MECHANICAL CHARACTERISTICS OF RECYCLED ASPHALT IN GERMANY

BY

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ABSTRACT:

Existing flexible pavements represent available supplies of aggregates that can be recycled. This can significantly contribute to environmental preservation by reducing the amount of new materials required for highway construction and avoiding the problems associated with disposal of the old pavement materials. Recycling also reduces the amount of energy needed to produce the new construction materials and transport those materials to the roadway construction site. Recycling has been defined as "the reuse, usually after some processing, of a material that has already served its first-intended purpose". The recycling procedures in pavement construction have many economical advantages over the traditional procedures. In Germany, recycling of construction materials is considered most important due to the shortage of land available for waste disposal. Recycling of asphalt mixtures began about 20 years ago through Dresden Municipal Government. Recycling of asphalt mixture can be defined as the restoration of aged mixes. The mechanical characterization of the recycled asphalt mixtures must be identified for construction and research purposes. The purpose of this research is to present the mechanical characterization of recycled asphalt mixtures made by blending and rejuvenating methods. Eleven types of asphalt mixture samples were taken from roads in Dresden city in Germany. These samples were taken from the pavement surfaces constructed seven years ago. The recycled asphalt mixture samples were tested in the laboratory. The results indicated that asphalt in the old mixtures used for recycling have low penetration and high softening point. It has also been indicated that asphalts in the recycled mixtures made by the Rejuvenating method have not been rejuvenated completely. The results also showed that Fatigue life of the recycled mixtures is longer than that of the conventional mixture. Other characteristics have been identified such as water-resistance, which showed that the recycled asphalt has high water-resistance.

Keywords
Asphalt Recycling, Mechanical Characteristics, Asphalt Mixtures