



Transportation Geotechnics and Geocology, TGG 2017, 17-19 May 2017, Saint Petersburg, Russia

Oil products absorbing properties of foam concretes

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Abstract

Construction pollutes the environment. One of types of pollution is oil products. They pollute the hydrosphere and a lithosphere. Oil products are hazardous to health of the person. For a solution in work it is offered to use porous materials. Their structure provides the absorbing property oil products. The oil products absorbing by means of the foam concrete articles are shown in the paper. The new parameter of such kind of the properties is named. Parameters of the geocoprotective technology on their base are shown. Two technologies have been used for the geocoprotective purposes such as preventive and sterilizative ones.

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Peer-review under responsibility of the scientific committee of the International conference on Transportation Geotechnics and Geocology

Keywords: articals, building, prevention, segregation, oil products;

1. Introduction

Construction activity has a negative impact on the environment and is accompanied by contamination of the soil with various substances, including organic nature. Oil products are hazardous to health of the person [1-2]. Perhaps biological decomposition of oil products [3-4].

To reduce the negative impact of necessary available for the construction industry material, capable of absorbing impurities. Such ability is based on properties of their surface [5-13]. Then lithosphere protection can be carried out construction methods, but requires knowledge of the absorption properties of building systems (structures, buildings), which geocoprotective lithosphere from organic pollution.

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2. Results and discussion

According to the research we know and properties of a surface [14-23], it is known that porous cement systems as finished products are capable of capillary absorb that should be suitable and for absorb of a various oil-products too. In works of scientists the capillary suction is investigated [24-25].

This feature can become a basis for geological and ecological protective preventive and liquidating technologies in construction activity. Parameters are necessary for assessment of absorbing properties. These parameters shall show quantity, height and speed of absorption.

The options describing absorbing properties include:

- specific absorbing capacity - A_{am} , kg/kg and A_{av} , m^3/m^3 - maximum mass of oil pollution, kg, that mass unit of the exact construction product is able to absorb, kg, or - maximum absorbed volume, m^3 oil pollutions, to unit volume, m^3 of the particular material or product.

- lifting height of oil-product H , cm (figure 1)



Fig.1 Lifting oil-product.

-speed of ingress (absorption) of oil-products, V_{abs} . (Cm/min) by a particular building material or product, such as lifting height h (cm) per time unit τ (min).

Considering that options A_{am} and A_{av} , H and V_{abs} . describe lithosphere protection properties, they have been named as geological and ecological protective, and materials or products that have such properties become geological and ecological protective resources.

Absorption properties of construction products were investigated and necessary parameters were determined (table 1).

Table 1. Geological and ecological protective properties of foam concrete products with an average density D300, D400, D500 of product (absorption method).

Absorbing capacity of foam concrete products with an average density					
D300		D400		D500	
A_{am} , kg/kg	A_{av} , m^3/m^3	A_{am} , kg/kg	A_{av} , m^3/m^3	A_{am} , kg/kg	A_{av} , m^3/m^3
<i>compressor oil</i>					
0,21	0,63	0,29	0,66	0,58	1,05
<i>industrial oil</i>					
0,23	0,68	0,35	0,78	0,59	1,05
<i>turbine oil</i>					
0,16	0,48	0,41	0,92	0,47	0,85
Maximum lifting height of oil-products, H_{max} cm					
<i>diesel oil</i>					

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