

UL 2158

Electric Clothes Dryers



Underwriters Laboratories Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096

UL Standard for Safety for Electric Clothes Dryers, UL 2158

Second Edition, Dated June 1, 1997

Revisions: This Standard contains revisions through and including October 30, 2007.

Summary of Topics

Revisions were issued to revise the requirements for installation instructions in Clause 7.3.2 and to add Clause 7.3.2A to include explicit instructions relative to how the appliance is to be exhausted. The French translations in Appendix B have also been updated.

UL Standards for Safety are developed and maintained in the Standard Generalized Markup Language (SGML). SGML -- an international standard (ISO 8879-1986) -- is a descriptive markup language that describes a document's structure and purpose, rather than its physical appearance on a page. Due to formatting differences resulting from the use of UL's new electronic publishing system, please note that additional pages (on which no requirements have been changed) may be included in revision pages due to relocation of existing text and reformatting of the Standard.

Except for the Preface, text that has been changed in any manner is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and the date on which requirements with a future effective date become effective is given in the Preface.

The following table lists the future effective dates with the corresponding item.

Future Effective Date	References
April 30, 2009	Clauses 7.3.2 and 7.3.2A

In the revisions dated May 24, 2004, pages 11 and 12 have been intentionally deleted from the Standard due to the deletion or relocation of text. Please discard any previous versions of these pages from your paper copy of the Standard.

The new and revised requirements are substantially in accordance with UL's Proposal(s) on this subject dated November 25, 2002, January 6, 2006 and August 31, 2007.

The revisions dated October 30, 2007 include a reprinted title page (page1) for this Standard.

As indicated on the title page (page 1), this UL Standard for Safety is an American National Standard. Attention is directed to the note on the title page of this Standard outlining the procedures to be followed to retain the approved text of this ANSI/UL Standard.

The UL Foreword is no longer located within the UL Standard. For information concerning the use and application of the requirements contained in this Standard, the current version of the UL Foreword is located on ULStandardsInfoNet at: <http://ulstandardsinfo.net/ul.com/ulforeword.html>.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the preface. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

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This Standard consists of pages dated as shown in the following checklist:

Page	Date
1-3	October 30, 2007
4-5	May 24, 2004
6-10	October 30, 2007
13	May 24, 2004
14	February 22, 1999
15-17	June 1, 1997
18-20B	May 24, 2004
21-22	June 1, 1997
23-28B	May 24, 2004
29	June 1, 1997
30-30B	October 30, 2007
31-32B	May 24, 2004
33-35	June 1, 1997
36-37	May 24, 2004
38-48	June 1, 1997
49-52B	May 24, 2004
53-62	June 1, 1997
63	May 24, 2004
64-68	June 1, 1997
69-72B	May 24, 2004
73-78	June 1, 1997
79-80	May 24, 2004
81-82	June 1, 1997
83	May 24, 2004
84-91	June 1, 1997
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93-96	May 24, 2004
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CONTENTS

Preface	6
1 Scope	13
2 Definitions	13
3 General requirements and reference publications	16
3.1 General requirements	16
3.2 Reference publications	17
4 General conditions for the tests	20
4.1 Voltage and frequency	20
4.2 Test load	20A
4.3 Test fabric	20A
4.4 Thermocouples	20A
4.5 Laundry detergent	21
4.6 Cheesecloth for heating and abnormal tests	21
4.7 Test temperature	21
5 Void	21
6 Void	21
7 Marking and Instructions	21
7.1 Marking	21
7.2 Instruction manual	28
7.3 Installation instructions	30
7.4 Operating instructions	32
7.5 User-maintenance instructions	32
7.6 Appliance stand and wall-mounting kit instructions	32
8 Protection against accessibility to current-carrying parts	32A
9 Starting of motor-operated appliances	34
10 Power input and current	34
11 Heating	35
12 Void	37
13 Leakage current	37
14 Void	39
15 Moisture resistance	39
15.3 Insulation resistance	39
16 Electric strength	39
17 Overload protection of transformers and associated circuits	40
18 Void	40
19 Abnormal operation	40
19.1 Grounded heating element	40
19.2 Cord reels	41
19.3 Wetting of electrical components	41
19.4 Breakdown of belts or parts and the interruption of water supply	42
19.5 Blockage of lint screen and exhaust	42
20 Stability and mechanical hazards	43
20.1 Automatic restarting of motor	43
20.2 Stability (freestanding appliances)	43
20.3 Wall-mounted appliances	44

20.4	Appliance stands	44
20.5	Sharp edges, projections, and moving parts	45
20.6	Entrapment	45
20.7	Contact with rotating tumbler	46
21	Mechanical strength	47
21.1	Frame and enclosure	47
21.2	Back covers	48
22	Construction	48
22.1	Current-carrying parts	48
22.2	Electrical insulation	48
22.3	Thermal insulation	49
22.4	Overflow pipes	49
22.5	Bottom openings	49
22.6	Plumbing requirements	51
22.7	Deflectors	51
22.8	Condensate dryers	52
22.9	Ventilation openings	52
23	Internal wiring	52
23.10	Splices and connections	53
23.11	Separation of circuits	53
23.12	Overcurrent protection	54
24	Components	54
24.1	General requirements for components	54
24.2	Specific requirements for components	54
24.3	Capacitors	55
24.4	Field-installed devices and accessories	55
24.5	Heating elements	56
24.6	Lampholders	57
24.7	Motors	57
24.8	Motor overload-protective devices	58
24.9	Receptacles	58
24.10	Seals and diaphragms	58
24.11	Switches and controls	59
24.12	Temperature controls	61
25	Supply connection and external flexible cords	61
25.1	General	61
25.2	Permanently connected appliances	62
25.3	Cord-connected appliances	63
25.4	Bushings	64
26	Terminals for external conductors	65
27	Provision for grounding	66
27.1	General	66
27.2	Neutral-grounding link	67
27.3	Bonding for grounding	68
27.4	Continuity of grounding circuit	69
27.5	Grounding terminals and leads	69
28	Screws and connections	70
29	Creepage distances, clearances, and distances through insulation	70
29.7	Alternate spacings – clearances and creepage distances	71
30	Resistance to heat, fire, and tracking	72
31	Resistance to rusting	72
32	Polymeric materials	72
32.1	General	72

