UL 136

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Pressure Cookers

Underwriters Laboratories Inc. (UL)
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UL Standard for Safety for Pressure Cookers, UL 136

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Revisions: This Standard contains revisions through and including October 8, 2001.

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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 are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

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

Future Effective Dates	References
April 8, 2003	Paragraphs 16.1 and 16.2

The revised requirements are substantially in accordance with UL's Bulletin(s) on this subject dated February 8, 2001. The bulletin(s) is now obsolete and may be discarded.

The revisions dated October 8, 2001 include a reprinted title page (page1) for this Standard.

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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.

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

Page	Date
1-6B	October 8, 2001
7-10	November 22, 1995
11-12	October 8, 2001
SR1-SR2	October 8, 2001

No Text on This Page

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UL 136

Standard for Pressure Cookers

First Edition – March, 1948
Second Edition – December, 1966
Third Edition – May, 1973
Fourth Edition – September, 1979
Fifth Edition – October, 1990

Sixth Edition

November 22, 1995

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

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.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. 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.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements cover household-type cooking utensils known as pressure cookers or pressure sauce pans which operate at a nominal pressure of 15 psig (103 kPa) or less. They are intended for use over gas- or electric-top burners of residential-type cooking ranges.

1.2 These requirements do not cover pressure cookers intended for pressure frying with oil.

1.3 Deleted October 8, 2001

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.1.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

2.1.2 revised October 8, 2001

2.1.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.1.3 revised October 8, 2001

2.1.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

2.1.4 revised October 8, 2001

2.2 Units of measurement

2.2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

2.2.1 revised October 8, 2001

2.3 Instructions

2.3.1 A copy or draft of the manufacturer's instructions covering care and use of the pressure cooker (that shall accompany each product as produced) is to be furnished with the sample submitted for investigation. These instructions are to be used as a guide in the examination and test of the product. For this purpose, a printed edition is not required. See Instruction Manual, General, Section 15, for details.

CONSTRUCTION

3 Materials

3.1 Pressure-holding parts, or parts of relief mechanisms or pressure-relief devices, shall comply with the requirements in this standard and shall have corrosion resistance determined to be equivalent to aluminum, brass, or stainless steel.

3.2 A gasket or seal used as a pressure-holding part shall be configured so that a substitute part is not capable of being fabricated using ordinary gasket materials available in sheet form.

3.3 All materials which come into contact with foods shall be nontoxic and shall not, under heat or normal conditions of use, decompose to emit toxic ingredients or vapors.

4 Assembly

4.1 The product shall be constructed so that an ordinary user is capable of assembling it as intended in a manner to reduce the risk of electric shock, fire, or injury.

4.2 If the appliance is provided with a removable or replaceable part, the removal of the part shall not cause the appliance to operate in a way that creates a risk of electric shock, fire, or injury to persons.

4.3 The cover shall be constructed to comply with one of the following:

a) When the cover is opened the maximum normal operating pressure shall be released before the fastening means is fully disengaged,

b) The cover shall be removable only after the pressure within the cooker is zero (0) psig, or

c) The opening of the cover when the cooker is under pressure shall not result in hazardous displacement of the cover or escape of steam or water.

5 Pressure Reliefs

5.1 A pressure vessel shall be provided with a reliable pressure-relief valve of the spring- or weight-loaded type. It shall be located in the cover of the cooker in a place that will minimize clogging.

5.2 A pressure-vessel cover shall also be provided with a secondary or emergency pressure-relief device (such as a replaceable blowout, or fusible plug) or with an arrangement of a clamped and/or gasketed cover to effectively limit pressure in the vessel and prevent distortion of the vessel when the cooker is tested in accordance with these requirements.

6 Pressure Gauges

6.1 A pressure gauge, if provided, shall be of the Bourdon-tube type. It shall have a range and dial indicator that is capable of indicating pressures at least 50 percent in excess of the maximum pressure allowed by the operation of the pressure-relief valve. It shall be accurate to within 1.5 psig (10 kPa).

6.2 The dial is not required to be capable of indicating pressures above the maximum operating range, when the dial is marked ″CAUTION″ or the equivalent in the areas of excess pressure.

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PERFORMANCE

7 Maximum and Normal Operating Pressure and Leakage Test

7.1 The maximum operating pressure of a cooker shall not exceed 18 psig (124 kPa). No leakage of steam or water shall occur at the joint between the body and cover at the maximum operating pressure determined during the test.

