

# **SLOVENSKI STANDARD**

## **SIST EN 60704-2-1:1998**

**01-januar-1998**

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### **Test code for the determination of airborne acoustical noise emitted by household and similar electrical appliances - Part 2: Particular requirements for vacuum cleaners**

Test code for the determination of airborne acoustical noise emitted by household and similar electrical appliances -- Part 2: Particular requirements for vacuum cleaners

Prüfvorschrift für die Bestimmung der Luftschallemission von elektrischen Geeräten für den Hausgebrauch und ähnliche Zwecke -- Teil 2: Besondere Anforderungen an Staubsauger

Code d'essai pour la détermination du bruit aérien émis par les appareils électrodomestiques et analogues -- Partie 2: Règles particulières pour les aspirateurs de poussière

**Ta slovenski standard je istoveten z: EN 60704-2-1:1994**

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#### **ICS:**

17.140.20	Emisija hrupa naprav in opreme	Noise emitted by machines and equipment
97.080	Aparati za nego tal	Floor treatment appliances

**SIST EN 60704-2-1:1998**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 60704-2-1

October 1994

ICS 17.140.20

Supersedes HD 423.2.1 S1:1987 + A1:1989

Descriptors: Acoustic, acoustical measurement, test code, airborne noise, emission, noise of machinery, household electrical appliance, vacuum cleaner, particular requirement

English version

Test code for the determination of airborne acoustical noise  
emitted by household and similar electrical appliances  
Part 2: Particular requirements for vacuum cleaners

(IEC 704-2-1:1984, modified)

Code d'essai pour la détermination du bruit  
aérien émis par les appareils  
électrodomestiques et analogues  
Deuxième partie:  
Règles particulières pour les aspirateurs de  
poussière  
(CEI 704-2-1:1984, modifiée)

Prüfvorschrift für die Bestimmung der  
Luftschallemission von elektrischen Geräten  
für den Hausgebrauch und ähnliche Zwecke  
Teil 2: Besondere Anforderungen an  
Staubsauger  
(IEC 704-2-1:1984, modifiziert)

This European Standard was approved by CENELEC on 1994-07-05. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

## CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

## Foreword

At the request of CENELEC Technical Committee TC 59X, Consumer information related to household electrical appliances, HD 423.2.1 S1:1987 (IEC 704-2-1:1984) and its amendment A1:1989 were submitted to the CENELEC voting procedure for conversion into a European Standard.

The text of the International Standard together with the common modifications accepted as A1:1989 to HD 423.2.1 S1:1987 was approved by CENELEC as EN 60704-2-1 on 5 July 1994.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-07-15
- latest date of withdrawal of conflicting national standards (dow) —

Annexes designated "normative" are part of the body of the standard. In this standard, Annex ZA is normative.

## Endorsement notice

The text of the International Standard IEC 704-2-1:1984 was approved by CENELEC as a European Standard with agreed common modifications as given below.

## Common modifications

### 1 Scope and object

1.1 Editorial change in the French version only.

1.2 Object:

Replace the text of the addition by:

The purpose of this standard is to define the methods to be used for measuring the level of noise of vacuum cleaners and for informing consumers of it. It does not cover the way of checking and sampling.

### 6 Operating and location of appliances under test

6.1.1 Editorial change in the French version only.

6.2.1 Delete the addition.

6.5.7 Editorial change in the French version only.

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## Introduction

The measuring conditions specified in this standard provide for sufficient steadiness in the noise emitted and reproducibility in different laboratories, whilst simulating as far as possible the practical use of vacuum cleaners.

It is recommended to consider noise data as part of performance data.

## 1 Scope and object

This clause of Part 1 is applicable except as follows:

### 1.1 Scope

*Replacement:*

This standard applies to dry pick-up portable electric vacuum cleaners for household and similar use, supplied from mains or from batteries.

By similar use, is understood the use in hotels, hospitals, shops, offices, etc.

This standard does not apply to:

- centrally sited vacuum cleaners,
- vacuum cleaners designed exclusively for industrial purposes,
- the wet pick-up function of multi-purpose vacuum cleaners,
- suction floor polishers.

### 1.2 Object

*Addition:*

The purpose of this standard is to define the methods to be used for measuring the level of noise of vacuum cleaners and for informing consumers of it. It does not cover the way of checking and sampling.

