Chapter 26- Prediction of rutting resistance of porous asphalt mixture incorporating nanosilica

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ABSTRACT

Porous asphalt (PA) has been well known for its advantages in improving skid resistance of pavement during rain, reducing splashing effects, and producing lower riding noise (Wu et al., 2020; Tang et al., 2013; Yao et al., 2011). These criteria exist due to the high porosity possessed by PA layer which allows for high drainage capability of surface run-off. According to the Public Works Department of Malaysia (JKR/SPJ/2008, 2008), PA should have a total percentage of voids between 20% and 25% which is relatively high compared to conventional hot mixed asphalt (Yao et al., 2013). The high voids content in PA have been enabled through the use open-graded type of aggregates (Yao et al., 2013). The gradation of PA consists mainly of coarse aggregates with dimension size larger than 2.36 mm (No. 10 sieve) together with small amount of fine aggregates (not more than 15%) and also mineral filler not exceeding 5% of the total aggregate weight (BS812-103.1, 1985). Hence, this type of gradation produces a relatively high interconnected air voids after compaction.

KEYWORDS
Binder; Modified; Nanosilica; Porous asphalt; Rutting