

UL 1995

STANDARD FOR SAFETY

Heating and Cooling Equipment



AUGUST 17, 2018 – UL 1995 tr1

UL Standard for Safety for Heating and Cooling Equipment, UL 1995

Fifth Edition, Dated July 31, 2015

Summary of Topics

This revision of UL 1995 includes a Clarification of the Scope.

As noted in the Commitment for Amendments statement located on the back side of the title page, UL and CSA are committed to updating this harmonized standard jointly. However, the revision pages dated August 17, 2018 will not be jointly issued by UL and CSA.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated June 6, 2018 and July 13, 2018.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this Standard "as is" without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL's liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL's Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney's fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser's computer system.

tr2 AUGUST 17, 2018 – UL 1995

No Text on This Page

This is a preview. Click here to purchase the full publication.



CSA Group CSA C22.2 No. 236-15 Fifth Edition



Underwriters Laboratories Inc. UL 1995 Fifth Edition

Heating and Cooling Equipment

July 31, 2015

(Title Page Reprinted: August 17, 2018)



This is a preview. Click here to purchase the full publication.

Commitment for Amendments

This standard is issued jointly by the Canadian Standards Association (operating as CSA Group) and Underwriters Laboratories Incorporated (UL). Comments or proposals for revisions on any part of the standard may be submitted to CSA Group or UL at any time. Revisions to this standard will be made only after processing according to the standards development procedures of CSA Group and UL. CSA Group will not be issuing revisions dated August 17, 2018.

ISBN 978-1-77139-831-2 © 2015 Canadian Standards Association

All rights reserved. No part of this publication may be reproduced in any form whatsoever without the prior permission of the publisher.

This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquires@csagroup.org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

To purchase CSA Group Standards and related publications, visit CSA Group's Online Store at shop.csa.ca or call toll-free 1-800-463-6727 or 416-747-4044.

Copyright © 2018 Underwriters Laboratories Inc.

UL's Standards for Safety are copyrighted by UL. Neither a printed nor electronic copy of a Standard should be altered in any way. All of UL's Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

This ANSI/UL Standard for Safety consists of the Fifth Edition including revisions through August 17, 2018. The most recent designation of ANSI/UL 1995 as an American National Standard (ANSI) occurred on July 30, 2015. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface. Any other portions of this ANSI/UL standard that were not processed in accordance with ANSI/UL requirements are noted at the beginning of the impacted sections.

The Department of Defense (DoD) has adopted UL 1995 on March 9, 1992. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

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 https://csds.ul.com.

To purchase UL Standards, visit UL's Standards Sales Site at http://www.shopulstandards.com/HowToOrder.aspx or call toll-free 1-888-853-3503.

CONTENTS

Pretace	
1 Scope	
2 Definitions	
3 Reference publications	
3.9 Attachment plugs, receptacles, connectors, and terminals	
3.10 Controls	
3.11 Cords, cables, and internal wiring	
3.12 Light sources and associated components	
3.13 Marking and labeling systems	
3.14 Power supplies	
3.15 Printed wiring boards	
3.16 Switches	
3.17 Transformers	
4 Installation and operating instructions	26
CONSTRUCTION	
5 Enclosures	29
6 Thickness of sheet metal enclosures for uninsulated live parts	
7 Openings in enclosures	
8 Enclosures, doors, and covers	
9 Accessibility of parts	
10 Assembly	
11 Mechanical protection	
12 Outdoor use equipment	
13 Enclosures, outdoor use	
14 Field wiring connections, outdoor use equipment	
15 Mechanical assembly – field assembly	
16 Auxiliary devices	
17 Connection to power supply	
18 Thermal insulation and air filters	
19 Terminal parts and leads for field wiring connections	
20 Internal wiring	
21 Separation of circuits	
22 Electrical insulation	
23 Motors	
24 Grounding and bonding	
25 Mounting of components	
26 Switches and controllers	
27 Transformers	
28 Capacitors	
29 Electric crankcase heaters	
30 Electric heaters	
31 Receptacles	
32 Control circuits	
33 Spacings	
34 Refrigerant, hot water, and steam coils	
35 Condensing and compressor units employing flammable refrigerants.	
36 Heat pump water heating and heat recovery equipment	

