Table 8. Measured compressive strength

Curing age	Compressive strength/MPa		
	A	B	C
3d	20.36	8.32	30.77
28d	59.11	40.39	51.51

4. CONCLUSIONS

This paper studies the impacts of mud content in sand and gravel on water reducer in concrete, and explores the microscopic mechanism between mud powder and water reducer. The main conclusions are as follows:

(1) The compressive strength of hardened cement mortar always decreased with the growth in mud content. The hardened cement mortar containing montmorillonite witnessed the fastest decline in compressive strength, followed by that containing kaolin and that containing illite.

(2) With the growing concentration of polycarboxylate superplasticizer, the zeta potential on the surface of cement particles continuously decreased before reaching the equilibrium. For the two types of mud, the zeta potential changed in a similar trend as cement, but reached higher levels at the equilibrium state.

(3) The effectiveness of the anti-mud agent may be influenced by reaction temperature, initiator dosage, reaction time and pH. To maximize the dispersion effect, the anti-mud agent should be synthesized under a weak alkaline environment at the reaction temperature of 70 °C, the initiator dosage of 6 %, and the reaction time of 5h.

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