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

## Part 3: Cantilever shear beam method

*Vibrations et chocs mécaniques — Caractérisation des propriétés  
mécaniques dynamiques des matériaux visco-élastiques —*

*Partie 3: Méthode du faisceau par cisaillement en encorbellement*



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## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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*

Part 4 (*Impedance method*) is under preparation.

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## 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.