	37 Power supplies	
3	39 Photovoltaic system grounding	96
4	40 Photovoltaic system ground fault protection	96
4	41 Photovoltaic system overcurrent protection	96
4	42 Photovoltaic system disconnection means	97
UNIT	MARKINGS	
4	43 General	98
	44 Equipment markings	
	45 Other markings	
TEST	rs ·	
2	46 General test parameters	111
	47 Input test	
	48 Temperature operation test – without any supplementary heating means	
	49 Temperature operation tests—with hot water or steam heating	
	50 Cooling operation test–temperature and pressure	
	51 Heating operation test – temperature and pressure	
	52 Abnormal temperature and pressure tests – refrigerant heat only	
	53 Electric heater tests	
	54 Abnormal temperature and pressure tests	
	55 Backup protection tests	
	56 Fan delay test – duct-connected downflow and horizontal units	
Ę	57 Control system failure test	134
Ę	58 Fan motor failure test	135
	59 Motors for use with wave chopping solid-state speed controls	
(60 Condenser water failure test	136
(61 Dielectric voltage-withstand test	137
	62 Condensate drain blockage test	
	63 Loading test	
	64 Limited short-circuit test	
	65 Transformer – burnout test	
	66 Transformer – overload test	
	67 Rain test	
	68 Accelerated aging tests	
	69 Impact test	
	70 Strength tests	
	71 Fatigue test analysis	
	72 Rupture member tests	
	73 Fusible plug test	
	74 Regulating relief valve endurance test	
	75 Leakage current test – cord-connected products	
	76 Starting test	
	77 Strain relief	
	78 Power supply cords	
	· · · · · · · · · · · · · · · · · · ·	
	80 Ultraviolet light exposure test	
	82 Heat pump pool heaters	
(oz Tieat putity pout tieatets	157

84 Knockout security test	
85 Pressure tests for leakage a	and strength159
87 Production line dielectric vo	Itage-withstand tests
88 Production line grounding c	ontinuity test
	re test
	radiation161
	iance test
	parameters162
	egulating controls)163
	imiting controls)165
	perature sensing device166
CSA, UL AND OTHER STANDARD	S AND CODES
91 Standards for components	
	ENTS FOR DUCT MOUNTED UV LAMPS SYSTEMS WHEN
	ITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY
EMPLOYED IN COMBINATION V COVERED BY UL 1995/CSA No.	ITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236.
EMPLOYED IN COMBINATION V COVERED BY UL 1995/CSA No.	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236.
EMPLOYED IN COMBINATION V COVERED BY UL 1995/CSA No. SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236
EMPLOYED IN COMBINATION V COVERED BY UL 1995/CSA No. SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179 179 179 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179 179 179 179 179 180
SA1 Scope	/ITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
SA1 Scope SA2 Definitions SA3 Reference publications SA4 General SA5 Installation and operating SA6 Enclosures SA7 Openings in enclosures SA8 Enclosures, doors, and co	/ITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
SA1 Scope	/ITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
EMPLOYED IN COMBINATION V COVERED BY UL 1995/CSA No. SA1 Scope SA2 Definitions SA3 Reference publications SA4 General SA5 Installation and operating SA6 Enclosures SA7 Openings in enclosures SA8 Enclosures, doors, and co SA9 Accessibility of parts (UV SA10 Field assembly SA11 Connection to power sup SA12 Materials in duct system SA13 Resistance to moisture SA14 Leakage current test	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
EMPLOYED IN COMBINATION V COVERED BY UL 1995/CSA No. SA1 Scope SA2 Definitions SA3 Reference publications SA4 General SA5 Installation and operating SA6 Enclosures SA7 Openings in enclosures SA8 Enclosures, doors, and co SA9 Accessibility of parts (UV SA10 Field assembly SA11 Connection to power sup SA12 Materials in duct system SA13 Resistance to moisture SA14 Leakage current test SA15 Elevated temperature test	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
EMPLOYED IN COMBINATION V COVERED BY UL 1995/CSA No. SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179
SA1 Scope	VITH AIR CONDITIONING AND HEATING SYSTEMS PRESENTLY 236. 179

ANNEX A (Informative)

Marking Translations

ANNEX B (Informative)

Hot, FI	aming O	il Test and	l Molten	PVC and	Copper	Test
---------	---------	-------------	----------	---------	--------	------

B1	General	.187
B2	Hot flaming oil	.187
ВЗ	Molten PVC and copper	.187

Preface

This is the harmonized CSA Group and UL standard for Heating and Cooling Equipment. It is the fifth edition of CSA-C22.2 No. 236, and the fifth edition of UL 1995.

This harmonized standard was prepared by the CSA Group and Underwriters Laboratories Inc. (UL). The efforts and support of the heating and cooling equipment industry, the Air Conditioning and Refrigeration Institute (ARI), and the Heating, Refrigerating, and Air Conditioning Institute of Canada (HRAI) are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This Standard was reviewed by the CSA Subcommittee on Appliances for Air-Conditioning for Household and Similar Purposes, under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on the Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committees. It was also reviewed by the UL Standards Technical Panel 1995 and processed according to the method of development, revision, and implementation of UL standards for safety.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to 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 uses the IEC format but is not based on, nor is it considered equivalent to, an IEC standard. This standard is published as an equivalent standard for CSA Group and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

Reasons for differences from IEC

The THSC investigated and found no existing IEC standards or work programs covering the scope of the products in this standard.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is 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.