## 2 References

This clause of Part 1 is applicable except as follows:

*Addition:*

- IEC Publication 312: *Methods of Measurement of Performance of Vacuum Cleaners for Household and Similar Use.*

## 3 Terms and definitions

This clause of Part 1 is applicable except as follows:

*Additional sub-clauses:*

### 3.101

#### cleaning head

that part of a vacuum cleaner which is applied to the surface to be cleaned, for example a nozzle, a brush or a power nozzle

### 3.102

#### upright vacuum cleaner

a cleaner constructed primarily for carpet cleaning, normally having a nozzle which is either an integral part of the cleaner housing or permanently connected thereto, the nozzle as a rule being provided with a motor-driven rotating part to assist dirt removal. In use, the complete cleaner housing is moved over the area to be cleaned by means of an attached handle

### 3.103

#### power nozzle

an attachment for vacuum cleaners which is provided with a rotating part (brush) to assist dirt removal, driven by an incorporated separate electric motor (motorized nozzle), an incorporated turbine powered by the air stream of the cleaner (air turbine nozzle) or an incorporated friction or gear mechanism powered by moving the nozzle in use back and forth (mechanical nozzle)

### 3.104

#### standard test carpet

type and quality of the standard test carpet shall be according to the following general specifications. For acoustical reasons, the size of the carpet shall be 1 m × 1 m.

type	Wilton
weight	2.9 kg/m <sup>2</sup>
colour	dark, one colour
backing	cotton, wool and raffia fibres, impregnated
pile material	100 % virgin wool
pile weight	1.0 kg/m <sup>2</sup> to 1.1 kg/m <sup>2</sup>
pile height	7 mm à 7.5 mm
pile apparent density	0.145 g/cm <sup>3</sup> to 0.140 g/cm <sup>3</sup>
tufts per length	37/10 cm
tufts per width	45/10 cm

NOTE The carpet according to the specification is available from:

Statens Provningsanstalt  
Box 857  
S-501 15 BORÅS  
Sweden

## 4 Measurement methods and acoustical environments

This clause of Part 1 is applicable except as follows:

### 4.2 Direct method

*Addition:*

NOTE If pure tone components are present in the noise emitted, proper precautions should be taken as specified in ISO Standard 3743 and ISO Standard 3744.

### 4.3 Comparison method

#### *Addition:*

NOTE If pure tone components are present in the noise emitted, proper precautions should be taken as specified in ISO Standard 3743 and ISO Standard 3744.

## 5 Instrumentation

This clause of Part 1 is applicable.

## 6 Operating and location of appliances under test

This clause of Part 1 is applicable except as follows:

### 6.1 Equipping and pre-conditioning of appliances

#### 6.1.1 *Replacement:*

The appliance is equipped with the ordinary cleaning head intended for dust removal from carpets and the necessary attachments, for example hoses and extension tubes. If the appliance is delivered with an ordinary carpet nozzle and in addition with a power nozzle, measurements shall be carried out for both cleaning heads.

The appliance is adjusted for the highest suction. Air by-pass openings (for reduction of suction), if any, are closed.

Electrical controls, if any, are set for the highest motor speed for normal use.

If the manufacturer recommends their use, the appliance is fitted with a new disposable filter (bag) of the type specified and supplied by the manufacturer.

If a textile filter or filter bag is provided (as the sole filter, as the sole dust receptacle or as an enclosure for disposable filter bags), it shall be cleaned before measurements, for example by shaking and beating. Brushing or washing is not allowed.

NOTE If the vacuum cleaner is equipped with a device such as a high-speed switch for short-term use, additional measurements shall be made.

#### 6.1.3 *Replacement:*

Prior to noise measurements on a particular vacuum cleaner with or without power nozzle, the vacuum cleaner and the power nozzle, if any, shall have been running with unrestricted extension tube or unrestricted nozzle or unrestricted inlet opening of upright cleaners or power nozzles for a total of 2 h to ensure adequate running-in. During this period rotating brushes or similar devices of upright cleaners or power nozzles shall be running, but not in contact with the floor.

### 6.2 Supply of electric energy and water or gas

6.2.3 and 6.2.4 Not applicable.

## 6.4 Loading and operating of appliances

### 6.4.2 *Replacement:*

Before commencing the measurement procedure, ensure that the cleaning head is adjusted correctly in accordance with the manufacturer's instructions or in the absence of such instructions such that the bristles of rotating brushes engage approximately 2 mm into the carpet pile.

