Transportation loads - Measurement and evaluation of dynamic-mechanical loads - Part 6: Automatic recording systems for measuring randomly occurring shock during monitoring of transports

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15433-6:2008 sisaldab Euroopa standardi EN 15433-6:2007 ingliskeelset teksti.	This Estonian standard EVS-EN 15433-6:2008 consists of the English text of the European standard EN 15433-6:2007.
Standard on kinnitatud Eesti Standardikeskuse 28.01.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 28.01.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.12.2007.	Date of Availability of the European standard text 01.12.2007.
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Transportation loads - Measurement and evaluation of dynamic mechanical loads - Part 6: Automatic recording systems for measuring randomly occurring shock during monitoring of transports

Charges de transport - Mesurage et analyse des charges mécaniques dynamiques - Partie 6: Systèmes d'enregistrement automatiques pour la mesure de choc aléatoire intervenant durant le suivi de transports

Transportbelastungen - Messen und Auswerten von mechanisch-dynamischen Belastungen - Teil 6: Transportüberwachung mit automatischen Aufzeichnungsgeräten zur Messung stochastisch auftretender Stöße

This European Standard was approved by CEN on 28 October 2007.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 15433-6:2007) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.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.

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.

Introduction

This standard was originally prepared by working group NAVp-1.4, Requirements and Testing, of the German Standardization Institute (DIN). It is part of a complete normative concept to acquire and describe the loads acting on goods and influencing them during transport, handling and storage.

This standard becomes significant when related to the realisation of the European Directive on Packaging and Packaging Waste (Directive 94/62 EC, 20 December 1994). This directive specifies requirements on the avoidance or reduction of packaging waste, and requires that the amount of packaging material is adjusted to the expected transportation load, in order to protect the transportation item adequately. However, this presumes some knowledge of the transportation loads occurring during shipment.

At present, basic standards, based on scientifically confirmed values, which can adequately describe and characterize the magnitudes of transportation loads, especially in the domain of dynamic mechanical loads do not exist nationally or internationally. Reasons for this are mainly the absence of published data, insufficient description of the measurements or restrictions on the dissemination of this information.

This standard will enable the measurement and analysis of dynamic mechanical transportation loads, thus enabling the achievement of standardized and adequately documented load values.

This series of standards consists of the following parts:

— Part 1: General requirements;

— Part 2: Data acquisition and general requirements for measuring equipment;

— Part 3: Data validity check and data editing for evaluation;

— Part 4: Data evaluation;

— Part 5: Derivation of Test Specifications;

— Part 6: Automatic recording systems for measuring randomly occurring shock during monitoring of transports.

This standard defines requirements that should be observed when automatic recording systems are being used for the purpose of a transportation survey. In this, it deviates from the characteristics of the other parts of the series, as in this case the prime concern is not the need for scientifically based and generally applicable data, which are to be used for standardization purposes, but to assist users "shock recorders“. Such automatic and computer-based recording systems have gone through remarkable developments, particularly in relation to their storage capacity and analysis capability. This, together with falling prices, has meant they are increasingly used for surveying specific transportations, especially inside packing. In general they do not reach the efficiency of a measuring chain such as used for test drives, especially in view of the storage capacity needed to measure unfiltered dynamic data during transportation.

1 Scope

This standard specifies the technical and functional properties of automatic recording equipment used to determine randomly appearing shocks during transportation.

Such automatic recording equipment can be used to:

— determine mechanical shock loads on individual transportations;

— monitor the transportation means to observe the limits of the shock parameters;

— determine the shock loads on the transported item.

This standard defines the sensors to be attached to the device, and specifies the minimum requirements for the parameters to be adjusted. It also defines the minimum requirements for the data analysis, as well as the data presentation.

This standard covers the complete recording equipment, including its accelerometers and the data analysis in an external data processing unit. The accelerometers can be integrated into the device or separately mounted from it (external sensors).

This standard also applies to the routine monitoring of individual transportations

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15433-2, *Transportation loads — Measurement and analysis of dynamic mechanical loads — Part 2: Data acquisition and general requirements for measuring equipment*

EN 61000-6-1, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2005)*

EN 61000-6-3, *Electromagnetic compatibility (EMC). — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006)*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529: 1989)*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply

3.1
sensor axes *x, y, z*
three Cartesian spatial axes that lie parallel to the measuring directions of the accelerometer

3.2
peak acceleration value
greatest positive or negative acceleration occurring during a shock event in a spatial axis or in a spatial vector: $\hat{a}_X, \hat{a}_Y, \hat{a}_Z, \hat{a}_R$