

Influence of the supplementary cementitious materials on the dynamic properties of concrete

E. Elbahi a, S.M.A Boukli Hacene a

a EOLE laboratory, Department of Civil Engineering, Faculty of Technology, Aboubekr Belkaid University, Tlemcen 13000, Algeria

bah.bach@yahoo.com

Keywords: Concrete, Non-destructive test, Dynamic elasticity modulus crushed limestone, Résistance, natural pozzolana.

Abstract

The Frequency of resonance method is one of many non-destructives tests which allow us to evaluate construction materials. It was used to determine the dynamic properties of concrete, required in structures design and control and considered to be the key elements of materials dynamics.

In this study, we chose a non-destructive approach to quantify -in laboratory-, the influence of adding “crushed limestone” and “natural pozzolana” on local concrete’s dynamic characteristics. However, several concrete mixtures have been prepared with limestone aggregates. The experimental plan used, allowed us to determine the dynamic elasticity modulus, the dynamic rigidity modulus and the Poisson's ratio of different formulated concretes.

REFERENCES

- [BOU 12] M. A. Bouakkaz, ”caractérisation du béton par les méthodes non destructives-application de la méthode de la fréquence de résonance”, Magister thesis in Civil Engineering, Université Abou Bekr Belkaid Tlemcen, Algeria, 2012.
- [GIN 12] V.T. Giner, F.J. Baeza, S. Ivorra, E. Zornoza, O. Galao, ”Effect of steel and carbon fiber additions on the dynamic properties of concrete containing silica fume” *Materials and Design*, Vol. 34, 2012, p. 332–339.
- [HAS 12] A.M.T. Hassan a, S.W. Jones a, ”Non-destructive testing of ultra high performance fibre reinforced concrete (UHPRC): A feasibility study for using ultrasonic and resonant frequency testing techniques” *Construction and Building Materials*, Vol. 35, 2012, p. 361–367.
- [HUN 04] Sang-Hun Han, Jin-Keun Kim, ”Effect of temperature and age on the relationship between dynamic and static elastic modulus of concrete” *Cement and Concrete Research*, Vol. 34, 2004, p. 1219–1227.