Time-dependent viscoelastic properties of magnetorheological paste with cement as carrier

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ABSTRACT

This paper reports an investigation on the viscoelastic properties of a new magnetorheological (MR) material, i.e. magnetorheological cement paste. The MR cement paste is mainly composed of cement based carrier and carbon iron particles (CIP). During the solidifying process of the cement carrier, the viscoelastic properties of the MR cement paste under various harmonic loading were examined under different solidifying periods, i.e. 0 minute, 5 minutes, 30 minutes and 60 minutes, and applied magnetic field, i.e. 0 mT, 0.1 mT, 0.2 mT, 0.3 mT, 0.4 mT and 0.5 mT. The rheological properties were explained by chemical process of cement and water, as well as magnetorheological effect. A viscoelastic model was developed to portray the rheological behavior of the MR cement paste.

REFERENCES

