Irish Standard
I.S. EN 15433-6:2016

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

I.S. EN 15433-6:2016

Incorporating amendments/corrigenda/National Annexes issued since publication:

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I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

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This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

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National Foreword

I.S. EN 15433-6:2016 is the adopted Irish version of the European Document EN 15433-6:2016, 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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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15433-6

July 2016

ICS 55.180.01

Supersedes EN 15433-6:2007

English Version

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 12 June 2016.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 15433-6:2016) 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 January 2017, and conflicting national standards shall be withdrawn at the latest by January 2017.

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

This document supersedes EN 15433-6:2007.

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

Introduction

This standard becomes significant when related to the realization of the European Directive on Packaging and Packaging Waste (Directive 94/62 EC, 20th December 1994), as amended by the Directive 2005/20/EC of 9th March 2005. 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 of “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 European 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 documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13011, *Transportation services - Good transport chains - System for declaration of performance conditions*

EN 15433-2, *Transportation loads - Measurement and evaluation 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*

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

EN 60529, *Degrees of protection provided by enclosures (IP Code)*

3 Terms and definitions

For the purposes of this document, 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: $\hat{a}_x$, $\hat{a}_y$, $\hat{a}_z$, $\hat{a}_R$