

Researches Concerning Additived Bitumen

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Summary

The theme of the thesis continue the preoccupation of road specialists - to improve the performance of behavior of bitumens and operating performance of asphaltic mixtures. To achieve this goal were using various inert or active additives which have introduced directly into bitumen or bituminous mix mass.

Experience shows that a very important role in achieving the desired performance in terms of additive or modified bitumens and mixtures it is both the type of additive or modifier used and the proportion in which it is added to the bitumen mass.

In last years, there is a strength tendency to use surface-active products like additives, which considerable ameliorate the adhesiveness of bitumen. In fact, this is a result of composition and specific molecular structure (polar – non-polar) of



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additive. The additive has a lyophilic group that fixes into the bitumen and a hydrophilic group that fixes at the natural aggregate surface.

Using modern analytical techniques allow a better understanding of the complex structure of binders, highlighting even interactions between bitumen and bitumen additives/polymers. These interactions determine the properties (mechanical properties, compatibility with new substances placed etc.).

This allowed the characterization of the mechanical properties using "classical" testing methods, such as penetration, ring – ball attempt, ductility, adhesiveness determining the quantitative and qualitative methods, etc., in a reproducible and valid mode.

In addition to the traditional methods used to determine the adhesion of bitumen to aggregates, a new, non-destructive but unregulated method was introduced, **the computer assisted image analysis**. The computer assisted image analysis (**PHP method** and "**procedure for the average percentages of black**" method) evaluate and quantifies quite objectively the covering power of bitumen on aggregates, eliminating any exterior influence. There are simple to use, iterative and reproducible methods.

The results obtained through this method are repeatable and reproducible and allow the elimination of a certain number of parameters that usually distort the reasoning regarding the capacity of coverage of bitumens (hot coverage in what concerns wet materials). These parameters, as it has been mentioned, are the luminosity, the operator's perspective, the nature and color of the basic aggregate etc.

Using the computer-assisted image analysis is for the time being at the level of research, but other current studies in the field of construction materials and other fields may be taken into account in the research development

KEYWORDS: bitumens, additives, computer assisted image analysis, nondestructive methods.

