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Feasibility of Ground Alkali-Active Sandstone Powder for Use in Concrete as Mineral Admixture

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Abstract : Alkali-active sandstone aggregate was ground by vertical and ball mill into particles with residue over 45 μm less than 12%, and investigations have been launched on particles distribution and characterization of ground sandstone powder, fluidity, heat of hydration, strength as well as hydration products morphology of pastes with incorporation of ground sandstone powder. Results indicated that ground alkali-active sandstone powder with residue over 45 μm less than 8% was easily obtainable, and specific surface area was more sensitive to characterize its fineness with extension of grinding length. Incorporation of sandstone powder resulted in higher water demand and lower strength, advanced hydration of C₃A and C₂S within 3days and refined pore structure. Based on its manufacturing, characteristics and influence on properties of pastes, it was concluded that sandstone powder was a good selection for use in concrete as mineral admixture.

Keywords : concrete, mineral admixture, hydration, structure
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