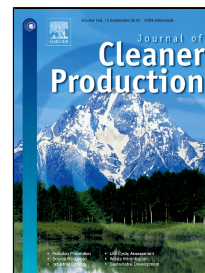


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A comprehensive review on mechanical and durability properties of cement-based materials containing waste recycled glass



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4 **based materials containing waste recycled glass**

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14 **Abstract**

15 Disposal of consumer waste is a major challenge in urban areas around the world. In the field of
16 building materials, it has long been recognized that many types of wastes can be used instead of
17 raw materials. In addition, production of binders such as Portland cement is a CO₂ intensive
18 process. However, for widespread use of wastes in construction, it is important that the properties
19 of resulting building materials are satisfactory. For concrete, the most important are the fresh,
20 hardened and durability properties. A promising waste material that can be utilized to create
21 sustainable concrete composites is waste recycled glass. In this paper, literature dealing with use
22 of waste recycled glass as partial replacement of either cement or aggregate in concrete is
23 systematically reviewed. The focus of this review is the influence of recycled waste glass on the
24 engineering properties of concrete. Main advantages and drawbacks of using recycled waste glass
25 are discussed. The aim of this review is to identify major research needs in the field that will help
26 bring this class of materials closer to worldwide practical use. Given that concrete is the most used
27 man-made material in the world, such development would significantly reduce the need for
28 landfilling of waste recycled glass that is unsuitable for reuse in glass production.

29
30 Key words: Waste glass powder, glass powder sand, supplementary cementitious materials,
31 mechanical properties, durability.

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