СЪВРЕМЕННО ПРИЛОЖЕНИЕ НА ПИРОЛИЗНО МАСЛО

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CONTEMPORARY APPLICATION OF PIROLYSIS OIL

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ABSTRACT

The opportunity of application of pyrolysis oil for forecasting durability of a layer of superficial processing road coverings is considered. The offered technique of definition of efficiency of application of any additive intended for improvement of properties of bitumen at the device of layers of superficial processing of road coverings allows receiving the most authentic forecast of safety of a layer.

Key words: *waste tire, thermal cracking, oil*

INTRODUCTION

Bitumen-stabilised materials (BSMs) are the product of cold treatment of granular or RA(P) recycled materials, with foamed bitumen or emulsion binders. The current testing procedures for the mix design and selection of BSM swith either foamed bitumen or emulsion as a binder are based on indirect tensile strength (ITS), indirect tensile test (ITT), unconfined compressive strength (UCS) and tensile strength ratio (TSR) after soaking of the specimen for moisture sensitivity. The limitation of these procedures is that specimen preparation; moisture conditioning and strength testing do not simulate the characteristics of BSM performance in the field. In the field, the moisture sensitivity is linked to the hydrodynamic effect on aBSMlayer during trafficking. At the same time, BSMs are known to have limited tensile strength because of the aggregate being only partially coated by the binder. As a result, the shear strength of materials based on aggregate interlock is the material property that is most closely linked to performance. The important factors that contribute to shear strength are gradation (aggregate distribution and maximum size fractions to fine particles), moisture content, density and confining pressure. Fundamental tests such as triaxial tests as well as accelerated pavement tests are widely recognised as reliable for the critical analysis of BSM performance in a manner that is representative of the field conditions. However, the use of triaxial testing has been limited to research. This leads to the limited use of this test by practitioners and commercial laboratories because of its complexity, cost and time issues.

MATERIALS AND METHODS

The aim of these investigations is to study the effect of pirolysis oil as an additive or component for bitumen from one hand and from another to decrease cost price of crude fuel.

All reagents used for the experiments were commercially available and not purified further.

In previous articles are given the physical-chemical properties of the obtained from thermal cracking product so called pirolysis oil [16], as well as basic characteristics of bitumen [17].

In accordance of ASTM D 4057 were prepared 4 mixtures. The composition consist are given in Table 1.

Table 1: Composition consist of prepared mixtures

Nr.	Bitumen %(m/m)	Pirolysis oil % (m/m)
1.	95	5
2.	85	15
3.	75	25
4.	65	35

We were investigated the phisico-chemical properties to mixtures and the obtained results are given in Table 2.

Table 2: Physico-chemical properties of obtained mixtures

Parameters	Values	Values	Values	Values
Density at 20 ºC	0.9325	0.9120	0.8925	0.8886
Sulphur, %	1.25	1.21	1.20	1.21
Specific heat /lower/, kJ/kg	40.34	39.5	40.12	40.14
Kinematic viscosity at 50 ºC, mm^2/s	14.40	14.35	14.44	14.44
Ash content, % (m/m)	0.35	0.33	0.33	0.28
Water soluble acids and base	Neal	Neal	Neal	Neal
Flash point, ºC	212	185	172	165
Freezing point, ºC	- 10	- 12	- 12	- 13
Water content, %	Neal	Neal	Neal	Neal

As can seen from the data in Table 2, the increasing quantity of pirolysis oil led to decrease of density and flash point of used raw-material as such as characteristics as water soluble acids and base, freezing point, water content, ash content, specific heat and viscosity haven`t had changes or if have had minimal change it`s possible to due to of uncertainly of the used method.

The obtained results will be use as a beginning to develop and to obtain a new component which may be in a composition in different roof and isolation materials.

CONCLUSIONS

For the first time is done investigation to obtain isolation or roof material for bitumen and pirolysis oil. The investigated mixtures were studied for basic characteristics and the obtained results will be use as a beginning to develop and obtain a new component, which may use in different roof isolation materials.

ACKNOWLEDGMENTS

The authors want to be grateful and to tell huge thanks to Found "Scientific investigations" for given help at realized of the present investigations.

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