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## **Elektriska hushållsapparater och liknande bruksföremål – Provningsmetod för bestämning av luftburet buller – Del 2-1: Särskilda fordringar på dammsugare**

*Household and similar electrical appliances –  
Test code for the determination of airborne acoustical noise –  
Part 2-1: Particular requirements for vacuum cleaners*

Som svensk standard gäller europastandarden EN 60704-2-1:2015. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60704-2-1:2015.

### **Nationellt förord**

Europastandarden EN 60704-2-1:2015

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60704-2-1, Third edition, 2014 - Household and similar electrical appliances - Test code for the determination of airborne acoustical noise - Part 2-1: Particular requirements for vacuum cleaners**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60704-2-1, utgåva 1, 2001, gäller ej fr o m 2017-06-26.

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### **SEK Svensk Elstandard**

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English Version

**Household and similar electrical appliances - Test code for the  
determination of airborne acoustical noise - Part 2-1: Particular  
requirements for vacuum cleaners  
(IEC 60704-2-1:2014)**

Appareils électrodomestiques et analogues - Code d'essai  
pour la détermination du bruit aérien - Partie 2-1: Exigences  
particulières pour les aspirateurs  
(IEC 60704-2-1:2014)

Elektrische Geräte für den Hausgebrauch und ähnliche  
Zwecke - Prüfvorschrift für die Bestimmung der  
Luftschallemission - Teil 2-1: Besondere Anforderungen an  
Staubsauger  
(IEC 60704-2-1:2014)

This European Standard was approved by CENELEC on 2014-06-26. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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



European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 59F/255/FDIS, future edition 3 of IEC 60704-2-1, prepared by SC 59F: "Floor treatment appliances" of IEC/TC 59: "Performance of household and similar electrical appliances." was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60704-2-1:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-07-09
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-06-26

This document supersedes EN 60704-2-1:2001.

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

## Endorsement notice

The text of the International Standard IEC 60704-2-1:2014 was approved by CENELEC as a European Standard without any modification.

**Annex ZA**  
(normative)

**Normative references to international publications  
with their corresponding European publications**

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

***Addition to Annex ZA of EN 60704-1:2010:***

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60312-1 (mod)	2010	Vacuum cleaners for household use - Part 1: Dry vacuum cleaners - Methods for measuring the performance	EN 60312-1	2013
			+prA	

## CONTENTS

FOREWORD.....	3
1 Scope and object.....	6
1.1 Scope .....	6
1.1.1 General .....	6
1.1.2 Types of noise .....	6
1.1.3 Size of the source.....	6
1.2 Object.....	6
1.3 Measurement uncertainty .....	7
2 Normative references .....	8
3 Terms and definitions .....	8
4 Measurement methods and acoustical environments .....	9
5 Instrumentation.....	10
5.1 Instrumentation for measuring acoustical data .....	10
6 Operation and location of appliances under test .....	10
6.1 Equipping and pre-conditioning of appliances .....	10
6.2 Supply of electric energy and of water or gas.....	11
7 Measurement of sound pressure levels.....	13
8 Calculation of sound pressure and sound power levels.....	14
9 Information to be recorded.....	14
10 Information to be reported .....	14
Annexes .....	17
Annex A (normative) Standard test table .....	17
Figure 101 – Appliance with cleaning head connected directly .....	15
Figure 102 – Appliance with the cleaning head connected by hose and connecting tube .....	16
Table 101 – Standard deviations of sound power levels determined on carpets .....	7
Table 102 – Standard deviations of sound power levels determined on hard floors .....	7
Table 103 – Standard deviations for declaration and verification for vacuum cleaners for carpets .....	7
Table 104 – Standard deviations for declaration and verification hard floors .....	7
Table 105 – Wilton type carpet specifications .....	9

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
TEST CODE FOR THE DETERMINATION  
OF AIRBORNE ACOUSTICAL NOISE –****Part 2-1: Particular requirements for vacuum cleaners**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60704-2-1 has been prepared by subcommittee 59F: Floor treatment appliances, of IEC technical committee 59: Performance of household and similar electrical appliances.

This third edition cancels and replaces the second edition published in 2000. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) introduction of a measuring method on hard floors;
- b) inclusion of values for measurement uncertainty;
- c) inclusion of values for standard deviation for declaration and verification;

d) update of the definition of the standard test carpet.

The text of this standard is based on the following documents:

FDIS	Report on voting
59F/255/FDIS	59F/259/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This Part 2-1 is intended to be used in conjunction with IEC 60704-1:2010, *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise – Part 1: General requirements*.

NOTE When “Part 1” is mentioned in this standard, it refers to IEC 60704-1.

The relevant text of Part 1 as amended by this standard establishes the test code for vacuum cleaners.

