

UL 710

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Exhaust Hoods for Commercial Cooking Equipment

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Underwriters Laboratories Inc. (UL)
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UL Standard for Safety for Exhaust Hoods for Commercial Cooking Equipment, UL 710

Fifth Edition, Dated December 28, 1995

Revisions: This Standard contains revisions through and including February 2, 2007.

Summary of Topics

This revision to UL 710 is to make an editorial correction to the scope paragraph 1.8.

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.

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 revisions dated February 2, 2007 include a reprinted title page (page1) for this Standard.

The revisions dated April 11, 2006 editorially replace all references to UL 1020 with the reference to UL 60691.

The revisions dated April 14, 1999 were issued to change references to UL 547, Standard for Thermal Protectors for Motors, to UL 2111, Standard for Overheating Protection for Motors. UL 547 has been withdrawn and replaced by UL 2111. These revisions were also issued to remove the "94" prefix from the flammability classifications. This type of flame classification has become familiar globally, therefore there is no need to retain the "94" designation.

As indicated on the title page (page1), this UL Standard for Safety has been adopted by the Department of Defense.

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/foreword.html>

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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.

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

Page	Date
1-2A	February 2, 2007
2B-4	April 11, 2006
5-6B	February 2, 2007
7	December 28, 1995
8-10B	April 14, 1999
11-12	December 28, 1995
13-16D	April 14, 1999
17	December 28, 1995
18-21	April 14, 1999
22-26	December 28, 1995
27	April 14, 1999
28-58	December 28, 1995
A1-A2	April 11, 2006

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DECEMBER 28, 1995

(Title Page Reprinted: February 2, 2007)

1

UL 710

Standard for Exhaust Hoods for Commercial Cooking Equipment

The first, second, and third editions were titled "Grease Extractors for Exhaust Ducts."

First Edition – October, 1970

Second Edition – November, 1975

Third Edition – July, 1981

Fourth Edition – December, 1990

Fifth Edition

December 28, 1995

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

The Department of Defense (DoD) has adopted UL 710 on October 9, 1992. The publication of revised pages or a new edition of this Standard will not invalidate the DoD adoption.

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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CONTENTS

INTRODUCTION

1 Scope	5
2 General	6
3 Components	6
4 Glossary	6

CONSTRUCTION

5 Assembly	6A
6 Accessibility of Uninsulated Live Parts, Film-Coated Wire, and Moving Parts	7
7 Materials	10A
8 Protection Against Corrosion	11
9 Provisions for Maintenance and Grease Removal	11
10 Fire Actuated Damper Assemblies	12
11 Duct Collars	16B
12 Controls	16B
12.1 Manual controls	16B
12.2 Limit controls	16C
13 Electrical Enclosure	17
13.1 General	17
13.2 Transparent covers	17
13.3 Battery storage compartments	18
13.4 Ventilating openings	18
14 Field-Wiring Connections	21
14.1 General	21
14.2 Grounding	22
15 Internal Wiring	23
15.1 General	23
15.2 Wiring methods	23
16 Separation of Circuits	23
17 Bonding For Grounding	24
17.1 General	24
17.2 Conductors	25
18 Capacitors	26
19 Overcurrent Protection	26
20 Lighting Fixtures	27
21 Transformers	28
22 Switches and Controllers	28
23 Electrical Spacings – High-Voltage Circuits	28
24 Electrical Spacing – Low-Voltage Circuits	30

PERFORMANCE

25 General	31
26 Test Installation	31
27 Instrumentation	32
28 Cooking Appliances	34
29 Thermostat Calibration Test	36
30 Temperature Test	36

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31	Cooking Smoke and Flare-Up Test	40
32	Abnormal Flare-Up Test	41
33	Fan-Failure Test	41
34	Fire Test	42
35	Burnout Test	42
36	Pressure Test	43
37	Damper Tests	43
37.1	General	43
37.2	Cycling test	43
37.3	Closure test	43
38	Gasket and Sealant, Physical and Immersion Tests	44
38.1	Tensile strength and elongation	44
38.2	Aging and immersion	44
38.3	Volume change	45
39	Fire and Leakage Test of Fittings for Hood Penetrations	45

