The Effect of Crumb Rubber Particle Size to the Optimum Binder Content for Open Graded Friction Course

Mohd Rasdan Ibrahim,1 Harra Yati Khatim,1,2 Mohamed Rehan Karim,1 Suhana Koting,1 and Nuha S. M. Mashan1

1Centre for Transportation Research, Faculty of Engineering, University of Malaya, 50603 Kuala Lumpur, Malaysia
2Universiti Tenaga Nasional, Putrajaya Campus, Jalan Ikras-Uniten, 43000 Kajang, Selangor, Malaysia

Received 31 August 2013; Accepted 29 October 2013; Published 15 January 2014

Abstract

The main objective of this paper is to investigate the relations of rubber size, rubber content, and binder content in determination of optimum binder content for open graded friction course (OGFC). Mix gradation type B as specified in Specification for Porous Asphalt produced by the Road Engineering Association of Malaysia (REAM) was used in this study. Marshall specimens were prepared with four different sizes of rubber, namely, 20 mesh size [0.841 mm], 40 mesh [0.42 mm], 80 mesh [0.177 mm], and 100 mesh [0.149 mm] with different concentrations of rubberised bitumen (4%, 8%, and 12%) and different percentages of binder content (4%–7%). The appropriate optimum binder content is then selected according to the results of the air voids, binder draindown, and abrasion loss test. Test results found that crumb rubber particle size can affect the optimum binder content for OGFC.