



BSI Standards Publication

Guidance on databases for human vibration

National foreword

This Published Document is the UK implementation of CEN/TR 17506:2020.

The UK participation in its preparation was entrusted to Technical Committee GME/21/6, Human exposure to mechanical vibration and shock.

A list of organizations represented on this committee can be obtained on request to its committee manager.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2020
Published by BSI Standards Limited 2020

ISBN 978 0 539 02440 1

ICS 13.160

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 July 2020.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

TECHNICAL REPORT

CEN/TR 17506

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

July 2020

ICS 13.160

English Version

Guidance on databases for human vibration

Recommandations relatives aux bases de données
consacrées aux effets des vibrations sur l'homme

Leitfaden zu Datenbanken für
Schwingungseinwirkungen auf den Menschen

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.



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

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

Contents		Page
European foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	6
4	Requirements for databases	6
5	Policy and quality criteria for data	8
5.1	Skills and competencies of measurement technicians	8
5.2	Quality of data collection procedure	9
5.3	Uncertainty	11
5.4	Sharing of data	11
Annex A (informative) Guidance on what should be said in the introduction to users of vibration database		12
A.1	Objective	12
A.2	Target audience	12
A.3	Owner information	12
A.4	Instructions for use	12
A.5	Restriction for use	13
A.6	Last updating	13
Annex B (informative) Main categories of tools and mobile machines		14
B.1	General	14
B.2	Hand-arm vibration	14
B.2.1	Hand-held tools or machines	14
B.2.2	Worked materials	42
B.2.3	Activity	43
B.2.4	Attachments	45
B.3	Whole-body vibration	47
B.3.1	Mobile machines	47
B.3.2	Surface type	61
B.3.3	Surface quality	64
B.3.4	Activity	65
B.3.5	Accessories	67
Annex C (informative) Data traceability		68
C.1	General	68
C.2	Vibration acquisition and recording traceability	68

C.2.1	General	68
C.2.2	Hand-arm vibration	68
C.2.2.1	Data to be recorded	68
C.2.2.2	Presentation of results	69
C.2.3	Whole-body vibration	71
C.2.3.1	Data to be recorded	71
C.2.3.2	Presentation of results	71
C.3	Input management	72
C.4	Data Output traceability: Provenance	73
Annex D (informative) Exchange of human vibration data		74
D.1	Introduction	74
D.1.1	General	74
D.1.2	Considerations when sharing machine vibration data	74
D.1.3	Terms and definitions	74
D.2	Data exchange	75
D.3	Additional data exchange considerations	79
Bibliography		81

European foreword

This document (CEN/TR 17506:2020) 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.

Introduction

European legislation — especially the Physical Agents Directive 2002/44/EC (Vibrations at work) — requires that employers assess workplace risks to the health and safety of their employees. EU Machinery Directive (2006/42/EC), Annex I, 1.7.4.3, requires that manufacturers provide information on vibration emission in commercial documents.

There are different types of databases (declared values = emission values, magnitude vibration data = imission values, physiological or epidemiological data).

Generally magnitude vibration databases are splitted into two parts according to the type of exposure: hand-arm or whole-body vibration.

According to their content, databases are assumed to be for:

- a) research (epidemiology, comparison of methods for vibration analysis);
- b) control of exposure (risk assessment, reduced risk);
- c) enforcement;
- d) market surveillance;
- e) compensation cases;
- f) impact analysis for legal regulations;
- g) performance of seat suspension systems.

According to their purpose, databases are elaborated for vibration experts, hygienists or machines users.

1 Scope

The purpose of this document is to give guidelines for elaborating databases on human vibration for different purposes (emission or immission) and types of exposure (hand-arm vibration or whole-body vibration).

This document is restricted to cases where vibration affects persons at work. It is mainly addressed to competent services for the assessment of vibration exposure at the workplace and to national authorities and industrial organizations.

It defines basic requirements to get databanks respecting quality criteria (information to be given regarding exposure, reference standards, machines, persons, key parts, data origin and traceability) taken into account the type of exposure (HAV, WBV).

Although this document has been mainly designed to facilitate the exchange of data between experts, a section explains the minimum information to be provided and precautions to be taken for databases opened to public. The way the data should be formatted to facilitate the exchange between developers of databases is covered.

Also this document provides proper terminology to qualify the different families of vibration sources e.g. tools, machines and working conditions (see Annex B). This document provides a method for classifying the quality of vibration data.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Requirements for databases

Vibration exposure data recorded in databases should follow the measurement methods recommended by EN ISO 5349-1 and EN ISO 5349-2 for hand-arm vibration, and series ISO 2631 and EN 14253 for whole-body vibration.

Declared values should be made in accordance with EN ISO 20643.

Annex A informs about the introduction to users of vibration database.

Annex B provides for the different categories of tools and mobile machines the corresponding standards on vibration declared values. Tables 1 and 2 list respectively tools and mobile machines main characteristics and measurement parameters. According to the object and quality of data, parameters are hierarchized into 3 types:

Type I:

- a) Field measurement (e.g. a_{wmax} or a_{hv}): Basic data are provided to help employers for estimating vibration exposure at a workplace.