ELECTRICAL TESTS

40	Overvoltage and Undervoltage Operation Test	45
41	Dielectric Voltage-Withstand Test	46
42	Short-Circuit Test	47

CONTROL UNIT TESTS

43	General	48
44	Heating Test	48

MARKING TEST

45	Permanence of Marking Test	52
----	----------------------------------	----

MANUFACTURING AND PRODUCTION TEST

46	Production-Line Dielectric Voltage-Withstand Test	53
----	---	----

MARKING

47	General	55
48	Elevated Air Temperature	56
49	Cautionary Markings	57

INSTALLATION AND OPERATING INSTRUCTIONS

50	General	57
----	---------------	----

APPENDIX A

Standards for Components.....	A1
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INTRODUCTION

1 Scope

1.1 These requirements cover exhaust hoods intended for placement over commercial cooking equipment. Exhaust hoods with and without exhaust dampers are covered by these requirements.

1.2 Exhaust hoods with exhaust dampers are intended to have the exhaust damper automatically close to prevent exhaust duct gas temperatures from exceeding 375°F (191°C).

1.3 All exhaust hoods are intended for use with fire extinguishing system units.

1.4 Exhaust hoods covered by these requirements shall be provided with manually or automatically operated cleaning or washing systems. These requirements do not cover the fire extinguishing aspects of such systems.

1.5 Exhaust hoods covered by these requirements are intended for installation in accordance with:

- a) The Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment, NFPA 96; and
- b) The National Electrical Code, NFPA 70; and
- c) Other codes such as the Basic National Mechanical Code (BOCA), the Standard Mechanical Code (SBCCI), and the Uniform Mechanical Code (ICBO).

1.6 These requirements do not cover products rated over 600 volts.

1.7 These requirements do not cover evaluation of the exhaust hoods with respect to their grease extraction efficiency.

1.8 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this Standard, and that involve a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as required 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 is judged to not comply with this Standard. Where appropriate, revision of requirements are proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Standard.

1.8 revised February 2, 2007

2 General

2.1 If a value for measurement is followed by a value in other units in parentheses, the first stated value is the requirement.

3 Components

3.1 Except as indicated in 3.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components used in the products covered by this standard.

3.2 A component is not required to comply with a requirement specified in its specific standard when it:

- 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.

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

3.4 Specific components are recognized as being 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 for which they have been recognized.

4 Glossary

4.1 For the purpose of this Standard the following definitions apply.

4.2 CIRCUIT, HIGH-VOLTAGE – A circuit having characteristics in excess of those of a low-voltage circuit. See 4.3.

4.3 CIRCUIT, LOW-VOLTAGE – A circuit involving a potential of not more than 30 volts rms alternating-current (42.4 volts peak or direct current), and supplied by a primary battery or by a Class 2 transformer or by a combination of transformer and fixed impedance which, as a unit, complies with all the performance requirements for a Class 2 transformer.

4.4 FITTING – A device intended to provide a liquid tight seal around penetrations.

4.5 PENETRATIONS – The routing of metallic piping into or through exhaust hoods or ducts for connection to a fire extinguishing system or waterwash system.

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CONSTRUCTION

5 Assembly

5.1 An exhaust hood shall include all the essential parts required for its intended function when installed as intended. The equipment shall be shipped as subassemblies.

5.2 An exhaust hood that is not assembled by the manufacturer as a unit shall be constructed so that each subassembly is capable of being incorporated into the final assembly without requiring alteration by the installer. Subassemblies that must bear a definite relationship to each other for the intended operation of the product shall be arranged and constructed to permit them to be incorporated into the complete assembly only in the correct relationship with each other, without requiring for alteration or realignment.

5.3 A part that comes in contact with the operator during intended usage shall be free from sharp edges or projections.

5.4 . An adjustable part shall be provided with a locking device to reduce unintentional shifting.

5.5 A screw or bolt used to attach a part that is intended to be detached for care or servicing shall function as intended following the application of the torque specified in Table 5.1 and after removal and replacement.

