INTERNATIONAL STANDARD

ISO 10846-1

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Acoustics and vibration — Laboratory measurement of vibro-acoustic transfer properties of resilient elements —

Part 1:
Principles and guidelines

Acoustique et vibrations — Mesurage en laboratoire des propriétés de transfert vibro-acoustique des éléments élastiques —

Partie 1: Principes et lignes directrices

Reference number
ISO 10846-1:1997(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

International Standard ISO 10846-1 was prepared jointly by Technical Committees ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*, and ISO/TC 108, *Mechanical vibration and shock*.

Annexes A to E of this part of ISO 10846 are for information only.

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Introduction

Passive vibration isolators of various kinds are used to reduce the transmission of vibrations. Examples are automobile engine mounts, elastic supports for buildings, elastic mounts and flexible shaft couplings for shipboard machinery and small isolators in household appliances.

This part of ISO 10846 serves as an introduction and a guide to parts 2 to 5 of ISO 10846, which describe laboratory measurement methods for the determination of the most important quantities which govern the transmission of vibrations through linear isolators, i.e. frequency-dependent dynamic stiffnesses.

This part of ISO 10846 provides the theoretical background, the principles of the methods, the limitations of the methods and guidance for the selection of the most appropriate standard of the series.

The laboratory conditions described in all parts of ISO 10846 include the application of static preload.

The results of the methods are useful for isolators which are used to prevent low-frequency vibration problems and to attenuate structure-borne sound. The methods are not sufficiently appropriate to characterize completely isolators which are used to attenuate shock excursions.

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Part 1:
Principles and guidelines

1 Scope

This part of ISO 10846 explains the principles underlying parts 2 to 5 of ISO 10846 for determining the transfer properties of vibration isolators from laboratory measurements, and provides assistance in the selection of the appropriate part of this series.

This part of ISO 10846 is applicable to vibration isolators which are used to reduce:

a) the transmission of audiofrequency vibrations (structure-borne sound, 20 Hz to 20 kHz) to a structure which may, for example, radiate fluid-borne sound (airborne, waterborne, or other);

b) the transmission of low frequency vibrations (typically 1 Hz to 80 Hz) which may, for example, act upon humans or cause damage to structures when vibration is too severe.

The data obtained with the measurement methods which are outlined in this part of ISO 10846 and further detailed in parts 2 to 5 of ISO 10846 can be used for:

— product information provided by manufacturers and suppliers;

— information during product development;

— quality control;

— computation of the transfer of vibrations through isolators.

The conditions for the validity of the measurement methods are

a) linearity of the vibrational behaviour of the isolator (this includes elastic elements with non-linear static load-deflection characteristics as long as the elements show approximate linearity for vibrational behaviour for a given static preload);

b) the contact interfaces of the vibration isolator with the adjacent source and receiver structures can be considered as point contacts.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 10846. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 10846 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2041:1990, *Vibration and shock — Vocabulary.*