32.2	Mould stress relief	72A
32.3	Horizontal burning rate	72A
32.4	Flammability	72A
32.5	6.8 J impact (ambient and low temperature)	73
32.6	Static load	73
32.7	56.7 J impact	74
32.8	Thermal cycling	74
32.9	Crush resistance	74
32.10	Hot-wire ignition	74
32.11	Thermal ageing	74
32.12	Volume resistivity	75
32.13	Enclosure flammability – large mass consideration	75
32.14	Abnormal operation test on enclosures	75
32.15	Abnormal operation test on functional polymeric parts	75
32.16	High-current arc ignition	76
33	Manufacturing and production tests	76
33.1	Plumbing system leakage test	76
33.2	Grounding continuity test	76
33.3	Electric strength test	77
Tables		79
Figures		89

Appendix A

Standards for Components

A1	Component Standards	A1
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Appendix B

French Translations

Preface

This is the common CSA and UL Standard for *Electric Clothes Dryers*. It is the eighth edition of CAN/CSA-C22.2 No. 112, *Electric Clothes Dryers*, and the second edition of UL 2158, *Electric Clothes Dryers*. This CSA edition supersedes previous editions published in 1957, 1964, 1970, 1973, 1980, 1990, and 1994. This UL edition supersedes the previous edition published in 1994.

This common standard has been jointly revised on October 30, 2007. For this purpose, CSA and UL are issuing revision pages dated October 30, 2007.

This common Standard was prepared by the Canadian Standards Association and Underwriters Laboratories Inc. (UL), and the appliance manufacturing industry. The efforts and support of the Canadian Appliance Manufacturers Association (CAMA) and the Association of Home Appliance Manufacturers (AHAM) are gratefully acknowledged.

This Standard was reviewed by the CSA Subcommittee on Clothes-Drying Machines, under the jurisdiction of the Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This standard has been approved as a National Standard of Canada by the Standards Council of Canada.

Where reference is made to a specific number of samples to be tested, the specified number shall be considered a minimum quantity.

Note: Although the intended primary application of this Standard is stated in its scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.

Level of Harmonization

This Standard is published as an identical standard for CSA and UL.

An identical standard is a standard that is exactly the same in technical content except for national differences resulting from conflicts in codes and governmental regulations. Presentation is word for word except for editorial changes.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard shall be based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

CSA effective date

The effective date for CSA International will be announced through CSA Informs or a CSA certification notice.

UL effective date

As of October 30, 2007, all products Listed or Recognized by UL must comply with the requirements in this standard except for clauses in the following list, which are effective April 30, 2009.

Clauses 7.3.2 and 7.3.2A

Between October 30, 2007 and April 30, 2009, new product submittals to UL may be evaluated under all requirements in this standard or, if requested in writing, evaluated under presently effective requirements only.

A UL effective date is one established by Underwriters Laboratories Inc. and is not part of the ANSI approved standard.

This standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

The most recent designation of ANSI/UL 2158 as an American National Standard (ANSI) occurred on October 30, 2007. The ANSI approval for this standard does not include the Cover Page, Transmittal Pages, Title Page, Preface, Appendices A and B, or superseded requirements.

This ANSI/UL Standard for Safety, which consists of the second edition with revisions through October 30, 2007, is under continuous maintenance, whereby each revision is ANSI approved upon publication.

Revisions of this Standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements. Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

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Electric Clothes Dryers

1 Scope

1.1 This Standard applies to electric clothes dryers intended to be used in nonhazardous locations in accordance with the *Canadian Electrical Code*, Part I (CEC), and the (U.S.) *National Electrical Code* (NEC), on circuits having a nominal voltage not exceeding 600 V.

Note: *Wherever practical, for convenience, the term "appliance" has been used in lieu of "clothes dryer" or "machine".*

1.2 This Standard applies to both cord-connected and permanently connected appliances. The appliances covered by this Standard are intended for use by the general public not specifically trained in the use of the appliance, regardless of the mode by which its operation is initiated. They are for use in households and for commercial purposes, including appliances provided with coin-, ticket-, or card-operated mechanisms, and combination washer-dryers.

1.3 This Standard does not apply to industrial and institutional type appliances. Industrial or institutional appliances are covered under the scope of *Electric Commercial Clothes-Drying Equipment*, UL 1240.

Note: *Industrial and institutional type appliances are not intended for use by the general public, but only by trained or supervised personnel.*

2 Definitions

Note: *For the purpose of this standard, the following definitions apply.*

2.1 **Appliance, cord-connected** – an appliance that is connected to the electrical supply by a cord set or by a power-supply cord terminating in an acceptable attachment plug.

2.2 **Appliance, household type** – an appliance commonly used in, but not restricted to, a single-family dwelling.

2.3 **Appliance, permanently connected** – an appliance that is connected to the electrical supply by means other than a supply cord and an attachment plug.

2.4 **Appliance, recessed** – an appliance intended to be:

- a) supported by the floor; and
- b) located immediately adjacent to a wall in the rear or located immediately adjacent to a wall, a cabinet, or another appliance on each side.

If the construction permits, a countertop may cover the appliance and adjacent cabinets and appliances. A recessed appliance is not intended for permanent attachment to the building structure or to adjacent cabinets or appliances.

