



River Water Treatment Plant in UKAY Perdana, Ampang

Wastewater plants in Malaysia face the major challenge of disposing the sludge that is left over from treating sewage water. While studies show that the volume of sludge is expected to rise, disposal options are limited due to strict environmental regulations. Meanwhile, the construction sector seeks economic and ecological cement replacement materials in order to meet the rising demand for concrete.

In a study published in the *Pertanika Journal of Science and Technology*, researchers from Universiti Teknologi MARA investigated the potential to replace various quantities of cement with processed sewage sludge to create a concrete mixture.

The researchers first produced domestic waste sludge powder (DWSP). They dried and burnt wet sludge cake to remove moisture, and then ground and filtered the dried sludge cake to make DWSP. Using varying proportions of DWSP (3, 5, 7, 10 and 15%), the researchers mixed the material with cement to produce normal strength and two higher strength grades of concrete. They then compared each DWSP concrete mixture with normal concrete in terms of their compressive strength, water absorption, water permeability and permeability to salt.

Overall, the researchers found that while DWSP has a potential role in the manufacture of concrete. The performance of DWSP concrete blends tends to decline with increasing concentrations of DWSP. For example, the compressive strengths of DWSP concrete generally decreased as the proportion of DWSP increased in concrete mix. Also, both water absorption and water permeability increased as the percentage of DWSP increased. However, resistance to salt increased for concretes containing up to 15% DWSP.

*“Overall, there is potential for using DWSP as a partial cement replacement,” the researchers say. “However, more detailed research should be conducted to yield better quality powder.”*

Source: <http://www.researchsea.com/>