

Quarry Limestone Dust as Fine Aggregate for Concrete

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In quarrying activities, rock is extracted and transformed into aggregate of various sizes for civil engineering applications. In this process waste, fine aggregates is generated. The disposal of this type of waste is a further cost in the extraction process, but also a possible cause of environmental degradation and pollution (e.g. leaching into water reserves, atmospheric pollution as a result of small particles causing respiratory diseases or deposited on plants disrupting photosynthesis, affecting aquatic habitats, etc.). A strategy for the effective recycling of quarry dust, not only reduces waste generation and disposal but also addressed protection of the environment. The Italian quarrying industry covers a relevant portion of global mineral extraction resulting in a significant production of fine waste. In some cases quarries are located close to ecological sensitive and protected areas and to the coast, with higher risks for biodiversity (an example is the limestone extraction industry in Trapani, Sicily). In this context, the paper reviews the strategies proposed in the use of limestone fine waste, especially for concrete, and discusses an experimental program intended to assess the mechanical properties of concrete made with the fine limestone waste produced in the area of Trapani, as a partial substitute of fine aggregate (sand).