2.5 **Appliance, stationary** – any appliance that is intended to be fastened in place or located in a dedicated space.

2.6 **Appliance, wall-insert** – an appliance intended to be mounted permanently in a wall or other vertical surface of a building or cabinet.

2.7 Automatic – an appliance is considered to be automatically controlled if one or more of the following condition applies:

- a) repeated starting of the appliance, beyond one complete predetermined cycle of operation, to the point where some form of limit switch opens the circuit, is independent of any manual control;
- b) during any single predetermined cycle of operation, the motor is caused to stop and restart one or more times;
- c) upon energizing the appliance, the initial starting of the motor may be intentionally delayed beyond normal, conventional starting; or
- d) during any single predetermined cycle of operation, automatic changing of the mechanical load may reduce the motor speed to reestablish starting-winding connections to the supply circuit.

2.8 Barrier – a partition for the insulation or isolation of electric circuits, for the isolation of electric arcs, or for the isolation of moving parts or hot surfaces. In this respect, a barrier may serve as a portion of an enclosure and as a functional part.

2.9 Built-in appliance – a stationary appliance that is constructed to be permanently installed in a cabinet or wall.

2.10 Circuit, low-voltage – a circuit that:

- a) has an ac potential of not more than 30 V (42.4 V peak) and power of 100 VA or less;
- b) has 30 V dc supplied by a primary battery;
- c) is supplied by a Class 2 transformer; or
- d) is supplied by a combination of a transformer and fixed impedance that, as a unit, complies with all the performance requirements for a Class 2 transformer.

A circuit that is derived from a circuit that exceeds 30 V by connecting resistance or impedance, or both, in series with the supply circuit to limit the voltage and current, is not considered to be a low-voltage circuit. Class 2 transformers are specified in CSA C22.2 No. 66 and UL 1585.

2.11 Circuit, line-voltage – a circuit having characteristics in excess of those of a low-voltage circuit.

2.12 Enclosure – a material used to:

- a) render inaccessible, by itself or in conjunction with acceptable enclosure barriers and supplementary enclosures, any or all uninsulated current-carrying parts, internal wiring, or electrical components not having their own enclosures;
- b) reduce the likelihood of propagation of ignition due to electrical disturbances occurring within; or
- c) both (a) and (b).

2.13 **Enclosure barrier** – a material used to reduce the size of an opening in an enclosure that:

- a) will not permit the entrance of a 19.1 mm diameter rod; and
- b) does not comply with Clause 8.2(a)(1) or (2).

A polymeric enclosure barrier shall be evaluated as a functional polymeric part.

2.14 **Enclosure, supplementary** – a material used to reduce the size of an opening in an enclosure that:

- a) will permit the entrance of a 19.1 mm diameter rod; and
- b) does not comply with Clause 8.2(a)(1) or (2);

when enclosure barriers, if provided, are removed.

A polymeric supplementary enclosure shall be evaluated as an enclosure.

2.15 **Field wiring terminal** – a terminal to which a wire may be connected in the field, unless the wire and a means of making the connection, such as:

- a) a pressure wire connector;
- b) soldering lugs;
- c) a soldered loop; or
- d) a crimped eyelet;

factory-assembled to the wire, are provided as a part of the appliance.

2.16 **Heater assembly** – an assembly of

- a) a heating element;
- b) electrical insulation (eg, refractory, mica, magnesium oxide); and
- c) a frame or housing (eg, a metal sheath or the like) that holds the assembly together.

2.17 **Heating element** – the actual electrical conducting medium that is intended to be heated by an electric current.

2.18 **Noncombustible material** – for purposes of this Standard, a noncombustible material is:

- a) metal;
- b) a 0.17-5VA and 94-5VA material; or
- c) a material that complies with the requirements for enclosure flammability in accordance with the 127 mm flame test in UL 746C.

2.19 **Part, decorative** – a material used for no other function except appearance. A removable polymeric control knob or lever may be considered a decorative part.

2.20 Part, functional – a material used in such a way that deterioration or breakage of the part would result in a risk of fire, electric shock, or injury to persons.

2.21 Part, nonfunctional – a part, such as thermal insulation or decorative material, that does not serve as electrical insulation or to support or enclose electrical components, maintain electrical spacings, or reduce the risk of injury to persons.

2.22 Thermostat, combined temperature-regulating and -limiting – a device that functions to:

- a) regulate the temperature under normal conditions of use; and
- b) limit abnormal temperatures that might result from conditions of abnormal operation of the appliance.

2.23 Thermostat, temperature-limiting – a device that functions:

- a) only under conditions that produce abnormal temperatures; and
- b) that is not intended to function during normal operation of the appliance.

2.24 Thermostat, temperature-regulating – a device that:

- a) regulates temperature; and
- b) functions during normal operation of the appliance.

2.25 Vulcanized fibre – a material that, if 0.8 mm thick minimum and acceptably mounted and secured, may be used as an enclosure barrier, but not as an enclosure or supplementary enclosure.

3 General requirements and reference publications

3.1 General requirements

3.1.1 Except as indicated in Clause 24, a component of a product covered by this Standard shall comply with all the requirements for that component. See Appendix A for a list of Standards covering components generally used in the products covered by this Standard. A component shall comply with both the Canadian Standards Association and Underwriters Laboratories Inc. Standards for the component.

3.1.2 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involves a risk of fire or of electric shock or injury to persons shall be evaluated using appropriate additional component and end-product requirements to maintain the level of safety as originally anticipated by the intent of this standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this standard does not comply with this standard. Revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this standard.

3.1.3 Combination washer-dryers shall comply with this Standard and also with the requirements of the Binational Standard CSA C22.2 No. 169 and UL 2157, *Electric Clothes Washing Machines and Extractors*. *Where more than one Standard applies, preference shall be given to that Standard considered to require the highest standard of construction or testing.*

3.2 Reference publications

3.2.1 Where reference is made to other publications, such reference shall be considered to refer to the latest edition and all amendments published to that edition up to the time when this Standard was approved.

