

USE OF POST-CONSUMER WASTE PLASTICS IN CEMENT-BASED COMPOSITES

By Tarun R. Naik, Shiw S. Singh, Calvin O. Huber, and Brian S. Brodersen

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ABSTRACT

This paper describes an innovative use of post-consumer waste HDPE plastic in concrete as a soft filler. A reference concrete was proportioned to have the 28-day compressive strength of 5000 psi (35MPa). A high-density plastic was shredded into small particles for use in the concrete. These particles were subjected to three chemical treatments (water, bleach, bleach + NaOH) to improve their bonding with the cementitious matrix. The plastic particles were added to the concrete in the range of 0 - 5% of total mixture by weight. Compressive strengths were measured for each test mixture. The results showed that chemical treatment has a significant effect on performance of the plastic filler in concrete. Of the three treatments used on the plastic, the best performance was observed with the alkaline bleach treatment (bleach + NaOH) with respect to compressive strength of concrete.