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Table 5.1
Maximum torque requirements for screws

Screw size	(mm)	Torque	
		Pound-inches	(N·m)
No. 8	(4.2)	20	(2.3)
No. 10	(4.8)	25	(2.8)
1/4 inch	(6.4)	100	(11.3)
5/16 inch	(7.9)	200	(22.6)
3/8 inch	(9.5)	350	(39.5)
7/16 inch	(11.1)	550	(62.1)
1/2 inch	(12.7)	800	(90.3)
9/16 inch	(14.3)	1200	(135.5)

5.6 All parts, controls, and devices requiring maintenance shall be accessible. Parts intended to be removed for maintenance shall not require realignment following removal and restoration to secure their intended relationship with other parts of the product. Special tools or equipment required for maintenance by the operator shall accompany the product to the user.

5.7 The product shall incorporate provisions for support or attachment to the building structure.

5.8 Joints between parts that confine a washing agent shall be mechanically secured and sealed.

5.9 External seams, joints, and penetrations; or that portion of the hood that captures grease laden vapors and exhaust gases shall have a liquid-tight continuous weld to the lower outermost edges of the entire hood assembly.

Exception No. 1: Seams and joints made with a fastening means other than a liquidtight continuous weld shall be employed in hoods that have been subjected to the Abnormal Flare-Up, Fan Failure, Fire, and Burnout Tests, Sections 32 – 35, with no evidence of the passage of smoke, flame, or vapor through the joint. Such evaluations are to be made with the fire sources located at positions which are critical for the purpose of evaluating the joint or seam.

Exception No. 2: Penetrations sealed by fittings subjected to the Fire and Leakage Tests of Fittings for Hood Penetrations, Section 39.

6 Accessibility of Uninsulated Live Parts, Film-Coated Wire, and Moving Parts

6.1 Each uninsulated live part or moving part, such as a belt, coupling, fan, gear, pulley, and shaft that results in risk of electric shock or injury to persons shall be located, guarded, or enclosed so as to reduce unintentional contact by service personnel or other persons performing mechanical or electrical service functions that are to be performed while the product is energized.

6.2 A hinged or pivoted panel or cover shall be positioned or arranged so that it does not fall or swing due to gravity or vibration in such a manner as to increase the risk of unintentional contact with the panel or cover, a moving part or an uninsulated live part that results in injury to persons.

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6.3 With reference to 6.1 for guarding of moving parts, a rod of a diameter larger than that specified in Table 6.1 shall not enter the opening in an enclosure.

Table 6.1
Maximum permissible test rod diameters for enclosure openings

Straight line distance to moving part from external plane of opening, inches (mm)	Maximum diameter rod that is capable of passing through the opening	
	Inches	(mm)
Less than 2 (50.8)	1/4	(6.4)
At least 2 (50.8) and less than 6 (152)	1/2	(12.7)
At least 6 (152) and less than 15 (381)	1	(25.4)

6.4 Compliance with 6.3 is to be determined by attempting to insert a rod 3 inches (76.2 mm) long and of the diameter specified in Table 6.1 into the openings when the equipment is assembled.

6.5 It shall not be required to remove a permanently attached guard to lubricate the equipment.

6.6 With reference to 6.1 and 6.2, the following are not determined to be uninsulated live parts:

- a) Coils of controllers, relays, solenoids, and transformer windings, when the coils and windings are provided with insulating overwraps;
- b) Enclosed motor windings;
- c) Insulated terminals and splices; and
- d) Insulated wire.

6.7 An electrical control component that requires examination, adjustment, servicing, or maintenance while energized, excluding voltage measurements, shall be located and mounted with respect to other components and with respect to grounded metal parts so that it is accessible for electrical service functions without subjecting the service personnel to the risk of electric shock from adjacent uninsulated live parts or to risk of injury from adjacent moving parts.

6.8 An enclosure opening shall not permit entrance of a rod of 3/4-inch (19-mm) diameter unless:

- a) A probe as illustrated in Figure 6.1 is capable of being made to touch an uninsulated live part when inserted through the opening; and
- b) A probe as illustrated in Figure 6.2 is capable of being made to touch film-coated wire when inserted through the opening.

