absorbents, which requires long-term experimental studies.

Conclusion

1. With the proper structural modifications (adjustments), the developed technology and converter for the neutralization of greenhouse gases and CO₂ emitted from the automobile exhaust system can be installed in the automobile pipeline for exhaust gas removal and provide CO₂ reduction of up to 92%, according to the analysis of the conducted scientific results.
2. For calculating the CO₂ neutralization converter capacity and productivity, it is necessary to solve a simple analytical problem regarding the dependence of the ratio of the engine's working volume and the active surface of the converter.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

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