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Utilization of PVC wastes on concrete bicycle roads

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Polyvinyl-chlorine (PVC) is a material with a wide range of utilities such as construction, packaging, medical materials, and the automotive sector. Because these materials have much time to disappear in nature, it is vital to utilize PVC chip wastes. Concrete was applied on the roads of the Northern campus of Hittites University. PVC chips obtained from door and window manufacturing shops have been added to the concrete mix of concrete bicycle roads. PVC chips were utilized in the concrete by eliminating 0,5 mm aperture size. PVC chips have been added into the transit-mixer from the concrete plant to the construction site. PVC chips were used in the mixture of concrete in the ratio of 1-3 and 5 kg/m3. The largest aggregate size in the mixture is 22.4 mm. The addition of PVC chip to the concrete mix reduced the precipitation value of fresh concrete from 190 mm to 150 mm. The addition of PVC chip has slightly increased the air void ratio of the fresh concrete. Hardened concrete tests, compression resistance, tensile splitting strength, and modulus of elasticity were performed. PVC has been compared with the additive control concrete sample. 5 kg/m3 PVC chip, which was added to the mixture, has reduced pressure resistance by about 11%. It can be stated that the PVC chip contributes positively to the tensile splitting strength and elasticity module values of the concrete. Apart from these tests, firstly, modulus of elasticity tests was carried out on 15*30 cm cylinder samples. Then, compression resistance and tensile splitting strength tests were conducted on the same samples. In the modulus of elasticity test, variations in compression and tensile splittings strengths of examples exposed to repeated compression loads were examined. After the test of elasticity modulus, the compression resistance and tensile-splitting strengths of the samples have decreased. It has been concluded that very thin PVC chip wastes can be utilized in a concrete

Recent Publications

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5. Tsuyoshi S., Takayuki I., Yusaku H., Yangsun K., Maito S., (2018), Analysis of the efficacy and feasibiltiy of recycling PVC sasha in Japan, Resources, Conservation & Recycling, 131:41-53.
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8. Mohammed A.A., (2019), Mechanical strength of concrete with PVC aggregates, Woodhead Publishing Series in Civil and Structural Engineering, 115-135.

Biography

Hasan Baylavli works in Hitit University Construction Technology and Building Audit Programs, in Çorum, Turkey as Research Assistant. Completed associate degree program in 1997 in Gazi University Çorum Vocational School Construction Program. Graduated from Pamukkale University, Faculty of Engineering, Department of Civil Engineering in 2000. Did Master's degree in Eskişehir Osmangazi University, Faculty of Engineering, Department of Civil Engineering Building Materials. Still does doctorate in University, Faculty of Engineering, Department of Civil Engineering Building Materials. Works in these subjects: self-compacting concretes, fiber-reinforced concretes and recycling. Furthermore, has studies in the fields of university campus planning, green campus and energy-efficiency in buildings..

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