

The Use of Landfilled Fly Ash in Polymer Cement Repair Mortar

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Pulverized fuel fly ash (PFA) produced as a by-product in the burning of coal in the Power Station in Malta was landfilled in disused quarries in Malta, with a significant environmental impact and health associated risks. The aim of this research was to analyse the properties of the fly ash and to attempt to utilize it as a partial cement replacement in polymer cement patch repair mortars, containing crystallization admixture for the rehabilitation of the reinforced concrete structures. On the basis of mechanical properties including the flexural and compressive strength at 60 days, it was concluded that 20% cement replacement resulted in the best results. The microstructure of the material was also assessed through scanning electron microscopy (SEM), to investigate the performance of the PFA particles incorporated in the polymer cement matrix. The utilization of PFA up to 30% as a replacement of the cement in mortar did not result in leachability of the mortar. The application of PFA effectively in polymer cement patch repair mortar also results in the exploitation of a landfilled waste, with significant environmental benefits.