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Household and similar electrical appliances - Safety - Part 2-11: Particular
requirements for tumble dryers

ICS 13.120; 97.060

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Titre : CEI 60335-2-11-A2 Ed 6.0: Partie 2-11: Règles particulières pour les sèche-linge à tambour

Title : IEC 60335-2-11-A2 Ed. 6.0: Household and similar electrical appliances - Safety - Part 2-11: Particular requirements for tumble dryers

: Note d'introduction

Ce document est diffusé conformément à la décision prise à la réunion du TC 61 de

Toulouse – voir 61/2568/RM.

Brisbane – voir 61/2800A/RM.

Historique:

61/2411/DC	61/2495A/INF
61/2597A/DC	61/2764B/INF

Introductory note

This document is circulated according to the decision taken at the meetings of TC 61 in

Toulouse – see 61/2568/RM.

Brisbane – see 61/2800A/RM.

History:

61/2411/DC	61/2495A/INF
61/2597A/DC	61/2764B/INF

ATTENTION

**CDV soumis en parallèle au vote (CEI)
et à l'enquête (CENELEC)**

ATTENTION

Parallel IEC CDV/CENELEC Enquiry

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FOREWORD

This amendment has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

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

FDIS	Report on voting
61/XXXX/FDIS	61/XXXX/RVD

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

The committee has decided that the contents of this amendment and base publication will remain unchanged until the maintenance result date¹⁾ 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- withdrawn;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.

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Add the following:

Annex BB (normative) Tumble dryers that use a refrigerating system incorporating sealed motor-compressors for carrying out the drying process

Annex CC (normative) Non-sparking “n” electrical apparatus

INTRODUCTION

Replace the second sentence of the second paragraph by the following:

It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

¹⁾ The National Committees are requested to note that for this publication the maintenance result date is 200X.

1 Scope

Add the following paragraph:

This standard also deals with the safety of **tumble dryers** that use a refrigerating system, incorporating sealed motor-compressors, for drying textile material. These appliances may use **flammable refrigerants**. Additional requirements for these appliances are given in Annex BB.

Replace the second dashed item of Note 103 by the following:

- in many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities, the national authorities responsible for transportation and the national authorities for buildings.

7 Marking and instructions

Add the following subclause:

7.1 Addition:

The appliance shall be marked with symbol 0790 of ISO 7000 or with the substance of the following:

Read the instructions

7.6 Delete symbol 5036.

7.12 Replace the second paragraph by the following:

If symbols 5041 of IEC 60417-1 or 0790 of ISO 7000 are used, their meaning shall be explained.

Add the following:

The instructions shall include the substance of the following:

- Do not dry unwashed items in the tumble dryer.
- Do not dry soiled items in the tumble dryer unless they have been washed.
- Items that have been soiled with substances such as cooking oil, acetone, alcohol, petrol, kerosene, spot removers, turpentine, waxes and wax removers should be washed in hot water with an extra amount of detergent before being dried in the tumble dryer.
- Items such as foam rubber (latex foam), shower caps, waterproof textiles, rubber backed articles and clothes or pillows fitted with foam rubber pads should not be dried in the tumble dryer.
- Fabric softeners, or similar products, should be used as specified by the fabric softeners instructions.
- The final part of a tumble dryer cycle occurs without heat (cool down cycle) to ensure that the items are left at a temperature that ensures that the items will not be damaged. Never stop a tumble dryer before the end of the drying cycle unless all items are quickly removed and spread out so that the heat is dissipated.

7.12.1 Delete the first dashed item of the first paragraph, including the bullets and Note 101.

7.14 Replace the requirement in the addition by the following:

The height of symbols 5041 of IEC 60417-1 and 0790 of ISO 7000 shall be at least 15 mm.

Add the following subclause:

7.15 *Addition:*

Symbol 0790 of ISO 7000, or the marking “Read the instructions”, shall be readily visible when the appliance is installed as in normal use.

7.101 *Replace the text by “Void”.*

7.102 *Replace the Note by the following:*

NOTE This symbol is a warning sign and the rules of ISO 3864-1 apply.

15 Moisture resistance

15.1 *Delete the addition to this subclause.*

22 Construction

22.103 *Replace the text by “Void”.*

Add the following new subclause:

22.105 The operation of an overheat **protective device** shall not disable the cool down cycle.

Compliance is checked during the tests of Clause 19.

Add the following new annexes:

Annex BB (normative)

Tumble dryers that use a refrigerating system incorporating sealed motor-compressors for carrying out the drying process

The following modifications to this standard are applicable for **tumble dryers** that use a refrigerating system incorporating sealed motor-compressors.