CSA Standards

CAN/CSA-B64.1.1-94,
Vacuum Breakers, Atmospheric Type (AVB);

C22.1-94,
Canadian Electrical Code, Part I;

CAN/CSA-C22.2 No. 0-M91,
General Requirements – Canadian Electrical Code, Part II;

C22.2 No. 0.1-M1985 (R1994),
General Requirements for Double-Insulated Equipment;

C22.2 No. 0.2-93,
Insulation Coordination;

C22.2 No. 0.5-1982 (R1992),
Threaded Conduit Entries;

C22.2 No. 0.15-95,
Adhesive Labels;

CAN/CSA-C22.2 No. 0.17-92,
Evaluation of Properties of Polymeric Materials;

C22.2 No. 14-95,
Industrial Control Equipment;

C22.2 No. 24-93,
Temperature-Indicating and -Regulating Equipment;

C22.2 No. 55-M1986 (R1992),
Special Use Switches;

C22.2 No. 66-1988,
Specialty Transformers;

C22.2 No. 77-95,
Motors with Inherent Overheating Protection;

CAN/CSA-C22.2 No. 100-95,
Motors and Generators;

C22.2 No. 156-M1987,
Solid-State Speed Controls;

C22.2 No. 169-97,
Electric Clothes Washing Machines and Extractors;

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CAN/CSA-C22.2 No. 223-M91,
Power Supplies with Extra-Low-Voltage Class 2 Outputs;

CAN/CSA-C361-92,
Test Method for Measuring Energy Consumption and Drum Volume of Electrically Heated Household Tumble-Type Clothes Dryers.

UL Standards

UL 94
Tests for Flammability of Plastic Materials for Parts in Devices and Appliances;

UL 157
Gaskets and Seals;

UL 244A
Solid-State Controls for Appliances;

UL 506
Specialty Transformers;

UL 508
Industrial Control Equipment;

UL 514A
Metallic Outlet Boxes;

UL 519
Impedance-Protected Motors;

UL 547
Thermal Protectors for Motors;

UL 723
Tests for Surface Burning Characteristics of Building Materials;

UL 746A
Polymeric Materials – Short Term Property Evaluations;

UL 746C
Polymeric Materials – Use in Electrical Equipment Evaluations;

UL 746E
Polymeric Materials – Industrial Laminates, Filament Wound Tubing, Vulcanized Fiber, and Materials Used in Printed Wiring Boards;

UL 840
Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment;

UL 873
Temperature-Indicating and -Regulating Equipment;

UL 969

Marking and Labeling Systems;

UL 991

Tests for Safety-Related Controls Employing Solid-State Devices;

UL 1004

Electric Motors;

UL 1054

Special-Use Switches;

UL 1097

Double Insulation Systems for Use in Electrical Equipment;

UL 1585

Class 2 and Class 3 Transformers;

UL 2157

Electric Clothes Washing Machines and Extractors.

ANSI¹ Standards

ANSI MC 96.1-1982,

Temperature Measurement Thermocouples;

ANSI/ASSE² 1001-1988,

Pipe Applied Atmospheric Type Vacuum Breakers;

ANSI/ASSE 1007/AHAM³ HLW-2PR-1986,

Plumbing Requirements for Home Laundry Equipment;

ANSI/NFPA⁴ 70-1993,

National Electrical Code.

¹American National Standards Institute.

²American Society of Sanitary Engineering.

³Association of Home Appliance Manufacturers.

⁴National Fire Protection Association.

4 General conditions for the tests

4.1 Voltage and frequency

4.1.1 Unless otherwise specified in the requirements, all tests shall be conducted with the appliance connected to a supply circuit with a rated frequency and a voltage (V_s) of:

- a) 120 V for an appliance rated from 110 to 120 V;
- b) 240 V for an appliance rated from 220 to 240 V; or
- c) the maximum rated voltage of the appliance for an appliance rated other than as mentioned in (a) or (b).

4.1.2 The test voltage (V_t) used during the heating tests of Clause 11 and the abnormal operation tests of Clause 19 shall be adjusted so that the calculated (see formula below) heating circuit input (W_t) is achieved. This compensates for heating elements with inputs at V_s (see Clause 4.1.1) that are different than their rated (marked) inputs.

$$W_t = W_m(V_s/V_m)^2$$

where

W_t is the calculated heating circuit input in, W

W_m is the heating element rated (marked) input in, W

V_s is the supply circuit voltage specified in Clause 4.1.1

V_m is the heating element rated (marked) input in, V

4.1.3 If it is necessary to increase the appliance test voltage beyond the voltage as specified in Clause 4.1.1, the motor shall be supplied from a separate circuit not exceeding the nominal system voltage (eg, 120 V, 240 V).

4.2 Test load

4.2.1 Unless otherwise specified, the test load shall:

- a) consist of cloths as described in Clause 4.3; and
- b) be soaked in water, which shall be extracted as it would be in normal use just before the cloths are placed in the appliance; or
- c) be wet until they have absorbed a mass of water equal to the dry mass of the cloths.

4.2.2 The dry mass of the test cloths shall be the greater of:

- a) the maximum load recommended by the manufacturer; or
- b) 0.032 kg/L of clothes-drum volume. The clothes-drum volume shall be determined by a measurement or calculation method.

Note: Whenever a referee method is necessary to determine clothes-drum volume, the measurement is to be made in accordance with the method described in CSA C361 or the U.S. Department of Energy (DOE) Energy Conservation Program for Consumer Products – Paragraph 3.1 of Appendix D to Subpart B of 10CFR430 – Uniform Test Method for Measuring the Energy Consumption of Clothes Dryers.

