

Marshall properties of asphalt containing alternative fine aggregates under different ageing conditions

Salam Ridha Oleiwi Aletba^a, Norhidayah Abdul Hassan^b, Ramadhansyah Putra Jaya^c, Eeydzah Aminudin^b, Hasanain Radhi Radeef^b, Zaid Hazim Al Saffar^d

^a Civil Engineering Department, Bilad Alrafidain University College, Diyala, Iraq

^b School of Civil Engineering, Universiti Teknologi Malaysia, Johor, Johor Bahru, 81300, Malaysia

^c Department of Civil Engineering, College of Engineering, Universiti Malaysia Pahang, Pahang, Gambang, 26300, Malaysia

^d Buildings and construction engineering, Technical College of Mosul, Northern Technical University, Mosul, Iraq

ABSTRACT

Fine aggregate is a main asphalt component, which provides essential effect on the performance of asphalt mixture. Major consumption of aggregate for construction has caused depletion of natural resources and needs for alternative aggregate. Industrial wastes generated from manufacturing processes were laboratory evaluated as alternative fine aggregates in hot mix asphalt with variation in hardness, density and water absorption. Detailed design of the asphalt containing the potential aggregates of garnet and coal bottom ash was prepared and compared with the conventional granite aggregate using Marshall mix design method. The asphalt mixtures were tested for volumetric properties and stability under different ageing conditions. Results showed that fine aggregate has considerably affected the asphalt properties. Garnet improves the asphalt density and stability compared with other fine aggregates under both ageing conditions, thereby suggesting the suitability of garnet as an aggregate in asphalt pavement.

KEYWORDS

Spphalt ageing; Bottom ash; Fine aggregate; Garnet; Marshall mix

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