

Abstract

The recycling of asphalt pavements is not a recent idea. Nevertheless due to the increasing of the environmental and economical demand it has turned out to be an alternative amply used throughout the world. During the last decades, and because of the petroleum crisis in 1973, great efforts have been carrying out to develop recycling techniques that use material from the milling of aged pavement layers. These techniques allow not only to reduce amount of bitumen and aggregates used in the production of new hot mix asphalt, but to reduce the number of landfills used for waste storage. Consequently great ecological and economical advantages has been observed.

Due to the low experience in hot mix recycling at central processing plants in Spain, the lack of a specific normative for these type of mixtures and taking into account the previous said, a complete study of the mechanical characteristics of the different types of hot mix recycling at central plants was carried out in the Laboratory of the Engineering School (U.P.C). The performance of all the tests involve the use of different percentage of milling material (RAP), several binders and/or various rejuvenating agents, and their comparison with the conventional mixtures, so as to obtain design and quality control criteria that guarantee a suitable behaviour of these mixtures.

Some of the tests performed have been used to the design and quality control of the conventional mixtures, i.e. Marshall, Indirect tensile strength or Tree Point Bending Test. Additional less known tests were used that provide important information, such as Universal method for the Characterization of Binders UCL[®], or the Barcelona Direct Tensile BTB.

The analysis of all the results maintain that the recycling mixture behaviour is quite similar to the conventional mixtures. The only requirement is a thorough performance. On the other hand, some useful parameters has been established to the design and the quality control of the hot mix recycling at central processing plants that support the used of this technique in the construction and rehabilitation of bituminous pavement projects in Spain.
