

Mechanical vibration and shock — Characterization of the dynamic mechanical properties of visco-elastic materials —

Part 3: Cantilever shear beam method

ICS 17.160

National foreword

This British Standard is the UK implementation of ISO 18437-3:2005+A1:2010. It supersedes BS ISO 18437-3:2005 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment 1 is indicated by **A1** **A1**.

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A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Part 3: Cantilever shear beam method

*Vibrations et chocs mécaniques — Caractérisation des propriétés
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Partie 3: Méthode du faisceau par cisaillement en encorbellement



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Foreword

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ISO 18437-3 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*.

ISO 18437 consists of the following parts, under the general title *Mechanical vibration and shock — Characterization of the dynamic mechanical properties of visco-elastic materials*:

- *Part 2: Resonance method*
- *Part 3: Cantilever shear beam method*
- A1 — *Part 4: Dynamic stiffness method*
- *Part 5: Poisson's ratio based on comparison between measurements and finite element analysis*

The following part is in preparation:

- *Part 1: Principles and guidelines* A1

Introduction

Visco-elastic materials are used extensively to reduce vibration magnitudes in structural systems through the dissipation of energy (damping) or isolation of components, and in acoustical applications that require a modification of the reflection, transmission, or absorption of energy. Such systems often require specific dynamic mechanical properties in order to function in an optimum manner. Energy dissipation is due to interactions on the molecular scale and is measured in terms of the lag between stress and strain in the material. The visco-elastic properties (modulus and loss factor) of most materials depend on frequency, temperature and strain magnitude. The choice of a specific material for a given application determines the system performance. The goal of this part of ISO 18437 is to provide details on the principle of operation of a cantilever shear beam method that avoids common clamping errors through the use of fixed ends, the measurement equipment, in performing the measurements, and analysing the resultant data. A further intent is to assist users of this method and to provide uniformity in the use of this method. This part of ISO 18437 applies to the linear behaviour observed at small strain magnitudes.