6.9 An opening that permits entrance of a 3/4 inch (19 mm) diameter rod is capable of being used under the conditions illustrated in Figure 6.3.

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Figure 6.1
Probe for uninsulated live parts

Figure 6.1 revised April 14, 1999

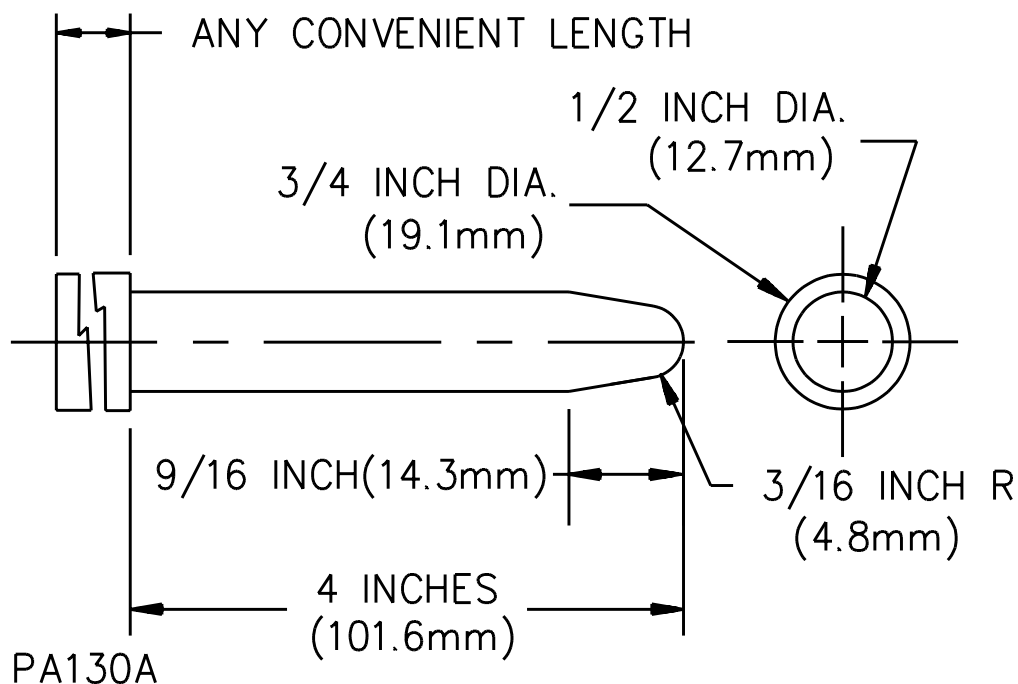
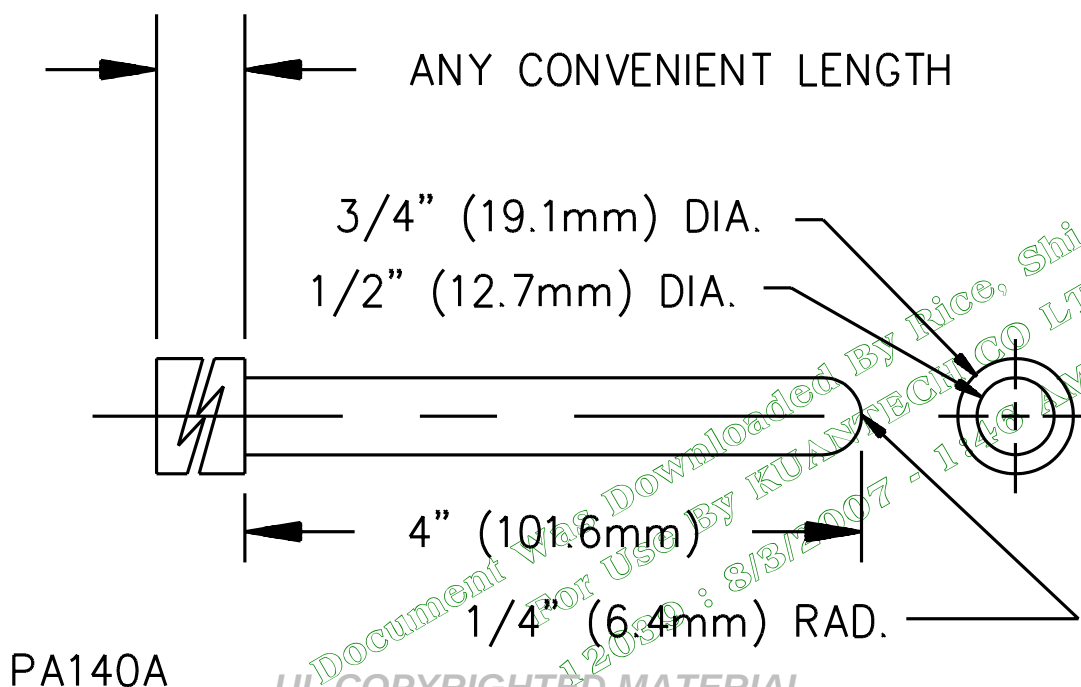


