
**Non-destructive testing — Acoustic
emission testing — Test method for
damage qualification of reinforced
concrete beams**

*Essais non destructifs — Contrôle par émission acoustique —
Méthode d'essai pour la qualification des dommages des faisceaux de
béton armé*

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Introduction

Acoustic emission (AE) techniques are extensively developed in concrete engineering. Concrete structures have long been referred to as maintenance-free. Recently, however, it is realized that the concrete structures can deteriorate due to many factors. In particular, heavy traffic loads result in fatigue of the concrete structures.

In order to assess the fatigue of reinforced concrete beams, one criterion to qualify the damage levels is proposed on the basis of two ratios associated with the Kaiser effect.

New AE parameters of load ratio and calm ratio are defined for qualification of the damage. It is found that the damage qualified by the two ratios are in good agreement with actual damage of the beams. This suggests that the damage of the reinforced concrete structures in service as bridges, docks and buildings be quantitatively assessed, by simply applying cyclic loading and monitoring AE activity.

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