2 Normative references

Addition:

IEC 60068-2-6, Environmental testing – Part 2: - Test Fc: Vibration (sinusoidal)

IEC 60079 (all parts), *Electrical apparatus for explosive gas atmospheres*

IEC 60079-4A, *Electrical apparatus for explosive gas atmospheres – Part 4: Method of test for ignition temperature – First supplement*

IEC 60079-15:2005, *Electrical apparatus for explosive gas atmospheres – Part 15: Construction, test and marking of type of protection, non-sparking “n” electrical apparatus*

IEC 60079-20:1996, *Electrical apparatus for explosive gas atmospheres – Part 20: Data for flammable gases and vapours, relating to the use of electrical apparatus*

IEC 60335-2-34, *Household and similar electrical appliances – Safety – Part 2-34: Particular requirements for motor-compressors*

ISO 817, *Organic refrigerants – Number designation*

ISO 5149, *Mechanical refrigerating systems used for cooling and heating – Safety requirements*

3 Definitions

Add the following new definition:

3.103

flammable refrigerant

refrigerant with a flammability classification of group 2 or 3 in accordance with ISO 5149

NOTE For refrigerant blends that have more than one flammability classification, the most unfavourable classification is taken for the purposes of this definition.

4 General requirement

Addition:

NOTE 101 The use of **flammable refrigerants** involves additional hazards that are not associated with appliances using non-flammable refrigerants.

This standard addresses the hazards due to ignition of **flammable refrigerant** by potential ignition sources associated with the appliance.

The hazard due to ignition of **flammable refrigerant** by an external potential ignition source associated with the environment in which the appliance is installed is compensated by the low probability of ignition.

5 General conditions for the tests

5.2 Addition:

At least one additional specially prepared sample is required for the tests of 22.108.

NOTE 101 Unless the motor-compressor conforms to IEC 60335-2-34, at least one additional specially prepared sample may be required for the test of 19.1.

NOTE 102 At least one additional sample of the fan motor and its thermal motor protector may be required for the test of 19.1.

NOTE 103 The test of 22.7 may be performed on separate samples.

NOTE 104 Due to the potentially hazardous nature of the tests of 22.107, 22.108 and 22.109, special precautions may need to be taken when performing the tests.

5.7 Addition:

The tests specified in Clauses 10, 11 and 13 are carried out at an ambient temperature of $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

6 Classification

6.1 Modification:

Tumble dryers using flammable refrigerants shall be **Class I**.

7 Marking and instructions

7.1 Addition:

Appliances shall also be marked with:

- the total mass of the refrigerant;
- for a single component refrigerant, at least one of the following:
 - the chemical name;
 - the chemical formula;
 - the refrigerant number;
- for a blended refrigerant, at least one of the following:
 - the chemical name and nominal proportion of each of the components;
 - the chemical formula and nominal proportion of each of the components;
 - the refrigerant number and nominal proportion of each of the components;
 - the refrigerant number of the refrigerant blend;

If refrigerant numbers are used, they shall be as specified in ISO 817.

The appliance shall also be marked with the mass of the refrigerant for each separate refrigerant circuit.

Appliances that use **flammable refrigerants** shall be marked with the symbol indicating caution, risk of fire.

7.6 Addition:

caution, risk of fire

7.12 Addition:

If the symbol indicating “caution, risk of fire” is used, its meaning shall be explained.

For appliances that use **flammable refrigerants**, the instructions shall include information pertaining to the installation, handling, servicing and disposal of the appliance.

The instructions shall also include the substance of the following:

WARNING: In the appliance enclosure or in the built-in structure, keep ventilation openings clear of obstruction.

WARNING: Do not damage the refrigerant circuit.

NOTE This warning is only necessary if parts of the refrigerant circuit are accessible to the user.

7.14 Addition:

The perpendicular height of the triangle of the symbol indicating “caution, risk of fire” shall be at least 15 mm.

7.15 Addition:

The marking of the type of **flammable refrigerant** and the symbol indicating “caution, risk of fire” shall be visible when gaining access to the motor-compressors.

11 Heating**11.8 Addition:**

*During the test, **protective devices** other than self-resetting thermal motor-protectors for motor-compressors shall not operate. When steady conditions are established, self-resetting thermal motor-protectors for motor-compressors shall not operate.*

The temperatures of windings and housing of motor-compressors shall not exceed the values specified in Table 101 and the temperature rise of all other components associated with the motor-compressor shall not exceed the values given in Table 3.

Table 101 – Maximum temperatures for motor-compressors

<i>Part of the motor-compressor</i>	<i>Temperature °C</i>
<i>Windings with</i>	
<i>- synthetic insulation</i>	<i>140</i>
<i>- cellulose insulation or the like</i>	<i>130</i>
<i>Housing</i>	<i>150</i>

*The entry in Table 3 relating to the temperature rise of the external enclosure of **motor-operated appliances** is applicable to all appliances covered by this standard. However it is not applicable to those parts of the external enclosure that*

- for **built-in appliances**, are not accessible after installation in accordance with the instructions for installation*