Lift the cleaning head off the carpet, switch on the appliance, replace the cleaning head and push into the measurement position taking care that no excessive pressure is exerted. Other conditions shall be as specified in Sub-clauses 6.1.1, 6.2 and 6.3.

6.4.3 and 6.4.4 Not applicable.

## 6.5 Location and mounting of appliances

6.5.1 to 6.5.6 inclusive Not applicable.

### 6.5.7 *Replacement:*

The cleaning head is located approximately in the centre of a piece of a standard test carpet (see Sub-clause 3.104) being placed directly without any resilient means other than that of the carpet:

- either on the floor of the reverberation test room with a minimum clearance 1 m between any part of the appliance or attachments and the nearest wall,
- or on the reflecting plane of the free-field environment.

The vertical projection of the shape of the appliance under test, with accessories (Reference box), shall be within the carpet area (see Figure 101, page 5).

If necessary the cleaning head is resiliently fastened to prevent self-propulsion.

Handles of hand-supported and upright vacuum cleaners are resiliently suspended or supported in normal position of use, the cleaning head being in full contact with the carpet.

If the cleaning head is connected by a hose and extension tube(s) to the appliance, the cleaning head is placed close to the appliance on the carpet such that the projection of the axis of longitudinal travelling of the cleaning head and that of the longitudinal axis of the appliance are parallel and the projections of the appropriate transverse axes coincide and the clearance between the projection of the appliance and the projection of the cleaning head is approximately 2 cm (see Figure 102, page 6).

The hose and extension tube(s) are resiliently suspended or supported in normal position of use.

NOTE 1 Sound radiation due to possible vibrations of the piece of standard test carpet should be prevented.

NOTE 2 The piece of standard test carpet is considered to be a part of the appliance to be tested and its possible influence on the acoustical characteristics of the test environment, for example, of the hard reflecting plane or of the absorption (reverberation time) of the reverberant test room should not be taken into account.

## 7 Measurement of noise levels

This clause of Part 1 is applicable except as follows:

### 7.1 Microphone array and measurement surface for free-field conditions

7.1.1 to 7.1.4 inclusive Not applicable.

#### 7.1.5 Addition:

The reference box shall include the appliance and the cleaning head. For appliances with dimensions of the reference box exceeding 0.7 m, the clearance between the reference box and the measurement surface shall be at least 1 m.

7.1.6 to 7.1.8 inclusive Not applicable.

## 8 Calculation of sound pressure and sound power levels

This clause of Part 1 is applicable.

## 9 Information to be recorded

This clause of Part 1 is applicable.

