

Household and similar electrical appliances — Safety —

Part 2-58: Particular requirements for commercial electric dishwashing machines

ICS 97.040.40

National foreword

This British Standard is the UK implementation of EN 60335-2-58:2005+A12:2016, incorporating corrigendum August 2007. It is derived from IEC 60335-2-58:2002, incorporating amendment 1:2008 and amendment 2:2015. It supersedes BS EN 60335-2-58:2005+A1:2008, which will be withdrawn on 18 December 2018.

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags **[C]** **[C]**.

Where a common modification has been introduced by CENELEC amendment, the tags carry the number of the amendment. For example, the common modifications introduced by CENELEC amendment A11 are indicated by **[C11]** **[C11]**.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **[A1]** **[A1]**.

The UK participation in its preparation was entrusted by Technical Committee CPL/61, Safety of household and similar electrical appliances, to Subcommittee CPL/61/5, Commercial catering equipment.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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

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

Amendments/corrigenda issued since publication

Amd. No.	Date	Comments
17469 Corrigendum No. 1	30 November 2007	Last paragraph of EN foreword replaced. Addition to Annex ZB deleted
	30 September 2008	Implementation of IEC amendment 1:2008 with CENELEC endorsement A1:2008
	31 July 2010	Implementation of CENELEC amendment A11:2010
	29 February 2016	Implementation of IEC amendment 2:2015 with CENELEC endorsement A2:2015 Implementation of CENELEC amendment A12:2016

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English version

**Household and similar electrical appliances –
Safety
Part 2-58: Particular requirements for commercial electric
dishwashing machines
(IEC 60335-2-58:2002, modified)**

Appareils électrodomestiques
et analogues –
Sécurité
Partie 2-58: Règles particulières
pour les lave-vaisselle électriques
à usage collectif
(CEI 60335-2-58:2002, modifiée)

Sicherheit elektrischer Geräte
für den Hausgebrauch und ähnliche
Zwecke
Teil 2-58: Besondere Anforderungen
für elektrische Spülmaschinen
für den gewerblichen Gebrauch
(IEC 60335-2-58:2002, modifiziert)

This European Standard was approved by CENELEC on 2004-12-07. 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

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Foreword

The text of the International Standard IEC 60335-2-58:2002, prepared by the IEC Technical Committee 61, together with the common modifications prepared by CENELEC TC 61, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60335-2-58 on 2004-12-07.

This European Standard replaces EN 60335-2-58:1997 + A1:1999.

The following dates are applicable:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2005-09-01
- date on which national standards
conflicting with the EN have to be withdrawn (dow) 2007-12-01

This Part 2 has to be used in conjunction with EN 60335-1, Household and similar electrical appliances – Safety – Part 1: General requirements. It was established on the basis of the 2002 edition of that standard. Amendments and revisions of Part 1 have also to be taken into account and the dates when such changes become applicable will be stated in the relevant amendment or revision of Part 1.

This Part 2 supplements or modifies the corresponding clauses of EN 60335-1, so as to convert it into the European Standard: Safety requirements for commercial electric dishwashing machines.

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. When this standard states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adapted accordingly.

NOTE 1 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- 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;
- additional annexes are lettered AA, BB, etc.;
- subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letter Z.

NOTE 2 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

There are no special national conditions causing a deviation from this European Standard, other than those listed in Annex ZA to EN 60335-1.

There are no national deviations from this European Standard, other than those listed in Annex ZB to EN 60335-1.

Introduction

An investigation by CENELEC TC 61 has shown that all risks from products within the scope of this standard are fully covered by the Low Voltage Directive, 73/23/EEC. For products having mechanical moving parts, a risk assessment in accordance with the Machinery Directive, 98/37/EC, has shown that the risks are mainly of electrical origin and consequently this directive is not applicable. However, the relevant essential safety requirements of the Machinery Directive are covered by this standard together with the principal objectives of the Low Voltage Directive.

Endorsement notice

The text of the International Standard IEC 60335-2-58:2002 was approved by CENELEC as a European Standard with agreed common modifications.

Foreword to amendment A1

The text of document 61E/598/FDIS, future amendment 1 to IEC 60335-2-58:2002, prepared by SC 61E, Safety of electrical commercial catering equipment, of IEC Technical Committee 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60335-2-58:2005 on 2008-03-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2008-12-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2011-03-01

This amendment supplements or modifies the corresponding clauses of EN 60335-2-58:2005.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

Endorsement notice

The text of amendment 1:2008 to the International Standard IEC 60335-2-58:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

In the Bibliography, add the following note to the standard mentioned:

ISO 13732-1 NOTE Harmonized as EN ISO 13732-1:2006 (not modified).

Foreword to amendment A11

This amendment to the European Standard EN 60335-2-58:2005 was prepared by the Technical Committee CENELEC TC 61, Safety of household and similar electrical appliances.