7.2 The maximum operating pressure of a cooker is the maximum pressure allowed by the operation of the pressure-relief valve under conditions of abnormal heat supply. The normal operating pressure of a pressure cooker is the maximum pressure allowed by the operation of the pressure-relief valve under normal heat supply.

7.3 Each size and type of pressure vessel is to be tested with at least two samples of the relief valve designated for its protection.

7.4 A calibrated pressure gauge having a range of at least 150 percent of the anticipated maximum working pressure is to be mounted to indicate pressures developed within the vessel.

7.5 The relief valve is to be adjusted to its maximum setting. The pressure cooker is to be half filled with water and placed over a conventional range top burner. The top burner is to be adjusted to liberate approximately 12,000 Btu per hour (3516 W) for cookers that have a nominal inside bottom diameter of 12 inches (305 mm) or less. If the inside diameter exceeds 12 inches, larger inputs are to be delivered proportional to the actual inside area in square inches versus 113 square inches (729 cm^2).

7.6 The application of heat is to be continued until the relief valve has opened and no further increase in the maximum pressure has occurred over a 5-minute period. The heat is to be reduced until the relief valve operates in accordance with the operating instructions.

7.7 The maximum or normal operating pressure is to be the highest of those pressures occurring in the test of at least two relief valves. If the maximum pressures in tests of two or more relief valves vary from one sample valve to another by more than 10 percent, the total number of samples tested is to be increased to six. The maximum operating pressure is to be the highest observed. In such a case, the lowest operating pressure of any sample is to be at least 85 percent of the maximum operating pressure determined by the above procedure.

8 Pressure-Relief Operation Tests

8.1 Pressure-relief valves

8.1.1 A pressure-relief valve shall not open initially to relieve steam at a pressure less than 80 percent of its maximum operating pressure as determined under conditions of abnormal heat supply.

8.1.2 Each pressure-relief valve subjected to the test for maximum operating pressure is to be tested in like manner. The initial pressure that occurs at the first release of steam is to be compared to the maximum operating pressure that occurs with this particular sample.

8.1.3 Observations for this test are to be recorded during the tests for maximum operating pressure as required.

8.2 Secondary or emergency relief devices

8.2.1 Under conditions of abnormal heat supply and with the pressure-relief valve opening plugged, the secondary or emergency relief device or arrangement shall effectively operate to limit pressure in the vessel to not more than 40 percent of the pressure obtained in the Hydrostatic Strength Test, Section 11.

8.2.2 Each size and type of pressure vessel is to be tested with at least two samples of the emergency relief device or the device used to relieve excessive pressures.

8.2.3 The sample to be tested is to be equipped with a calibrated pressure gauge. The test is to be conducted in the manner described in 7.5 – 7.7.

9 Cover Opening Test

9.1 An ordinary user shall not be capable of manually defeating the holding action of the clamping device when the pressure in the cooker reaches a value that creates a risk of fire, electric shock, or injury to persons. The propelling of a loosened cover and the escape of steam or hot water are examples of these risks.

9.2 One sample of each size and type of cooker is to be subjected to this test. The sample to be tested is to be equipped with a calibrated pressure gauge as described in 7.4.

9.3 If the cover is secured by a twist-lock arrangement requiring a rotating force exerted between the vessel and its cover, the vessel is to be clamped so as to be held stationary. The outermost point of any cover or cover handle is to be attached by a cable to a spring scale capable of being used in the range of 100 pounds (45.4 kg). The arrangement shall provide the application of a line of force of 100 pounds (445 N), maintained at 90 degrees to the radius of the point of attachment, from a remote or protected location.

9.4 If the cover is secured by a clamping device requiring manual turning or manipulation of a threaded part or other mechanism, it shall be constructed so that the intended manual operation of the mechanism does not result in risk of electric shock, fire, or injury to persons.

9.5 The sample cooker is to be half filled with water and heated until the maximum operating pressure is attained.

9.6 If the force is to be applied using the spring scale, a pull of 100 pounds (445 N) is to be maintained while the pressure in the vessel is to be gradually reduced until the cover rotates to the unlocked position. Freeing of a cover to rotate shall not result in any displacement of the cover or escape of steam or water that would result in a risk of fire, electric shock, or injury to persons.

9.7 If a threaded part or other mechanism is to be manipulated, the action is to be performed as rapidly as possible. As a result of this manipulation, the pressure in the vessel is to be reduced automatically to zero prior to the time required by the operator to remove the means for clamping the cover to its vessel. During the period of manipulation, there shall not be a displacement of the cover or escape of steam or water that would result in a risk of electric shock, fire, or injury to persons.