4.3 Test fabric

4.3.1 The fabric used for tests shall be bleached, preshrunk cotton suiting, having a warp of 21-23 threads per cm and a filling of 18-20 threads per cm. Individual cloths shall be 610 × 915 mm, double hemmed to a size of approximately 560 × 865 mm. A small number of smaller cloths, 305 × 305 mm, double hemmed to a size of 255 × 255 mm, may be used if necessary to make the total weight of cloth correct.

4.4 Thermocouples

4.4.1 Thermocouples shall consist of wires not larger than No. 24 AWG (0.21 mm²). The thermocouple wire shall conform with the requirements for special thermocouples as specified in the table of limits of error of thermocouples in ANSI MC 96.1.

Note: When thermocouples are used in the determination of temperatures in connection with the heating of electrical devices, it is common practice to employ thermocouples consisting of No. 30 AWG (0.05 mm²) iron and constantan wires and a potentiometer-type indicating instrument; such equipment shall be used whenever referee temperature measurements by thermocouples are necessary.

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4.5 Laundry detergent

4.5.1 Whenever laundry detergent is required for a test in this Standard it shall be AHAM detergent or any other powdered laundry detergent having similar properties.

4.6 Cheesecloth for heating and abnormal tests

4.6.1 Whenever cheesecloth is required for a test in this Standard, the cloth shall be bleached cheesecloth running approximately 34 g/m² with a thread count in the range of 10-13 × 9-12 threads/cm.

4.7 Test temperature

4.7.1 The tests shall be conducted in a draught-free location and, in general, at an ambient temperature in the range of 10 – 40°C.

5 Void

6 Void

7 Marking and Instructions

7.1 Marking

Advisory Note: In Canada, there are two official languages. Therefore, it is necessary to have CAUTION, WARNING, and DANGER markings in both English and French. Appendix B lists acceptable French translations of the markings specified in this Standard. When a product is not intended for use in Canada, cautionary markings may be provided in English only.

7.1.1 General

7.1.1.1 A marking that is required to be permanent shall be moulded, die-stamped, paint-stencilled, stamped, or etched metal that is permanently secured, or indelibly stamped on a pressure-sensitive label secured by adhesive. Pressure-sensitive labels and adhesive shall comply with CAN/CSA-C22.2 No. 0.15 and UL 969.

7.1.1.2 A marking required to be permanent shall be located on a part that would require the use of a tool for removal.

7.1.1.3 A cautionary marking intended to instruct the operator shall be legible and visible to the operator during normal operation of the appliance. A marking giving servicing instructions shall be legible and visible when such servicing is being performed.

7.1.1.4 A cautionary marking shall be prefixed by the word "CAUTION", "WARNING", or "DANGER" in letters not less than 3.2 mm high. The remaining letters of such marking shall not be less than 1.6 mm high.

7.1.2 Appliance markings

7.1.2.1 An appliance shall be rated in volts and in amperes or watts. The number of phases shall be included in the ratings if the appliance is intended for connection to a polyphase circuit, and the ratings shall include the frequency expressed in hertz (Hz).

7.1.2.2 An appliance shall be provided with a schematic circuit diagram, attached or secured to the appliance in a location that is easily accessible for servicing, such as the back panel, the toe panel, the location of the wiring terminals, the console, or the control housing.

7.1.2.3 An appliance, as mentioned in Clause 9.2, that will not start and operate normally when connected to a circuit protected by a 15 A fuse of other than the time-delay type, but that will start and operate normally when connected to a circuit protected by a 15 A time-delay fuse, shall be plainly and permanently marked with the following or the equivalent:

"If connected to a circuit protected by fuses, use time-delay fuses with this appliance".

7.1.2.4 If fuses are provided, the maximum size in amperes of the fuse required shall be permanently marked on the appliance.

7.1.2.5 Appliances having field wiring terminals shall be marked with one of the following:

- a) "Use copper conductors only", if the terminal is acceptable only for connection to copper wire;
- b) "Use aluminum conductors only", if the terminal is acceptable only for connection to aluminum wire;
- c) "Use copper or aluminum conductors" or "Use copper, copper-clad aluminum, or aluminum conductors", if the terminal is acceptable only for connection to either copper or aluminum wire; or
- d) "Use copper-clad aluminum or copper conductors", if the terminal is acceptable only for connection to either copper or copper-clad aluminum wire.

7.1.2.6 A heating element rated more than 1 A and intended to be replaceable in the field shall be marked with:

- a) its rating in V and A or in V and W;
- b) the manufacturer's part number; or
- c) an equivalent means of identification.

The marking shall withstand the environment involved.

Note: An open-wire heating element need not be marked if it is part of an assembly that is marked as required.

7.1.2.7 Clothes dryers employing supply terminals intended for use with supply conductors rated above 60°C shall be marked on the exterior adjacent to the supply entry with the following or equivalent wording:

"USE SUPPLY CONDUCTORS RATED ___ °C (___ °F)."

The marking shall include both °C and °F. The temperature rating of the conductors used in the heating test (Clause 11) shall be placed in the marking.

7.1.2.8 An appliance shall be clearly and permanently marked with a warning that the appliance is intended for use only with fabrics that have been washed with water as a cleaning agent.

7.1.2.9 A warning consisting of the following shall be included in the permanent marking on an appliance:

a) For an appliance that includes a no-heat setting in its controls:

"WARNING – To reduce the risk of fire, do not use heat when drying articles containing foam rubber or similarly textured rubber-like materials";

or the marking given in item (b).

b) For any other appliance:

"WARNING – To reduce the risk of fire, do not dry articles containing foam rubber or similarly textured rubber-like materials."

7.1.2.10 An appliance that provides means for collection of dust and lint accumulation shall be plainly and permanently marked to indicate the necessity of keeping the lint trap cleaned out.

