

Mehaaniline võnkumine ja löök. Kämbla-käsivarre vibratsioon. Meetod kämbla-käsivarresüsteemi poolt koormatud elastsete materjalide vibratsiooni ülekanduvuse mõõtmiseks

Mechanical vibration and shock - Hand-arm vibration - Method for measuring the vibration transmissibility of resilient materials when loaded by the hand-arm system

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 13753:2008 sisaldab Euroopa standardi EN ISO 13753:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 18.08.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 25.06.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 13753:2008 consists of the English text of the European standard EN ISO 13753:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 18.08.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 25.06.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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Võtmesõnad: inimkeha, käelaba, käsivarred, mõju, teimid, vibratsioon, vibratsiooni mõõtmine, vibratsiooniteimid

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English Version

**Mechanical vibration and shock - Hand-arm vibration - Method
for measuring the vibration transmissibility of resilient materials
when loaded by the hand-arm system (ISO 13753:1998)**

Vibrations et chocs mécaniques - Vibrations main-bras -
Méthode pour mesurer le facteur de transmission des
vibrations par les matériaux résilients chargés par le
système main-bras (ISO 13753:1998)

Mechanische Schwingungen und Stöße - Hand-Arm-
Schwingungen - Verfahren zur Messung der
Schwingungsübertragung elastischer Materialien unter
Belastung durch das Hand-Arm-System (ISO 13753:1998)

This European Standard was approved by CEN on 25 May 2008.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

The text of ISO 13753:1998 has been prepared by Technical Committee ISO/TC 108 "Mechanical vibration and shock" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 13753:2008 by Technical Committee CEN/TC 231 "Mechanical vibration and shock" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2008, and conflicting national standards shall be withdrawn at the latest by December 2008.

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

This document supersedes EN ISO 13753:1998.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship with EC Directive(s), see informative Annexes ZA and ZB, which are integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 13753:1998 has been approved by CEN as a EN ISO 13753:2008 without any modification.

Annex ZA (informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC, amended by Directive 98/79/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 98/37/EC on machinery, amended by 98/79/EC.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the Essential Requirement 1.5.9 of that Directive and associated EFTA regulations.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Annex ZB (informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2006/42/EC on machinery.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the Essential Requirement 1.5.9 of that Directive and associated EFTA regulations.

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Introduction

This International Standard was developed in response to the growing demand to protect people from the risks of vibration damage caused by exposure to hand-transmitted vibration.

Various standards refer to measurement and assessment of risk to vibration exposure and to methods of type testing specific tools and processes.

Resilient materials are used to cover handles and make gloves. It is hoped that both of these will reduce the magnitude of the vibration exposure. This International Standard describes a method of measuring the vibration attenuation of a sample of the material in the form of a flat sheet or layer. In some cases the material may be of two or more layers forming a sheet. It is a laboratory measurement and offers a reproducible and reliable procedure.

This International Standard assumes that the material behaves in a linear way and that it has negligible mass compared with the mass loading. (A correction could be made for the material mass if required.) The method determines the impedance of the material when loaded by a mass providing a compression force equivalent to that found when the material is gripped by the hand. This is done by measuring the transfer function of the mass-loaded material at all the required frequencies. The vibration transmission when loaded by the hand is computed using standard values of hand-arm impedance and the measured values of the material impedance. The impedances used in this International Standard are for the palm of the hand when gripping a circular handle. The resulting transmissibility may not be applicable to the fingers. The impedance for the z_h direction of the hand-arm system where the material is under compression is used. The mathematical basis of the method is contained in annex B.

If the results of this measurement procedure show transmissibilities greater than 0,6 at all frequencies up to 500 Hz, then the material would probably not provide greater attenuation in the practical situation in the same frequency range. In the practical situation, the transmissibility as a function of frequency should be appropriate to the frequency spectrum of the source.

Mechanical vibration and shock — Hand-arm vibration — Method for measuring the vibration transmissibility of resilient materials when loaded by the hand-arm system

1 Scope

This International Standard specifies a procedure to determine the vibration transmissibility of a resilient material when loaded by the hand-arm system.

The method is applicable to all materials which behave in a linear way. It is expected that this is realized in most elastic foam and rubber materials and, provisionally, in woven cloths. The method can be applied to mixed systems, e.g. a cloth material attached to a foam or rubber base.

It is expected that the results of this laboratory test will be used in screening materials used for vibration attenuation on the handles of tools and for gloves. This will enable rank ordering of materials for gloves, but will not necessarily predict the transmissibility of the gloves fabricated from these materials (for this purpose, see ISO 10819).

2 Normative references

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

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

ISO 5349:1986, *Mechanical vibration — Guidelines for the measurement and the assessment of human exposure to hand-transmitted vibration*.

ISO 5805:1997, *Mechanical vibration and shock — Human exposure — Vocabulary*.

ISO 10068:—¹⁾, *Mechanical vibration and shock — Free, mechanical impedance of the human hand-arm system at the driving point*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 2041, ISO 5349 and ISO 5805 apply.

NOTE For hand-transmitted vibration, see ISO 5805. For transmissibility, see ISO 2041.

1) To be published.