Figure 6.2
Probe for film-coated wire

Figure 6.2 revised April 14, 1999



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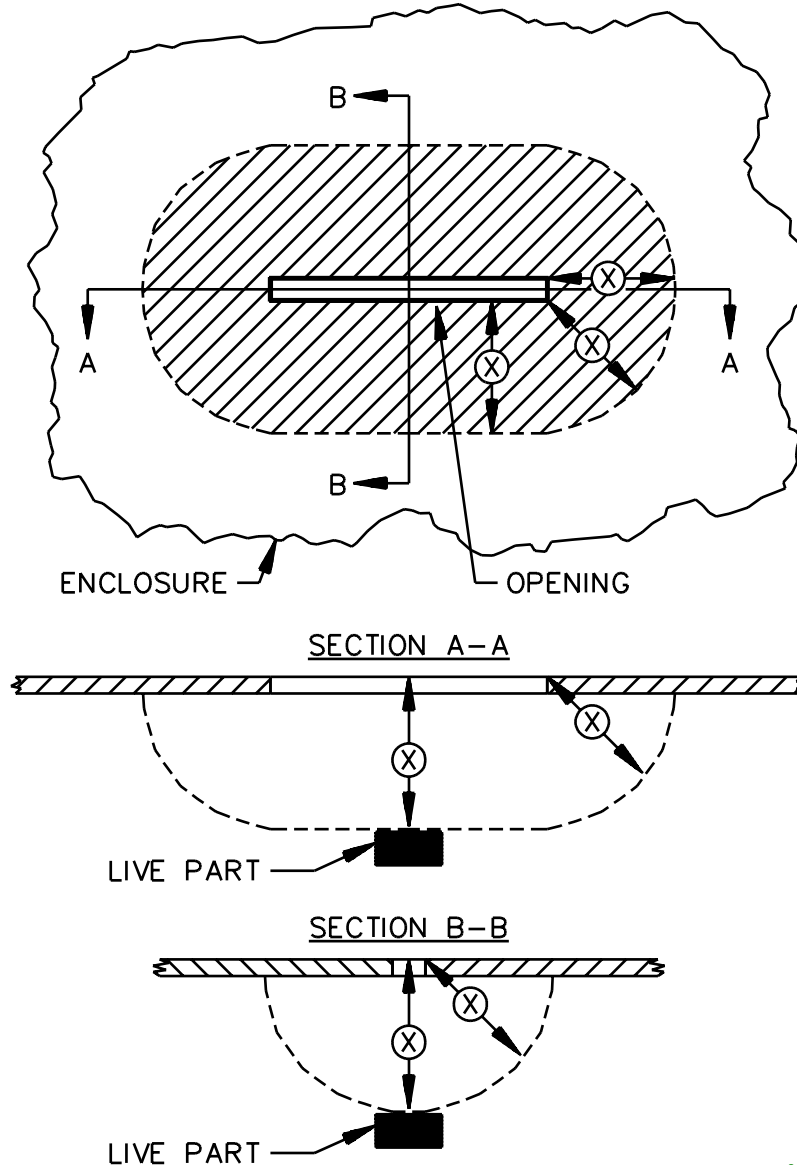


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Figure 6.3
Opening in enclosure

Figure 6.3 revised April 14, 1999



EC100B

The opening and the enclosure shall have no uninsulated live metal part or film-coated wire:

- Less than X inches (mm) from the perimeter of the opening; as well as
- Within the volume generated by projecting the perimeter X inches (mm) normal to its plane.