10 Locking Mechanism Operation Test

10.1 A pressure cooker, if constructed as described in 9.3, is to be subjected to the cycling described in 10.2. Before and after the cycling, the samples shall comply with the requirements in the Cover Opening Test, Section 9.

10.2 The cover locking mechanism is to be operated through 6000 cycles. Each cycle shall completely lock and unlock the cover.

11 Hydrostatic Strength Test

11.1 An assembled pressure cooker shall withstand without rupture an internal hydrostatic pressure equal to the highest of the following:

a) 5 times the maximum operating pressure or

b) 2-1/2 times the release pressure of the emergency relief devices.

11.2 Two samples of each size and type pressure cooker are to be subjected to this test.

11.3 All openings for safety relief devices, gauges, and the like, are to be effectively closed. Covers having clamping or gasketed arrangements for emergency relief are to be provided with supplementary means to enable the maximum test pressure to be exerted on the vessel and its cover.

11.4 Each sample for test is to be assembled as intended and connected into a system of piping in a manner permitting the removal of all air in the piping and sample. A calibrated pressure gauge having a range of at least 150 percent of the anticipated maximum test pressure is to be connected in the piping system.

11.5 The hydrostatic pressure is to be increased at a uniform rate until a pressure equal to the following is reached:

a) 5 times the maximum operating pressure or

b) 2-1/2 times the release pressure of the emergency relief device.

12 Elastomeric and Polymeric Parts

12 deleted May 29, 1992

MANUFACTURING AND PRODUCTION TESTS

13 General

13.1 The manufacturer shall provide the necessary production control, inspection, and tests to assure compliance with these requirements in production.

MARKINGS

14 General

14.1 A pressure cooker shall be legibly and permanently marked, where it will be plainly visible, with:

a) The manufacturer’s or private labeler’s name, identifying symbol, trade name, trademark, or other descriptive marking by which the organization responsible for the product may be identified;

b) The date or other dating period of manufacture not exceeding any three consecutive months. These may be abbreviated or in a code affirmed by the manufacturer. The date code repetition time cycle shall not be less than 10 years; and

c) A distinctive catalog, type, or model number.

14.2 If a manufacturer produces pressure cookers at more than one factory, each cooker shall have a distinctive marking to identify it as the product of a particular factory.

INSTRUCTION MANUAL

15 General

15.1 An instruction manual shall be provided with each pressure cooker. The manual shall specifically warn the user against each potential risk of fire, electric shock, or injury to persons; and state the precautions that should be taken to reduce each risk. The safety instructions shall be a permanent part of the manual, but separated in format from the other instructions. They shall appear before the operating instructions in the manual.

15.2 The instruction manual shall include instructions or illustrations to identify features intended to reduce the risk of fire, electric shock, or injury to persons.

15.3 In the text and illustrations of the safety instructions:

a) Upper case letters shall not be less than 5/64 inch (2.0 mm) in height,

b) Lower case letters shall not be less than 1/16 inch (1.6 mm) in height, and

c) The phrases ″IMPORTANT SAFEGUARDS″ and ″SAVE THESE INSTRUCTIONS″ shall be in letters not less than 3/16 inch (4.8 mm) in height.

15.4 The instruction manual shall include the text specified in Important Safeguards, Section 16.

15.5 Unless otherwise indicated, the text of the instructions shall be verbatim to, or in equally definitive terminology, as specified in Important Safeguards, Section 16, except where specific conflict in the application of the text to a product exists or the risk alluded to has been reduced. The items may be numbered. In a list of items, the phrases ″Read all Instructions″ and ″SAVE THESE INSTRUCTIONS″ shall be first and last, respectively. Other important and safeguard items are not prohibited from being inserted if considered appropriate by the manufacturer.

15.6 The instruction manual shall include instructions and caution statements for cleaning, user maintenance (such as lubrication or nonlubrication), operations recommended by the manufacturer, and shall warn a user that any other servicing shall be performed by an authorized service representative.