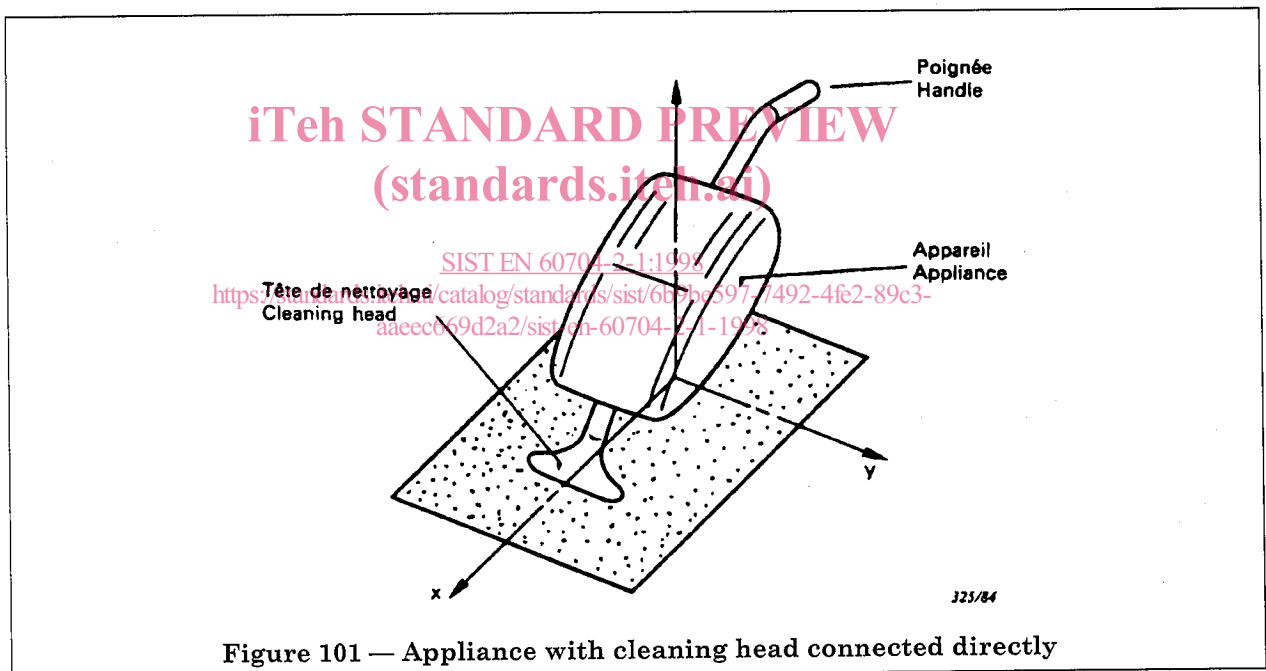
## 10 Information to be reported

This clause of Part 1 is applicable except as follows:

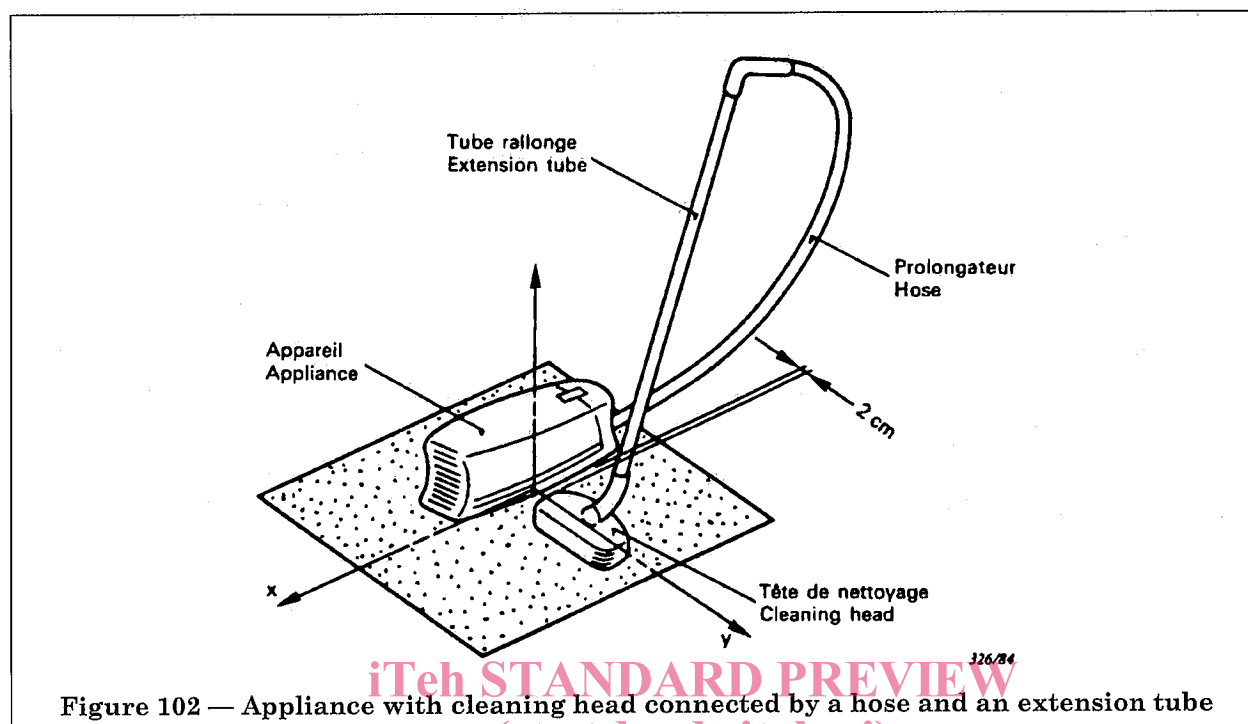
### 10.3 Test conditions for the appliance

#### 10.3.2 Addition:

If the test voltage differs from the rated voltage, this shall be reported (see Sub-clause 6.2.1).







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