

ABSORPTION OF CONCRETE INCORPORATING WASTE POLYSTYRENE

^{1,2}**B.A. Herki***, ²**J.M. Khatib**, ²**D. Searle**, ²**P. Georgakis**

¹Soran University, Kurdistan-Iraq. ²School of Technology, University of Wolverhampton, Wolverhampton, WV1 1LY, UK
e-mail add: b.a.herki@wlv.ac.uk

*Corresponding author

ABSTRACT: The potential uses and the high cost of land-filling of solid wastes including waste polystyrene (PS) have prompted research into their beneficial reuse as construction materials. Concrete industry can use waste polystyrene as a partial or full replacement material with natural aggregate. This paper presents the results of an experimental study on the effects of waste polystyrene based lightweight aggregate called Stabilised Polystyrene (SPS) in a composite matrix of clay and cement in concrete. The composite aggregate was formed with 80% waste polystyrene which was shredded to different sizes, 10% red clay dust to improve the resistance to segregation and 10% Portland cement. Effects of SPS aggregate on fundamental properties of concrete were investigated. Three series of concrete with three different water/cement ratios of 0.6, 0.8 and 1.0 with varying SPS content ratios of 0, 30, 60 and 100% as partial replacement of natural aggregate by equivalent volume were prepared and tested. Water absorption by total and capillary action was determined for the various concrete mixes in series one. The results indicate that there is an increase in total and capillary water absorption (CWA) with increasing amounts of SPS aggregate in concrete.