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Experimental Studies on High Damping Polymer Concrete

J M Hua*, Z M Hu, H Cao, X Zheng
College of Civil Engineering, Chongqing University, Key Laboratory of New Technology for Construction of Cities in Mountain Area (Chongqing University), Ministry of Education, P R China
*Corresponding address: huajianmin@cqu.edu.cn

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The damping performance of concrete can be improved when mixed with polymer. In this paper, the standard test methods were used to compare mechanical properties and durability between polymer concrete and ordinary concrete. Vibration tests and fatigue experiments were carried out with two prestressed simple beams respectively made by polymer concrete and ordinary concrete. The loss factors of ordinary cement mortar and polymer cement mortar were measured by using dynamic viscoelastometer, and they were also analyzed by scanning electron microscope. The experimental results show that the flexural strength, splitting tensile strength and durability of the polymer concrete are higher than those of ordinary concrete. The elastic modulus and compressive strength of the former decrease slightly but yet meet the requirement of code. The loss factor of polymer cement mortar is higher than that of the ordinary cement mortar, due to the reticular formation of the polymer. The damping ratio of the polymer concrete beam is significantly greater than that of ordinary concrete beam, and their fatigue performances are similar.