



Investigating the Effects of Glass Fiber on Technical Specifications of Pure Bitumen

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Abstract

The poor performance of pavement as well as the short life time of pavement is caused by misused of bitumen and materials and inappropriate mixture of asphalt. To achieve optimum performance of pavements with proper and harmonious development of all the above factors are needed. Since bitumen is sensitive to high temperature and in order to prevent damages caused by high temperature, the classic tests and using additives is important. This causes the behavior ultimately leads to modified bitumen asphalt mixture performance. In this research the effects of different percentages of glass fiber on properties of pure bitumen are performed. The results show that glass fiber causes increasing in ductility, softening point and penetration test of bitumen. Due to positive obtained results it is suggested to use the glass fiber as an additive to bitumen.

Key words: Bitumen, Glass fiber, Specification, Optimum

1. Introduction

More than 100 years ago men used to use a mixture of bitumen and rubble in order to cover roads. From those days to now the methods, machinery, quality, quantity, standards, applications which are used in asphalt coating have changed a lot. In general, adhesion and impermeability are the unique characteristic of bitumen. These properties of bitumen make it more functional. One of the most important applications of bitumen is in road construction. Despite the low weight of bitumen, it plays a considerable rule in the consistency and robustness against various factors corrosive coating on the surface, as a binder and rock keeper in asphalt coating. Unfortunately because of growing in urban traffic and traffic of heavy vehicle, problems such as drooping track at high temperature and cracking at low temperature, affect the usage of bitumen. Therefore in recent decades many efforts have been made to improve the properties of bitumen. These researches show that these materials can prevent cracking and drooping track in bitumen.