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THE EFFECT OF FIBRES ON THE RHEOLOGICAL AND FAILURE PROPERTIES OF BITUMINOUS MASTICS AND MIXTURES

E. Santagata *

Full Professor, Politecnico di Torino, I

G. Chiappinelli

Graduate Student, Politecnico di Torino, I

* Department of Hydraulics, Transportation and Civil Infrastructures,
24, corso Duca degli Abruzzi, 10129 Torino, Italy, santagata@polito.it

ABSTRACT

In the area of pavement construction and maintenance the selection of an appropriate bituminous binder is a key issue in order to achieve a satisfying level of performance in the field. In such a context, polymer modified binders have gained world-wide acceptance due to their improved rheological properties that are reflected by a unique response of the pavement systems in which they are comprised in extreme temperature conditions and under heavy traffic loads. However, the effects of other modifying agents and additives that may be included in bituminous mixtures should not be neglected and should be evaluated by proper means in order to optimize resources in each and every paving application. In particular, the advantages that may stem from the use of different types of fibres should be carefully considered since they may offer alternative strategies in the process of binder enhancement.

As a result of these observations the Authors have set up an experimental research program the goal of which is to evaluate the effects of different kinds of fibres on the performance-related properties of bituminous road materials. The investigations have been performed in various stages by considering systems of an increasing degree of complexity: binders, mastics and mixtures.

In this paper an overview of the obtained results is given and details of the specific protocols used throughout the research project are provided.

KEYWORDS: fibres, mastics, mixtures, rheology, failure properties.