16 Important Safeguards

16.1 The instruction manual shall include the following:

When using pressure cookers, basic safety precautions should always be followed:

1. Read all instructions.

2. Do not touch hot surfaces. Use handles or knobs.

3. Close supervision is necessary when the pressure cooker is used near children.

4. Do not place the pressure cooker in a heated oven.

5. Extreme caution must be used when moving a pressure cooker containing hot liquids.

6. Do not use pressure cooker for other than intended use.

7. This appliance cooks under pressure. Improper use may result in scalding injury. Make certain unit is properly closed before operating. See ″Operating Instructions.″(Such instructions shall appear elsewhere in the manual as noted in Instruction Manual, General, Section 15.)

8. Do not fill the unit over 2/3 full. When cooking foods that expand during cooking such as rice or dried vegetables, do not fill the unit over 1/2 full. Over filling may cause a risk of clogging the vent pipe and developing excess pressure. See ″Food Preparation Instructions.″(Such instructions shall appear elsewhere in the manual as noted in Instruction Manual, General, Section 15.)

9. Be aware that certain foods, such as applesauce, cranberries, pearl barley, oatmeal or other cereals, split peas, noodles, macaroni, rhubarb, or spaghetti can foam, froth, and sputter, and clog the pressure release device (steam vent). These foods should not be cooked in a pressure cooker.

10. Always check the pressure release devices for clogging before use.

11. Do not open the pressure cooker until the unit has cooled and all internal pressure has been released. If the handles are difficult to push apart, this indicates that the cooker is still pressurized – do not force it open. Any pressure in the cooker can be hazardous. See ″Operating Instructions.″ (Such instructions shall appear elsewhere in the manual as noted in Instruction Manual, General, Section 15.)

12. Do not use this pressure cooker for pressure frying with oil.

13. When the normal operating pressure is reached, turn the heat down so all the liquid, which creates the steam, does not evaporate.

14. SAVE THESE INSTRUCTIONS.

Revised 16.1 effective April 8, 2003

16.2 For pressure cookers employing detachable handles, the precaution ″Be sure that handles are assembled and fastened properly before each use. Cracked, broken or charred handles should be replaced.″ shall be included in the Important Safeguards. Instructions detailing correct assembly of the handles, and an explanation of the means to determine incorrect assembly of the handles, shall also be incorporated in the Instruction Manual. These instructions shall directly follow the precaution statement or shall be located elsewhere in the Instruction Manual if a specific reference is made following the precautionary statement.

Revised 16.2 effective April 8, 2003

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Superseded requirements for the Standard for Pressure Cookers

UL 136, Sixth Edition

The requirements shown are the current requirements that have been superseded by requirements in revisions issued for this Standard. To retain the current requirements, do not discard the following requirements until the future effective dates are reached.

16.1 The instruction manual shall include the following:

When using pressure cookers, basic safety precautions should always be followed:

1. Read all instructions.

2. Do not touch hot surfaces. Use handles or knobs.

3. Close supervision is necessary when the pressure cooker is used near children.

4. Do not place the pressure cooker in a heated oven.

5. Extreme caution must be used when moving a pressure cooker containing hot liquids.

6. Do not use pressure cooker for other than intended use.

7. This appliance cooks under pressure. Improper use may result in scalding injury. Make certain unit is properly closed before operating. See ″Operating Instructions.″(Such instructions shall appear elsewhere in the manual as noted in Instruction Manual, General, Section 15.)

8. Do not fill the unit over 2/3 full. When cooking foods that expand during cooking such as rice or dried vegetables, do not fill the unit over 1/2 full. See ″Food Preparation Instructions.″(Such instructions shall appear elsewhere in the manual as noted in Instruction Manual, General, Section 15.)

9. Do not cook foods such as applesauce, cranberries, pearl barley, oatmeal or other cereals, split peas, noodles, macaroni, rhubarb, or spaghetti. These foods tend to foam, froth, and sputter, and may block the pressure release device.

10. Always check the pressure release devices for clogging before use.

11. Do not open the pressure cooker until the unit has cooled and internal pressure has been reduced. See ″Operating Instructions.″ (Such instructions shall appear elsewhere in the manual as noted in Instruction Manual, General, Section 15.)

12. Do not use this pressure cooker for pressure frying with oil.

13. SAVE THESE INSTRUCTIONS.

16.2 For pressure cookers employing detachable handles, the precaution ″Be sure that handles are assembled and fastened properly″ shall be included in the Important Safeguards. Instructions detailing correct assembly of the handles, and an explanation of the means to determine incorrect assembly of the handles, shall also be incorporated in the Instruction Manual. These instructions shall directly follow the precaution statement or shall be located elsewhere in the Instruction Manual if a specific reference is made following the precautionary statement.