7.1.2.11 The markings mentioned in Clauses 7.1.2.8 to 7.1.2.10 shall be separated from other markings to reduce the likelihood of their being overlooked.

7.1.2.12 Deleted

7.1.2.13 An appliance shall be permanently marked:

a) at or near the exhaust opening of the appliance with the word "CAUTION" and the following statement or the equivalent: "Risk of Fire. A clothes dryer produces combustible lint. The dryer must be connected to an exhaust to the outdoors. See Installation Instructions;" and

b) on a surface readily visible to the user after installation of the appliance with the word "CAUTION" and the following statement or the equivalent: "Risk of Fire. A clothes dryer produces combustible lint. The dryer must be connected to an exhaust to the outdoors. Regularly inspect the outdoor exhaust opening and remove any accumulation of lint around the outdoor exhaust opening and in the surrounding area."

Exception: This requirement does not apply to an appliance intended to condense lint-bearing moisture vapour and discharge the condensate into a plumbing system.

7.1.2.14 For a combination washer-dryer, the words "A clothes dryer," where used in Clause 7.1.2.13, shall be changed to "The dryer operation of a combination washer-dryer."

In the markings, where the words "clothes dryer" appear more than once, the word "appliance" may be substituted for the subsequent use of the words "clothes dryer."

7.1.2.15 Deleted

7.1.2.16 If an appliance employs a non-current-carrying metal part that is not grounded as provided in Clause 27.1.3, the appliance shall be permanently marked with the word "WARNING" and the following or the equivalent:

"Certain internal parts are intentionally not grounded and may present a risk of electric shock only during servicing. Service Personnel— Do not contact the following parts while the appliance is energized: (list of ungrounded parts)."

The marking shall be located on the outside of the appliance and it shall be readily visible before any servicing operation. The marking also shall be located close to each ungrounded part and it shall be readily visible before or when the part becomes accessible.

If all approaches to ungrounded parts can be adequately covered by one marking:

- a) then only one marking, visible from the outside of the appliance and at the approach to the ungrounded parts, need be employed; or
- b) if the marking is located on the ungrounded part, only one marking need be employed.

7.1.2.17 If a manufacturer produces or assembles appliances at more than one factory, each finished appliance shall have a distinctive marking, which may be in code, by which it may be identified as the product of a particular factory.

7.1.2.18 An appliance provided with instructions for any type of user maintenance other than cleaning a lint trap shall be marked with the word "WARNING" and the following or the equivalent:

"To reduce the risk of electric shock, disconnect this appliance from the power supply before attempting any user maintenance other than cleaning the lint trap. Turning the controls to the OFF position does not disconnect this appliance from the power supply."

The marking shall be so located as to be visible before the maintenance is attempted.

Note: An appliance not equipped with a lint trap may omit the reference to a lint trap in the required marking.

7.1.2.19 An appliance shall have a permanent, legible marking that will be readily visible after the appliance has been installed as intended without the necessity of moving the appliance. The markings shall include the:

- a) manufacturer's name, trademark, or other descriptive marking by which the organization responsible for the product can be identified – hereinafter referred to as the manufacturer's name;
- b) catalogue number or the equivalent;
- c) electrical rating; and
- d) date of manufacture by week, month or quarter, and year, which may be abbreviated or in an established or otherwise acceptable code.

7.1.2.20 An appliance that is intended to be installed in a closet shall be provided with a permanent marking that specifies the required clearances to all adjacent surfaces and the required ventilation in the door. This marking may be included with other markings on a common label provided it is:

- a) separate from the wording of all other markings on the label; and
- b) visible during installation.

7.1.2.21 Deleted

7.1.2.22 A stationary appliance employing an attachment plug in accordance with Clause 25.3.3 shall be marked in the installation instructions, markings, or by a hang tag or equivalent: "Connect To Individual Branch Circuit."

7.1.2.23 A cord-connected appliance shall be clearly and permanently marked in a location that will be visible after the appliance has been installed as intended. The marking shall include a statement indicating the size of the branch circuit to which the appliance is intended to be connected and the maximum ampere rating of the overcurrent-protective device to be used in that branch circuit. (See Clause 10.)

Note: A marking on the back of the appliance is acceptable.

7.1.2.24 With reference to Clause 10.2, an appliance that is fastened or otherwise secured at a specific location and is intended to be connected to a supply circuit protected by a 15 A or a 20 A overcurrent-protective device and that has a current rating greater than 50% of the supply-circuit-current rating shall be permanently marked to indicate that the appliance shall be connected only to a supply circuit to which no lighting units or general-purpose receptacles are connected. The marking shall be located so that it will be readily visible when the connections to the supply circuit are made.

7.1.2.25 An appliance that does not comply with Clause 22.5.7 shall be marked, in a location that is visible during installation and inspection, with the word: "WARNING", and the following statement or the equivalent:

"To reduce the risk of fire, this appliance must be fastened or otherwise secured to an uncovered concrete floor."

7.1.2.26 The following marking shall appear on all 120/208 V household clothes dryers:

"WARNING: DO NOT USE ON 120/240 V SUPPLY."

The marking shall be located adjacent to the supply entry and shall be in contrasting letters not less than 6 mm high.

7.1.2.27 If a cord-connected appliance employs a dual-voltage motor, instructions shall be provided to indicate the type of attachment plug that should be used if the appliance is reconnected for the alternative voltage.

7.1.2.28 If an appliance can be readily adapted, upon installation, for connection to a supply circuit of either of two different voltages, complete instructions, including identification of terminals, for making the connections for the different voltages shall be included in the permanent marking of the appliance.

