VitroGeoWaste III

The use the fine fraction of the construction and demolition wastes for green cements

Oral presentation ☐ / Poster presentation ☑

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Abstract: Construction and demolition waste (CDW) is a major source of waste. Much of the concrete aggregates are recycled but the finer fraction usually goes to landfill. This study is a valuation of the application of this fine fraction as a substitute material for limestone in the manufacture of cement. This represents a contribution to achieve the recycling of the finer materials of CDW and thus allow the sector to approach the goal of zero waste and reduction of CO2 emissions. Several CDWs in Catalonia have been evaluated. These wastes may contain the ceramic fraction (ARMc) or this fraction may have been removed together with a soil fraction (ARH). The XRD analyses reveals that both contain quartz, feldspars, calcite and ettringite. In the case of the ARMc type, clays reach more than 10 wt%. The amorphous phase represents 15-28 wt%. All of them show low plasticity.The DTA/TG results show an endothermic peak close to 400°C in the ARH waste due to dehydration of clays and decomposition of organic matter.Both types of CDW have an endothermic that vary between 800 and 870 °C, related with the

decarbonation of carbonates. After calcinationwollastonite, beliteand gehlenite, formed.The reactivity of the calcined wastes wasdeterminedusing the R3 test.Different mixtures of CDW withPortland cement and kaolin were tested.The results obtained confirm the high potential of these wastes as alternative raw materials for cementitious materials.

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