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Commentary

Use of Wastewater Treatment Sludge (WTS) As Filler in Hot-Mixed Asphalt Concrete

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ABSTRACT

This research deals with the use of sludge from the Water Treatment Plant of Ponta do Ismael, in the city of Manaus, state of Amazonas, Brazil, as a filler fraction in hot-mixed asphalt concrete, replacing the mineral filler traditionally used in this region (Portland cement). Five asphalt mixtures were analysed, one as reference (100% Portland cement) and four others, using sludge in the proportions of 25%, 50%, 75% and 100%, by mass, reaching a maximum of 5%, in relation to the total mass of the mixture. Specimens of the five asphalt mixtures were moulded and the results according to Marshall stability, flow value, static indirect tensile strength, resilient modulus and repeated-load indirect fatigue (fatigue life) were analysed. All the physical and mechanical properties of the five mixtures met the specifications of Brazilian standards, having mixtures with sludge showing better performances than the reference mixture.

Keywords: Sludge; Wastewater treatment plant; Mineral filler; Asphalt mixture; Fatigue life; Resilient modulus; Static indirect tensile strength; Marshall stability

BIOGRAPHICAL NOTES

Nilton de Souza Campelo (Corresponding Author) has been teaching the disciplines Soil Mechanics, Foundation Engineering and Pavement Design for 30 years, in undergraduate and graduate courses in Civil Engineering at the Federal University of Amazonas. His research focuses on the areas of geotechnics, civil construction and solid waste.

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