7.1.2.29 If an appliance is for use either on a 120 V, 2-wire circuit or on a 120/240 V, 3-wire circuit, depending on the connections to be made when the appliance is installed, there shall be a warning marking on the appliance stating that non-current-carrying metal parts are not to be connected to the grounded terminal when the appliance is used on the lower-voltage circuit.

7.1.2.30 A permanently connected appliance having one motor and other loads or more than one motor with or without other loads shall be permanently marked, in a location that will be visible when connections to the power-supply circuit are made and inspected. The markings shall include:

- a) the minimum supply-circuit conductor ampacity in accordance with Clause 7.1.2.31; and
- b) the maximum rating and type of supply-circuit overcurrent-protective device, such as a non-time-delay fuse or a dual-element time-delay fuse, in accordance with Clause 7.1.2.32.

7.1.2.31 With reference to the requirement in Clause 7.1.2.30(a), the minimum supply-circuit conductor ampacity shall be based on the maximum input in accordance with Clause 10.

7.1.2.32 With reference to the requirement in Clause 7.1.2.30(b), the rating of the supply-circuit overcurrent-protective device shall not exceed the rating of the fuse employed in the short-circuit test of the motor overload-protective device employed in the appliance.

7.1.2.33 An appliance intended for permanent connection shall be marked to indicate the wiring system or systems for which it is acceptable. The marking shall be located so that it will be visible when power-supply connections to the appliance are being made.

Note: *An appliance intended for permanent connection to a rigid metal conduit or armoured cable wiring system need not be marked.*

7.1.2.34 An appliance constructed in accordance with Clause 25.2.7 shall be marked, in a location visible during connection to the supply circuit, with the word "WARNING" and the following statement:

"To reduce the risk of electric shock or fire, do not use a flexible power-supply cord with this appliance."

7.1.2.35 An appliance provided with double insulation shall be permanently marked with the words:

"DOUBLE INSULATION – When servicing, use only identical replacement parts."

The words "DOUBLE-INSULATED" may be used instead of "DOUBLE INSULATION".

7.1.2.36 An appliance shall not be marked with a double insulation symbol (a square within a square, the words "DOUBLE INSULATION", or the equivalent) unless it complies with the requirements for double-insulated appliances in accordance with CSA C22.2 No. 0.1 and UL 1097.

7.1.2.36A A pressure wire connector intended for connection of an equipment-grounding conductor shall be identified by being marked "G", "GR", "GND", "Ground", or "Grounding"; by the grounding symbol illustrated in Figure 7, or a similar marking; or by a marking on the wiring diagram provided on the appliance.

7.1.2.37 Dryers with neutral-link grounding

Note: *The CEC does not permit the use of neutral-link grounding on products intended to be installed in Canada.*

7.1.2.37.1 If a neutral-grounding link as described in Clause 27.2 is provided, instructions for the proper use of the link, which may be in the form of a circuit diagram, shall be provided on the appliance. If a dryer or combination washer-dryer is for use either on a 120 V, 2-wire circuit or on a 120/240 V, 3-wire circuit, depending on the connections to be made when the dryer or combination washer-dryer is installed, there shall be a warning marking on the appliance stating that non-current-carrying metal parts are not to be connected to the grounded terminal when the appliance is used on the lower voltage circuit.

7.1.2.37.2 A clothes dryer or combination washer-dryer intended for permanent connection to the power supply, and for which the connection between the grounding link and the grounded terminal is made at the factory in accordance with the requirements in Clause 27.2, shall be legibly marked at a location visible during installation of the appliance with the word "WARNING" and the following statement or the equivalent:

"Risk of Electric Shock: Appliance grounded to neutral conductor through a link. Grounding through the neutral conductor is prohibited for (1) new branch-circuit installations, (2) mobile homes, (3) recreational vehicles, and (4) areas where local codes prohibit grounding through the neutral conductor. For installations where grounding through the neutral conductor is prohibited: (1) disconnect the link from the neutral, (2) use grounding terminal or lead to ground appliance, and (3) connect neutral terminal or lead to branch-circuit neutral in usual manner (where the appliance is to be connected by means of a cord kit use 4-conductor cord for this purpose)."

7.1.2.37.3 A clothes dryer or combination washer-dryer intended to be connected to the power supply by a flexible cord and attachment plug, and for which the connection between the grounding link and the grounding terminal is made at the factory in accordance with the requirements of Clause 27.2, shall be legibly marked at a location visible during installation of the appliance with the word "WARNING" and the following or equivalent:

"Risk of Electric Shock: Appliance grounded to neutral conductor through a link. Grounding through the neutral conductor is prohibited for (1) new branch-circuit installations, (2) mobile homes, (3) recreational vehicles, and (4) areas where local codes prohibit grounding through the neutral conductor. For installations where grounding through the neutral conductor is prohibited, the 3-conductor cord or cable assembly must be replaced by a 4-conductor cord or cable assembly. See manufacturer's instructions."

(See also Clause 7.3.4.)

7.1.3 Wall-mounting kits and stands

7.1.3.1 A wall-mounting kit or an appliance stand packaged and marketed separately for the basic appliance or recommended by the appliance manufacturer for use with the basic appliance shall be permanently and legibly marked with a catalogue number or the equivalent. Information packaged with the appliance shall identify, by catalogue number:

- a) the wall-mounting kits; or
- b) the appliance stands that have been investigated and found acceptable for use with the appliance; or
- c) the appliance with which the wall-mounting kit or appliance stand is intended to be used.

7.1.3.2 The catalogue number mentioned in Clause 7.1.3.1 shall appear in at least one of the following locations:

- a) on the wall-mounting kit or appliance stand;
- b) on the package containing the wall-mounting kit or appliance stand; or
- c) in the information furnished with the wall-mounting kit or appliance stand.

7.2 Instruction manual

7.2.1 General

7.2.1.1 A household appliance shall be provided with:

- a) instructions pertaining to a risk of fire, electric shock, or injury to persons associated with the use of the appliance;
- b) installation instructions;
- c) operating instructions; and, if applicable
- d) user-maintenance instructions.

