FLEXURAL BEHAVIOUR OF LIGHTWEIGHT PRECAST REINFORCED CONCRETE SLAB WITH BRC

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ABSTRAK

Tayar getah terpakai dan tempurung kelapa sawit (PKS) merupakan bahan buangan yang jarang dikitar semula sepenuhnya. Oleh itu, penggunaan getah remah (CR) dan PKS dalam konkrit ringan memberi lebih peluang untuk mengitar semula bahan tersebut. Dalam kajian ini, enam puluh enam spesimen kiub dan tiga spesimen papak telah disediakan untuk menyiasat prestasi sifat konkrit dengan PKS dan CR sebagai pengganti separa agregat kasar. Penggantian 10% , 20%, 30%, 40% dan 50% PKS dan CR telah digunakan mengikut isipadu. Kajian mendapati semakin tinggi tahap penggantian bahan-bahan buangan, lebih rendah ketumpatan konkrit serta kekuatan mampatan diperolehi. Hasil yang ditunjukkan daripada ujian lenturan, nilai peratusan sebanyak 10% daripada tempurung kelapa sawit dan getah remah adalah jumlah optimum penggantian kerana kekuatan mampatan yang diperolehi adalah lebih tinggi serta kelakuan lenturan papak adalah hampir dengan konkrit konvensional.

ABSTRACT

All forms of consumed rubber tire become waste because several tons of wastes rubber tire cannot be fully recycled at once. The same problem arise on the disposal of used palm kernel shells (PKS) which cause pollution towards the process of waste management. Hence, the application of crumb rubber (CR) and PKS in lightweight concrete provides further opportunity to recycle waste tires and make use of the abundant shells available. Sixty six cube specimens and three slab specimens were prepared in this study to investigate the performance of concrete properties with PKS and CR as partial replacement of coarse aggregate. The different amount of PKS and CR include 10%, 20%, 30%, 40% and 50% of replacement by volume. Test conducted on the cube specimens include concrete density test and compressive strength test, while for slab specimens were flexural test. The higher the replacement level of these waste materials, the lower the concrete density as well as the compressive strength obtained. From the result indicated on flexural test, the percentage value of 10% of kernel shell and crumb rubber was the optimum amount of replacement as the compressive strength obtained was higher and the flxural behaviour was closed to control concrete.