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Award-winning paper in 2019.
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Announcement

Construction Materials

ice Publishing

Award-winning paper in 2019

Papers published in *Construction Materials* are eligible for awards from the Institution of Civil Engineers. Papers from any of the ICE journals can be nominated for several awards. In addition, each journal has awards dedicated to their specific subject area.

On Thursday 4 June 2020, an award was announced for the following paper published in *Construction Materials* in 2019. The editorial panel nominated their best papers and an awards committee chaired by Tim Broyd allocated the awards.

Thomas Howard Medal

The Thomas Howard Medal, presented for the best paper detailing the use of materials in construction, was awarded to Jeffry *et al*. (2019).

Abstract

Waste coconut shell (CS) was used to produce nano charcoal ash (NCA) as a potential modifier material in an asphalt binder. This study focused on the microstructural and physical properties of NCA. Thermogravimetric analysis and derivative thermogravimetric analysis (TGA/DTA), field emission scanning electron microscopy (FESEM), X-ray fluorescence, particle size analysis (PSA), penetration tests, softening point tests and dynamic shear rheometer (DSR) tests were performed. The TGA/DTA results revealed 490°C to be a suitable CS burning temperature to form carbon and to reduce impurities. The morphology determined by FESEM showed that charcoal CS presents a smooth, porous and irregular shape. The carbon content on the surface of the material was 77.6%, as indicated by energy-dispersive X-ray spectroscopy. PSA showed that the optimum size of the charcoal CS obtained after several grinding cycles was 148 nm. Test results indicated that adding NCA from coconut shell to bitumen improved the binder stiffness up to 47% and significantly increased the softening point up to 12% compared with virgin binder. The DSR test revealed that the optimum size of NCA enhanced the bitumen by increasing the resistance to rutting until a temperature of 76°C was reached, prior to failure at a temperature of 82°C.

REFERENCE

Jeffry SNA, Putra Jaya R, Abdul Hassan N, Mirza J and Mohd Yusak MI (2019) Microstructure and physical properties of nano charcoal ash as binder. *Proceedings of the Institution of Civil Engineers – Construction Materials* **172(2)**: 103–115, https://doi.org/10.1680/jcoma.16.00054.