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Guided By

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Project Title

EFFECT OF CRUMB RUBBER PARTICLES SIZE VARIATION ON BITUMEN MIX DESIGN

Abstract:

The increase of waste tyre disposal is a serious problem that leads to environmental pollution. Crumb rubber obtained from shredding of those scrap tires has been proven to enhance the properties of plain bitumen since the 1840s. It can be used as a cheap and environmentally friendly modification process to minimize the damage of pavement due to increase in service traffic density, axle loading and low maintenance services which has deteriorated and subjected road structures to failure more rapidly. Use of crumb rubber leads to excellent pavement life, driving comfort and low maintenance. The rheology of CRMB depends on internal factors such as crumb rubber quantity, type, particle size, source and pure bitumen composition, and external factors such as the mixing time, temperature, and also the mixing process (dry process or wet process). The present study aims in investigating the experimental performance of the bitumen modified with 15% by weight of crumb rubber varying its sizes. Four different categories of size of crumb rubber will be used, which are coarse (1 mm - 600 μ m); medium size (600 μ m - 300 μ m); fine (300 μ m - 150 μ m); and superfine (150 μ m - 75 μ m). Common laboratory tests will be performed on the modified bitumen using various sizes of crumb rubber and thus analyzed. Marshall Stability method is adopted for mix design. Finally a comparative study is made among the modified bitumen samples using the various sizes of Crumb Rubber particles and the best size is suggested for the modification to obtain best results.

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