



Research Article

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Methods for modification of strengthened kaolinite clays in road construction

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Keywords:

Kaolin clay, strengthened soils, modification methods, physical and mechanical properties, road pavement

Abstract:

The presence of clay minerals, such as kaolinite, in soils during soil strengthened negatively impacts the physical and mechanical properties and durability of cement-based soils, as well as the increased amount of binder used in road pavement, which is a pressing issue. It has been established that mitigating the negative impact of clay minerals in soils, reducing the binder content in materials, and improving the physical, mechanical, technological, and operational properties of road pavement is possible through the use of methods for modifying strengthened soils. Promising modification methods have been identified, the main ones being: altering the ion-exchange complex, hydrophobization, plasticization, and complex modification (a combination of methods). The effects of modification methods on the physical and mechanical properties of strengthened kaolin clays (compressive strength, tensile strength, and frost resistance coefficient) have been determined. The impact of the complex modification was investigated using the mathematical design of experiments method. Regression equations were obtained in the form of a second-degree polynomial, and response functions were constructed as parametric dependencies. It has been shown that the use of the complex modification method provides the greatest opportunity to level out the negative impact of kaolinite and, as a consequence, to obtain structural layers of road pavement with improved physical and mechanical properties.

1 Introduction

This section contains the bulk of references to literature. Links are formatted, for example, like this [1]; or so [2], [3]; or so [4]–[6]. Shape them using the free Mendeley software. We will send you training materials as needed. It's simple, convenient, and saves you time and effort.

You can end this section like this (but not necessarily like this):

The object of the study was ...

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Goal...

Tasks...

2 Materials and Methods

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3 Results and Discussion

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4 Conclusions

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5 Acknowledgements

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6 Fundings

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7 Conflict of Interests

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References

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