عنوان مقاله:

Durability Properties of Concrete Containing Waste Cathode Ray Tube Glass as Fine Aggregates - A Review Service Unavailable

محل انتشار:

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خلاصه مقاله:

The increasing amount of waste cathode ray tubes (CRTs) due to the development of the electronic industry is a global problem. The non-biodegradable nature and hazardous substances in waste CRT glass increase the severity of the problem. Researchers suggest that the use of waste CRT glass as a construction material could be a viable solution to prevent leaching of lead to the environment and at the same time preventing natural resources from extinction. Therefore, this work presents a review of literature reporting on the effects of using waste CRT glass as an alternative replacement of natural aggregates on lead leaching, water absorption rate, and alkali-silica reaction (ASR). Preparing concrete and mortar that used CRT glass as fine aggregates offer added advantages in term of the water absorption rate. However, the percentage replacement, particle size, lead (Pb) content, types of admixtures, and techniques of treatment should be considered in ensuring an acceptable ASR expansion rate and lead leaching concentration of CRT glass concrete. The findings of this paper can be used as a guide to enhance the efficiency of recycling the waste CRT glass as a construction material with immense environmental and economic benefits.The increasing amount of waste cathode ray tubes (CRTs) due to the development of the electronic industry is a global problem. The non-biodegradable nature and hazardous substances in waste CRT glass increase the severity of the problem. Researchers suggest that the use of waste CRT glass as a construction material could be a viable solution to prevent leaching of lead to the environment and at the same time preventing natural resources from extinction. Therefore, this work presents a review of literature reporting on the effects of using waste CRT glass as an alternative replacement of natural aggregates on lead leaching, water absorption rate, and alkali-silica reaction (ASR). Preparing concrete and mortar that used CRT glass as fine aggregates offer added advantages in term of the water absorption rate. However, the percentage replacement, particle size, lead (Pb) content, types of admixtures, and techniques of treatment should be considered in ensuring an acceptable ASR expansion rate and lead leaching concentration of CRT glass concrete. The findings of this paper can be used as a guide to enhance the efficiency of recycling the waste CRT glass as a construction material with immense environmental and economic benefits.

کلمات کلیدی:

Cathode Ray Tube, Waste Glass, Concrete, Lead, Durability