

Waste glass as partial replacement in cement – a review

ABSTRACT

The industries of Cement and glass are dealing with a variety of demanding situations due to the excessive factories gases emissions, the extensive use of power and the intensive use of the earth's natural resources. The temporary landfills of dumping waste glass are now not providing a friendly environment, because of waste glass particle are nonbiodegradable. Furthermore, the chemical structure and the pozzolanic characteristics of waste glass are inspiring for using this waste in the cement industries and urban industries and to provide an environmentally friendly answer for the glass and cement industries. Thus, it can be used as a partial cement replacement in Portland cement concrete or as a partial replacement in the form of waste glass powder (WGP) or as waste glass sludge (WGS). The use of glass powder in Portland cement concrete does have some negative impact on characteristics of the concrete; however, waste glass in its crushed condition can be use in about 100 % and it can still be a practical applicability. This paper reviews the unusual uses of waste glass in cement and concrete and the effect of thermal and pozzolanic activity on the properties of waste glass the impact of the glass characteristics on the durability and performance of the produced cement and concrete.