7.2.1.2 The instructions required by Clause 7.2.1.1 shall be:

- a) in separate manuals; or
- b) combined in one or more manuals, provided the instructions pertaining to a risk of fire, electric shock, or injury to persons are emphasized and in a separate format to distinguish them from the rest of the text.

7.2.1.3 Instructions for user repair that are provided with an appliance, or that are specifically referenced by other literature or markings provided with the appliance, shall be considered with respect to the risks that may be present during the repair and after the repair has been completed.

7.2.1.4 Any heading or statement requiring the cautionary prefix "WARNING" shall be entirely in upper case letters or otherwise emphasized to distinguish it from the rest of the text.

7.2.1.5 Unless otherwise indicated, the text of all instructions shall be in the words specified or words that are equivalent, clear, and understandable. However, there shall be no substitute for the word "WARNING".

Note: *If the appliance is such that the specific wording is unnecessary or conflicting, the wording may be omitted or modified as appropriate.*

7.2.2 Instructions pertaining to a risk of fire, electric shock, or injury to persons

7.2.2.1 The instructions pertaining to a risk of fire, electric shock, or injury to persons shall warn the user of reasonably foreseeable risks and state the precautions that should be taken to reduce such risks.

7.2.2.2 The heading "IMPORTANT SAFETY INSTRUCTIONS" or the equivalent shall precede the list of instructions required in Clause 7.2.2.4, and the statement "SAVE THESE INSTRUCTIONS" or the equivalent shall either precede or follow the list (see Clause 7.2.1.4).

7.2.2.3 The instructions shall include the appropriate instructions from Clauses 7.2.2.4 and 7.2.2.5.

7.2.2.4 The instructions required by Clause 7.2.2.1 shall include the items in the following list, as applicable, as well as any other instructions a manufacturer considers to be necessary for the appliance. The items in the list may be numbered (see Clause 7.2.1.4).

IMPORTANT SAFETY INSTRUCTIONS

WARNING – To reduce the risk of fire, electric shock, or injury to persons when using your appliance, follow basic precautions, including the following:

- 1) Read all instructions before using the appliance.
- 2) Do not dry articles that have been previously cleaned in, washed in, soaked in, or spotted with gasoline, dry-cleaning solvents, or other flammable or explosive substances, as they give off vapours that could ignite or explode.

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- 3) Do not allow children to play on or in the appliance. Close supervision of children is necessary when the appliance is used near children.
- 4) Before the appliance is removed from service or discarded, remove the door to the drying compartment.
- 5) Do not reach into the appliance if the drum is moving.
- 6) Do not install or store this appliance where it will be exposed to the weather.
- 7) Do not tamper with controls.
- 8) Do not repair or replace any part of the appliance or attempt any servicing unless specifically recommended in the user-maintenance instructions or in published user-repair instructions that you understand and have the skills to carry out.
- 9) Do not use fabric softeners or products to eliminate static unless recommended by the manufacturer of the fabric softener or product.
- 10) Do not use heat to dry articles containing foam rubber or similarly textured rubber-like materials.
- 11) Clean lint screen before or after each load.
- 12) Keep area around the exhaust opening and adjacent surrounding areas free from the accumulation of lint, dust, and dirt.
- 13) The interior of the appliance and exhaust duct should be cleaned periodically by qualified service personnel.
- 14) Do not place items exposed to cooking oils in your dryer. Items contaminated with cooking oils may contribute to a chemical reaction that could cause a load to catch fire.

SAVE THESE INSTRUCTIONS

7.2.2.5 The instructions pertaining to a risk of fire, electric shock, or injury to persons shall include (a), (b), or (c) below, as applicable. As an alternative, (a) or (b) may be included in the installation instructions, and (c) may be included in the user-maintenance instructions. If the instructions in (a) and (b) are included in the installation instructions, and if (c) is included in the user-maintenance instructions, a reference to these instructions shall be included as a separate item in the list required by Clause 7.2.2.4. (See Clause 7.2.1.4.)

- a) For a grounded, cord-connected appliance:

GROUNDING INSTRUCTIONS

This appliance must be grounded. In the event of malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. This appliance is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING – Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service representative or personnel if you are in doubt as to whether the appliance is properly grounded.

Do not modify the plug provided with the appliance: if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

b) For a permanently connected appliance:

GROUNDING INSTRUCTIONS

This appliance must be connected to a grounded metal, permanent wiring system, or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance.

c) For a double-insulated, cord-connected appliance:

SERVICING A DOUBLE-INSULATED APPLIANCE

In a double-insulated appliance, two systems of insulation are provided instead of grounding. No grounding means is provided on a double-insulated appliance, nor should a means for grounding be added to the appliance. Servicing requires extreme care and knowledge of the system, and should be done only by qualified service personnel. Replacement parts for a double-insulated appliance must be identical to those parts being replaced. A double-insulated appliance is marked with the words "DOUBLE INSULATION" or "DOUBLE INSULATED". The double-insulation symbol (a square within a square) may also be marked on the appliance.

7.3 Installation instructions

7.3.1 The installation instructions shall include all the information needed to install the appliance for use as intended, and shall be preceded by the heading "INSTALLATION INSTRUCTIONS" or the equivalent (see Clause 7.2.1.4).

7.3.2 The cover or first page of the installation instructions shall include:

- a) the safety alert symbol (triangle with exclamation mark);
- b) the word "WARNING" in black letters not less than 6.4 mm high on an orange or white background; and
- c) the following wording or equivalent:

"WARNING – Risk of Fire"

"Clothes dryer installation must be performed by a qualified installer."

"Install the clothes dryer according to the manufacturer's instructions and local codes."