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Properties of Cement Pastes with Different Particle Size Fractions of Metakaolin

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Abstract : Properties of Portland cement mixtures with various fractions of metakaolin were studied. 10 % of Portland cement CEM I 42.5 R was replaced by different fractions of high reactivity metakaolin with defined chemical and mineralogical properties. Various fractions of metakaolin were prepared by jet mill classifying system. There is a clear trend between fineness of metakaolin and hydration heat development. Due to metakaolin presence in mixtures the compressive strength development of mortars is rather slower for coarser fractions but 28-day flexural strengths are improved for all fractions of metakaoline used in mixtures compared to reference sample of pure Portland cement. Yield point, plastic viscosity and adhesion of fresh pastes are considerably influenced by fineness of metakaolin used in cement pastes.

Keywords : calorimetry, cement, metakaolin fineness, rheology, strength
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