This Part 2-1 supplements or modifies the corresponding clauses in IEC 60704-1. When a particular subclause of Part 1 is not mentioned in this Part 2-1, that subclause is applicable as far as reasonable. Where this standard states "addition", "modification" or "replacement", the relevant requirements, test specifications or explanatory matter in Part 1 should be adapted accordingly.

Subclauses, tables and figures that are additional to those in Part 1 are numbered starting from 101. Additional annexes are lettered AA, BB, etc.

Unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause.

A list of all the parts in the IEC 60704 series, published under the general title *Household and similar electrical appliances – Test code for the determination of airborne acoustical noise*, can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.



## INTRODUCTION

The measuring conditions specified in this part of IEC 60704 provide for sufficient accuracy in determining the noise emitted and comparing the results of measurements taken by different laboratories, whilst simulating as far as possible the practical use of vacuum cleaners.

It is recommended to consider the determination of noise levels as part of a comprehensive testing procedure covering many aspects of properties and performance of household vacuum cleaners.

NOTE As stated in the introduction to IEC 60704-1, this test code is concerned with airborne noise only.

# **HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – TEST CODE FOR THE DETERMINATION OF AIRBORNE ACOUSTICAL NOISE –**

## **Part 2-1: Particular requirements for vacuum cleaners**

### **1 Scope and object**

This clause of Part 1 is applicable except as follows:

#### **1.1 Scope**

##### **1.1.1 General**

*Replacement:*

These particular requirements apply to electrical vacuum cleaners (including their accessories and their component parts) for household use in or under conditions similar to those in households.

This part of IEC 60704 applies as it is to electrical vacuum cleaners operating in dry conditions. Some additions and modifications for vacuum cleaners operating in wet conditions are under consideration. How to test robotic vacuum cleaners is under consideration for a future edition.

This part of IEC 60704 does not apply to vacuum cleaners for industrial or professional purposes.

##### **1.1.2 Types of noise**

*Replacement:*

The methods specified in ISO 3743-1, ISO 3743-2 and ISO 3744 can be used for measuring noise emitted by electric vacuum cleaners.

##### **1.1.3 Size of the source**

*Replacement:*

The method specified in ISO 3744 is applicable to noise sources of any size. When applying ISO 3743-1 and ISO 3743-2, care should be taken that the maximum size of the appliance under test fulfils the requirements specified in ISO 3743-1 and ISO 3743-2.

### **1.2 Object**

*Addition:*

This part of IEC 60704 describes the determination of the noise emission of vacuum cleaners under normal operating conditions on carpet and hard floor according to 4.6 of IEC 60312-1:2010.

NOTE 101 For determining and verifying noise emission values declared in product specifications, see IEC 60704-3.

NOTE 102 If a boost position is incorporated, this is not taken into account.

NOTE 103 A boost position is a setting of a control for occasional use which results in a higher temporary fan speed.

### 1.3 Measurement uncertainty

*Replacement:*

For vacuum cleaners designed for cleaning carpets the estimated values of standard deviations of sound power levels determined according to this part of IEC 60704 are provided in Table 101:

**Table 101 – Standard deviations of sound power levels determined on carpets**

Standard deviation (dB)	
$\sigma_r$ (repeatability)	$\sigma_R$ (reproducibility)
0,3	0,8

For vacuum cleaners designed for cleaning hard floors the estimated values of standard deviations of sound power levels determined according to this part of IEC 60704 are provided in Table 102:

**Table 102 – Standard deviations of sound power levels determined on hard floors**

Standard deviation (dB)	
$\sigma_r$ (repeatability)	$\sigma_R$ (reproducibility)
0,2	0,6

*Addition:*

#### 1.101 Standard deviation for declaration and verification

For the purpose of determining and verifying declared noise emission values for vacuum cleaners designed for cleaning carpets according to IEC 60704-3, the following values provided in Table 103 apply:

**Table 103 – Standard deviations for declaration and verification for vacuum cleaners for carpets**

Standard deviation (dB)		
$\sigma_P$ (production)	$\sigma_t$ (total)	$\sigma_M$ (reference)
0,5 to 1,0	0,9 to 1,3	1,5

For the purpose of determining and verifying declared noise emission values for vacuum cleaners designed for cleaning hard floors according to IEC 60704-3, the following values provided in Table 104 apply:

**Table 104 – Standard deviations for declaration and verification hard floors**

Standard deviation (dB)		
$\sigma_P$ (production)	$\sigma_t$ (total)	$\sigma_M$ (reference)
0,5 to 1,0	0,8 to 1,2	1,5

## **2 Normative references**

This clause of Part 1 is applicable except as follows:

*Addition:*

IEC 60312-1:2010, *Vacuum cleaners for household use – Part 1: Dry vacuum cleaners – Methods for measuring the performance*