X equals five times the diameter of the largest diameter rod which is capable of being inserted through the opening, and not less than 4 inches (102 mm).

6.10 A part of an outer enclosure that is capable of being removed without the use of a tool, or part of an outer enclosure that is capable of being removed by the user for access to an operating adjustment is to be disregarded; that is, it is not be assumed that the part in question reduces the risk of electric shock.

7 Materials

7.1 The hood and other parts of an exhaust hood that serve to confine or convey the exhaust products, including any dampers and structural parts, shall be made of materials equivalent in strength and fire resistance to at least No. 20 MSG (0.036 in.) nominal thickness Type 302 or 430 stainless steel.

7.2 Internal ferrous metal parts, except pipe and associated fittings subject to a washing agent, shall be made of one of the 300 or 400 series of stainless steel or provided with corrosion protection as specified in Protection Against Corrosion, Section 8. Other ferrous metal parts shall be plain cold-rolled steel not less than 0.042 inch (1.1 mm) thick.

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7.3 Any insulation material installed within an exhaust hood shall not be exposed to cooking vapors.

7.4 Insulation materials other than electrical insulation shall have a flame spread rating of 25 or less when tested in accordance with the Standard for Test for Surface Burning Characteristics of Building Materials, UL 723. Adhesives or cements used in the installation of insulating materials shall comply with the above requirements when tested with the specific insulating material.

7.5 Insulation materials installed within the supply air plenums of exhaust hoods shall be provided with a nonabsorptive facing and shall be secured so as not to sag or interfere with the intended passage of air. An adhesive or cement used to attach such material shall retain its adhesive qualities at any temperature the adhesive attains when tested in accordance with these requirements and at 0°F (minus 17.8°C).

7.6 Asbestos material shall not be used.

7.7 Gasket and sealant materials used in an exhaust hood, as well as in duct collars, damper assemblies and fittings for hood penetrations, that are exposed to cooking smoke and vapor shall be subjected to Gasket and Sealant, Physical and Immersion Tests, Section 35.

Exception: Sealants used for aesthetics and/or cleanability purposes.

8 Protection Against Corrosion

8.1 A ferrous metal part required to be provided with corrosion protection shall be provided with one of the following corrosion-protection systems:

a) A zinc coating complying with the coating Designation G60 or A60 in Table I of the Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process, ASTM A653/A653M-94, with not less than 40 percent of the zinc on any side, based on the minimum single spot test requirement in this ASTM Designation. The weight of the zinc coating is to be determined by any method; in case of question shall be established in accordance with the test method in the Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles, ASTM A90-81.

b) A zinc coating, other than that specified in (a), uniformly applied to an average thickness of not less than 0.00041 inch (0.0104 mm) on each surface with a minimum thickness of 0.00034 inch (0.00864 mm). The thickness of the coating is to be established in accordance with the test method in the standard for Measurement of Electrodeposited Metallic Coating Thicknesses by the Dropping Test, ASTM B555-86.

9 Provisions for Maintenance and Grease Removal

9.1 Exhaust hoods shall include means for removal of grease and other cooking process contaminants.

9.2 Internal parts of the product shall be accessible for inspection and repair, without the use of special tools.

9.3 Grease removal devices shall be provided with all exhaust hoods. When grease filters are provided, the filters shall comply with the Standard for Grease Filters for Exhaust Ducts, UL 1046.

9.4 Grease filters shall be installed at an angle not less than 45° from the horizontal and shall be tight-fitting.