Two proposals to amend EN 60335-2-58:2005 (documents CENELEC/TC 61/DE0581/DC and CENELEC/TC 61/DE0583/DC) were discussed during the Brughes meeting of CENELEC TC 61 in June 2005; when it was decided to submit the drafts to formal vote.

The drafts (prAA and prAB) were circulated in May 2008 and were approved together as amendment A11 to EN 60335-2-58 on 2009-11-01.

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

The following dates are applicable:

- latest date by which the amendment has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2010-11-01
- latest date by which the national standards conflicting
with the amendment have to be withdrawn (dow) 2012-11-01

This amendment supplements or modifies the corresponding clauses of EN 60335-2-58:2005.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

Foreword to amendment A2

The text of document 61/4842/FDIS, future IEC 60335-2-58:2002/A2, prepared by IEC/TC 61 "Safety of household and similar electrical appliances" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60335-2-58:2005/A2:2015.

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) 2016-02-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-05-27

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.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive 2006/42/EC, see informative Annex ZZ, included in EN 60335-2-58:2005/A12:2016.

Endorsement notice

The text of the International Standard IEC 60335-2-58:2002/A2:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated :

IEC 61010-2-040	NOTE	Harmonized as EN 61010-2-040.
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In the Bibliography of EN 60335-2-58:2005/A1:2008, the following note has to be deleted for the standard indicated:

ISO 13732-1	NOTE	Harmonized as EN ISO 13732-1:2006 (not modified).
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Foreword to amendment A12

This document (EN 60335-2-58:2005/A12:2016) has been prepared by CLC/TC 61 "Safety of household and similar electrical appliances".

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) 2016-07-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-01-22

This amendment supplements or modifies the corresponding clauses of EN 60335-1:2012 and its amendments, EN 60335-2-58:2005, EN 60335-2-58:2005/A1:2008, EN 60335-2-58:2005/A11:2010 and EN 60335-2-58:2005/A2:2015.

This Part 2 applies in conjunction with EN 60335-1:2012 and its amendments, which is referred to in this text as "Part 1". This Part 2 supplements or modifies the corresponding clauses of Part 1 as indicated in the text.

NOTE 1 The following numbering system is used:

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

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60335-2-58 are prefixed "Z".

NOTE 2 The following print types are used:

- requirements: in roman type;
- test specifications: in italic type;
- notes: in small roman type.

Words in bold in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

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.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

Annexes

The annexes of Part 1 are applicable except as follows.

Annex ZC (normative)

Normative references to international publications with their corresponding European publications

Replace Annex ZC from EN 60335-2-58:2005 (as modified by its amendments) by the following:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<i>Addition to Annex ZC of EN 60335-1:2012 and its amendments:</i>				
IEC 60704-1	2010	Household and similar electrical appliances - Test code for the determination of airborne noise - Part 1: General requirements	EN 60704-1	2010
ISO 3744	—	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane	EN ISO 3744	—
ISO 3746	—	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane	EN ISO 3746	—
ISO 4871	—	Acoustics - Declaration and verification of noise emission values of machinery and equipment	EN ISO 4871	—
ISO 9614-2	—	Acoustics - Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scanning	EN ISO 9614-2	—
ISO 11201	—	Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections	EN ISO 11201	—
ISO 11203	—	Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level 	EN ISO 11203	—



Ⓒ₁₂ Annex ZE
(informative)

**Specific additional requirements for appliances
and machines intended for commercial use**

This annex is not applicable.

Annex ZF
(informative)

**Criteria applied for the allocation of products covered by standards
in the EN 60335 series under LVD or MD**

This annex is not applicable. Ⓒ₁₂

Annex ZAA (normative)

Emission of acoustical noise

ZAA.1 Noise reduction

Noise reduction for appliances is an integral part of the design process and shall be achieved by applying measures to control noise at the source, see for example EN ISO 11688-1.

The success of the applied noise reduction measures is assessed on the basis of the actual noise emission values in relation to other appliances of the same type.

ZAA.2 Noise test code

ZAA.2.1 Emission sound pressure level determination

The A-weighted emission sound pressure level shall be measured in accordance with EN ISO 11201, grade 2. The microphone is placed at a distance of 1 m from (middle/centre) of the control board of the appliance at a height of $1,55 \text{ m} \pm 0,075 \text{ m}$.

In cases where the sound power level of dishwashing machines is determined, EN ISO 11203 shall be applied for determining the A-weighted emission sound pressure level by following the procedure given in 6.2.3 d) with $d = 1 \text{ m}$.

Measurements shall be done by time averaging over the whole duration of the program sequence selected.

