TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 15350

July 2020

ICS 13.160

Supersedes CEN/TR 15350:2013

English Version

Mechanical vibration - Guideline for the assessment of exposure to hand-transmitted vibration using available information including that provided by manufacturers of machinery

Vibrations mécaniques - Guide pour l'évaluation de l'exposition aux vibrations transmises à la main à partir de l'information disponible, y compris l'information fournie par les fabricants de machines

Mechanische Schwingungen - Anleitung zur Beurteilung der Belastung durch Hand-Arm-Schwingungen aus Angaben zu den benutzten Maschinen einschließlich Angaben von den Maschinenherstellern

This Technical Report was approved by CEN on 29 June 2020. It has been drawn up by the Technical Committee CEN/TC 231.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

This document is a preview generated by EVS

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2020 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. CEN/TR 15350:2020 E

Contents

Page

European foreword ... 3
Introduction ... 4
1 Scope ... 5
2 Normative references ... 5
3 Terms and definitions ... 6
4 Estimation of the vibration exposure ... 7
5 Estimation of the vibration magnitude ... 8
6 Estimation of the daily exposure time ... 10
7 Consideration of variabilities and uncertainties ... 11
8 Documentation ... 12
Annex A (informative) Information provided by machinery manufacturers and suppliers ... 13
A.1 Legal duties of manufacturers and suppliers ... 13
A.2 Vibration emission data ... 13
A.3 Additional information ... 14
Annex B (informative) Procedure for estimating daily vibration exposures as part of a vibration control programme ... 15
Annex C (informative) Estimation of the vibration magnitude - Limitation for the use of the vibration declaration ... 19
C.1 General ... 19
C.2 Electric tools (power connected and battery driven) ... 19
C.3 Pneumatic and hydraulic tools ... 21
C.4 Internal combustion tools ... 23
Annex D (informative) Method for confirming the estimation of exposure time ... 25
D.1 General ... 25
D.2 Battery tools ... 26
D.3 Electric tools ... 28
D.4 Combustion engine tools ... 29
D.5 Pneumatic and hydraulic tools ... 30
Annex E (informative) Determination of vibration exposure points ... 31
Annex F (informative) Examples of calculation of the estimated daily vibration exposure ... 34
F.1 Example: Combined application of a combi hammer and a wall chaser ... 34
F.2 Estimation of exposure points P_E ... 35
F.2.1 General procedure ... 35
F.2.2 Examples ... 36
Bibliography ... 38

This document is a preview generated by EVS

European foreword

This document (CEN/TR 15350:2020) has been prepared by Technical Committee CEN/TC 231 "Mechanical vibration and shock", the secretariat of which is held by DIN.

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 CEN/TR 15350:2013.

The main changes are as follows:

— Document brought in line with CEN/TR 1030-2:2016 by removing content already covered there;

— Annex B updated by explaining the procedure for identifying vibration risks that need to be controlled;

— Annex C now based on harmonized standards published after 2007 (e.g. EN 60745, EN 62841, EN ISO 28927, EN ISO 22867), providing more realistic results, without the need of multiplying factors, formely used for correcting the risk of underevaluating vibration exposure;

— new Annex D included, providing the estimation of exposure duration with examples of indicative exposure durations according to the quality of operators.

This document is a preview generated by EVS

Introduction

This document provides information on how to estimate the exposure time (exposure duration) and how to assess the vibration exposure from hand-held power tools and hand-guided machines. The methods described use existing vibration emission values declared for the machine of interest or information coming from other sources.

Daily vibration exposure depends on both the average vibration magnitude at the vibrating surface in contact with the hand and the total user time for which an employee is in contact with that vibration.

EN ISO 5349-1 notes that vibration is affected by many factors, such as force, posture, inserted tools etc. It is therefore important to recognize that vibration exposure values are estimates of true exposures and therefore estimates of true risk from hand-arm vibration. To make good exposure assessments it is important to have an appreciation of the limitations of different vibration information sources (sources such as collated information on types of machine, manufacturer's declared emission values, or workplace). However, it is also important to recognize when your estimate of exposure is sufficiently precise for your application.

It is important that the vibration values used in the exposure assessment are representative of those in the specific use of the machinery. Workplace measurements, however, are required if suitable data are not available to represent the vibration under the specific working conditions or if the calculation results do not help to decide whether or not the vibration exposure limit value or exposure action value is likely to be exceeded or if appropriate information from health surveillance shows needs of precaution.

This document is a preview generated by EVS

1 Scope

This document gives guidelines for estimating and documenting the daily vibration exposure due to the use of hand-held power tools and hand-guided machines, in relation to the requirements of the European Physical Agents Directive (vibration) 2002/44/EC. This document is addressed to competent services for the assessment of vibration exposure at the workplace and to national authorities and industrial organizations.

The methods in this document are based on the requirements and guidance given in EN ISO 5349-1 and EN ISO 5349-2 but instead of measuring the vibration magnitudes at the specific workplaces, the methods in this document use existing vibration values from other sources of information including those provided by the manufacturers of the machinery in relation to the requirements of the Machinery Directive 2006/42/EC.

This document gives guidance on how to estimate the exposure time and the daily vibration exposure $A(8)$ as defined in EN ISO 5349-1. It also offers a simple method for estimating the daily vibration exposure by means of a table which indicates the vibration exposure as a function of the equivalent vibration total value and the associated exposure time. Both methods can be used even in cases of multiple exposures on the same day.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 ISO 5349-1, *Mechanical vibration - Measurement and evaluation of human exposure to hand-transmitted vibration - Part 1: General requirements (ISO 5349-1)*

EN ISO 5349-2:2001, *Mechanical vibration - Measurement and evaluation of human exposure to hand-transmitted vibration - Part 2: Practical guidance for measurement at the workplace (ISO 5349-2)*

This document is a preview generated by EVS