Title: Low-Carbon Cement with Waste Oil-Cracking Catalyst Incorporation

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Abstract: The present paper shows preliminary results of an ongoing project which one of the goals is to investigate the viability of using waste FCC catalyst (wFCC), originated from Portuguese oil refinery, to produce low carbon blended cements. For this purpose, four blended cements were produced by substituting cement CEM I 42.5R up to 20% (w/w) by waste FCC catalyst. Initial and final setting times, consistency of standard paste, soundness and compressive strengths after 2, 7 and 28 days were measured. It was observed that the wFCC blended cements developed similar strength, at 28 days, compared to the reference cement, CEM I 42.5R. Moreover, cements with waste FCC catalyst incorporation up to 15% w/w meet European Standard EN 197-1 specifications for CEM II/A type cement, in the 42.5R strength class.

Author Keywords: Blended Cements; Cement Industry; Low Carbon Cement; Pozzolanic Material; Sustainability; Waste Materials; Waste Oil-Cracking Catalyst

KeyWords Plus: Pozzolanic Activity; Compressive Strenght; Residue FC3R; Spent Catalyst; Fluidized-Bed; FCC Catalyst; Mortars; Corrosion; Pastes

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