ZAA.2.2 Sound power level determination

A-weighted sound power level shall be measured in accordance with EN ISO 3744 or EN ISO 9614-2, grade 2. When applying EN ISO 3744 or EN ISO 9614-2 the parallelepiped measurement surface shall be used. If grade 2 cannot be applied, EN ISO 3746 or EN ISO 9614-2, grade 3 shall be used. In this case, the test report shall state the reasons why it was not possible to apply the grade 2 method.

Measurements shall be done by time averaging over the whole duration of the program sequence selected

ZAA.2.3 Mounting and installation conditions

The tests are carried out with the appliance installed according EN 60704-1:2010, 6.5.1 or 6.5.3 or 6.5.5.

Care shall be taken that any electrical connections, piping or air ducts connected to the appliance do not significantly contribute to the noise emission of the appliance.

The installation conditions of the appliance are the same for determining both the emission sound pressure level and the sound power level. 

Ⓒ12 ZAA.2.4 Operating conditions

The appliance is supplied at **rated voltage** and operated under the condition as defined in the instruction manual for a universal program sequence at maximum temperature with maximum load as specified accordingly. Program sequences for a special kind of load or special program sequence options shall be avoided. The operating conditions are the same for determining both the emission sound pressure level at the specified positions and the sound power level.

The most unfavourable program sequences causing the highest noise emission has to be investigated.

NOTE To specify detailed operating conditions is not possible.

ZAA.2.5 Measurement uncertainties

The total measurement uncertainty of the noise emission values determined according to this standard is depending on the standard deviation σ_{R0} given by the applied noise emission measurement method and the uncertainty associated with the instability of the operating and mounting conditions σ_{omc} . The resulting total uncertainty is then calculated from

$$\sigma_{tot} = \sqrt{\sigma_{R0}^2 + \sigma_{omc}^2}$$

The upper bound value of σ_{R0} is about 1,5 dB for the grade 2 measurement methods dealing with the determination of the emission sound pressure level or the sound power level.

NOTE 1 For appliances with a rather constant noise emission, a value of 0,5 dB for σ_{omc} can apply. In other cases, e.g. a large influence of the load material in the appliance which may vary in an unpredictable manner, it is possible that a value of 2 dB may be more appropriate. Methods to determine σ_{omc} are described in the basic measurement standards.

The expanded measurement uncertainty U, in decibels, shall be calculated from

$$U = k \sigma_{tot},$$

where

k is the coverage factor.

NOTE 2 The expanded measurement uncertainty depends on the degree of confidence that is desired. For the purpose of comparing the result with a limit value, it is appropriate to apply the coverage factor for a one-sided normal distribution. In that case, the coverage factor $k = 1,6$ corresponds to a 95 % confidence level. Further information is given in EN ISO 4871. Please note that the expanded measurement uncertainty U is denoted as K in EN ISO 4871.

NOTE 3 The expanded measurement uncertainty as described in this European Standard does not include the standard deviation of production which is used in EN ISO 4871 for the purpose of making a noise declaration for batches of machines.

ZAA.2.6 Information to be recorded

The information to be recorded covers all the technical requirements of this noise test code. Any deviations from this noise test code or from the basic standards upon which it is based are to be recorded together with the technical justification for such deviations.

ZAA.2.7 Information to be reported

The information to be given in the test report shall include

- the data required by the manufacturer for inclusion in the noise declaration,
- the data required by the user to verify the declared values. Ⓒ12

Ⓒ12 Thus, the following information shall be included:

- reference to the noise test code and the basic noise emission standards used;
- description of the installation and operation conditions used;
- location of the **workstation(s)** and other specified positions;
- the noise emission values obtained.

The test report shall state that all requirements of the noise test code have been fulfilled, or, if this is not the case, it shall identify any unfulfilled requirements. Deviations from the requirements shall be stated and a technical justification for these deviations shall be given.

ZAA.2.8 Declaration and verification of noise emission values

The declaration of the noise emission values shall be made as a dual number noise emission declaration according to EN ISO 4871.

It shall declare the emission sound pressure level L_{pA} and the respective uncertainty K_{pA} and, if required, additionally the sound power level L_{WA} with its uncertainty K_{WA} .

NOTE K_{pA} and K_{WA} are expected to be 2,5 dB for grade 2 and 4 dB for grade 3 measurements.

The noise emission declaration shall state that the noise emission values have been obtained according to this noise test code. Any deviations from this noise test code or from the basic standards upon which it is based shall be clearly indicated.

Additional noise emission values may also be given in the declaration.

If undertaken, verification of the noise emission values shall be conducted according to EN ISO 4871, using the same mounting, installation and operating conditions as those used for the initial determination. Ⓒ12

Annex ZZ
(informative)

Coverage of Essential Requirements of EU Directives

This European Standard has been prepared under a mandate given to CENELEC by the European Union and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Annex I of the EU Directive 2006/42/EC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard. 

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