



Standard Specification for Recirculating Hood System for Cooking Appliances¹

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1. Scope

1.1 This specification covers the requirements of recirculating systems rated 600 volts or less and intended for indoor use with integral and non-integral recirculating systems and for installation in commercial establishments using electric commercial cooking appliances for the preparation of food.

1.2 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip (Withdrawn 2014)³
- A176 Specification for Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip (Withdrawn 2015)³
- D3951 Practice for Commercial Packaging
- F760 Specification for Food Service Equipment Manuals
- F1704 Test Method for Capture and Containment Performance of Commercial Kitchen Exhaust Ventilation Systems
- F2474 Test Method for Heat Gain to Space Performance of Commercial Kitchen Ventilation/Appliance Systems
- F2519 Test Method for Grease Particle Capture Efficiency of Commercial Kitchen Filters and Extractors

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

2.2 ANSI Standards:⁴

- ANSI B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)
- ANSI/UL 710B Standard for Recirculating Systems
- ANSI/UL 1046 Grease Filters for Exhaust Ducts
- ANSI Z1.4 Sampling Procedures and Tables for Inspection and Attributes
- NSF/ANSI 2 Food Equipment

2.3 Other Standards:

- EPA Method 202 Determination of Condensable Particulate Emissions from Stationary Sources⁵

3. Terminology

3.1 Definitions:

3.1.1 *grease removal device, n*—a device designed and installed in a Type I hood to remove condensable grease vapor or particles, or both, from the airstream.

3.1.1.1 *Discussion*—The device must be certified to ANSI/UL 1046 or be listed to ANSI/UL 710B as part of the hood.

3.1.1.1 *baffle filter, n*—typically have a series of vertical baffles designed to capture grease and drain to a grease trough.

3.1.1.1 *Discussion*—Filters are removable for cleaning and maintenance to the hood.

3.1.1.2 *electro-static precipitator (ESP), n*—an electric device that draws contaminated air past an ionizer that charges the particles in the airstream and deposits them on oppositely charged collecting plates.

3.1.2 *hood, n*—a device designed to capture and contain cooking effluent including, grease, smoke, steam, heat, and vapor until it is exhausted through a duct or recirculating system.

3.1.3 *recirculating system, n*—a system listed to ANSI/UL 710B incorporating a hood, a fan, and air treatment devices

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁵ Available from United States Environmental Protection Agency (EPA), Ariel Rios Bldg., 1200 Pennsylvania Ave., NW, Washington, DC 20004, <http://www.epa.gov>.

designed to substantially remove grease and particulate matter from the airstream before reintroducing the treated air into the occupied space.

3.1.3.1 *integral, n*—a recirculating system that forms an integral part of the cooking appliance.

3.1.3.2 *non-integral, n*—a recirculating system intended for installation over specific commercial cooking equipment.

3.1.4 *Type 1 hood, n*—a hood used for collecting and removing convective heat, grease particulate, condensable vapor, and smoke.

3.1.4.1 *Discussion*—Includes listed grease filters, baffles, or extractors for removing the grease and a fire-suppression system.

4. Classification

4.1 Commercial recirculating systems shall be classified by Type, Style, Electrical Class and Size:

4.1.1 *Type:*

4.1.1.1 *Type 1*—Hood is integral and attached to the appliance.

4.1.1.2 *Type 2*—Hood is non-integral and unattached to the appliance and stands on adjustable legs.

(1) *Type 2A*—With plain adjustable legs.

(2) *Type 2B*—With flanged feet that allows the stand to be bolted to the floor.

4.1.2 *Style:*

4.1.2.1 *Style 1*—Electric grill.

4.1.2.2 *Style 2*—Electric open vat fryer.

4.1.2.3 *Style 3*—Electric kettle fryer.

4.1.2.4 *Style 4*—Electric pressure fryer.

4.1.2.5 *Style 5*—Electric oven.

4.1.2.6 *Style 6*—Combination of above electric appliances.

4.1.2.7 *Style 7*—Other electric appliance (specify).

4.1.3 *Electrical Class:*

4.1.3.1 *Class 1*—208 Volt, 1Ph, 60 Hz power supply.

4.1.3.2 *Class 2*—208 Volt, 3Ph, 60 Hz power supply.

4.1.3.3 *Class 3*—240 Volt, 1Ph, 60 Hz power supply.

4.1.3.4 *Class 4*—240 Volt, 3Ph, 60 Hz power supply.

4.1.3.5 *Class 5*—480 Volt, 3Ph, 60 Hz power supply.

4.1.3.6 *Class 6*—440 Volt, 3Ph, 60 Hz power supply (ship-board use).

4.1.3.7 *Class 7*—400 Volt, 3Ph, 50 Hz power supply.

4.1.3.8 *Class 8*—230 Volt, 1 Ph, 50 Hz.

4.1.4 *Size:*

4.1.4.1 *Size 1*—Length of less than 3 ft (0.914 m).

4.1.4.2 *Size 2*—Length greater than 3 ft (0.914 m) and less than 6 ft (1.829 m).

4.1.4.3 *Size 3*—Length greater than 6 ft (1.829 m).

5. Ordering Information

5.1 An order for a recirculating hood system under this specification shall include the following information in the purchasing document:

5.1.1 ASTM title, number, and date of issue.

5.1.2 Type,

5.1.3 Style,

5.1.4 Electrical class,

5.1.5 Size,

5.1.6 Quantity to be furnished,

5.1.7 Appliances to be installed under hood (if Style 7).

5.1.8 Spare and maintenance parts required.

5.2 The following options should be reviewed, and if desired they should be also be included in the order:

5.2.1 When Federal/Military procurement(s) is involved, refer to the supplemental pages.

5.2.2 When other than manufacturer's standard, commercial, and domestic packaging is required, specify packaging requirements.

5.2.3 When special or supplemental requirements, or both, such as inspections, options, accessories, modifications, changes for correctional facilities use, additional nameplate data, etc. are required.

5.2.4 When specified, a certification to ensure that samples representing each lot have been either tested or inspected as directed and the requirements have been met. When specified, a copy of the certification or test results, or both, shall be furnished to the purchaser.

6. Materials

6.1 *General*—Recirculating hood systems shall conform to the applicable documents listed in Section 2. Materials used shall be free of defects that would affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. The use of used or rebuilt products is not allowed under this specification unless otherwise specified.

6.2 *Hood*—The hood and other parts of an exhaust hood that serve to confine or convey the exhaust products, including dampers and structural parts, shall be made of materials equivalent in strength and fire resistance to Type 302, 304, or 430 stainless steel not less than 0.037 inch (0.94 mm) or steel not less than 0.043 inch (1.09 mm) thick. Internal ferrous metal parts of the hood shall be made of one of the 300 or 400 series of stainless steel or provided with corrosion protection.

6.3 *Hardware and Fittings*—Unless otherwise specified, all hardware and fittings shall be corrosion resistant to Specifications A167 or A176 or suitably processed to resist corrosion in accordance with the manufacturer's standard practice.

6.4 *Threaded Parts*—All threaded parts shall conform to ANSI B1.1.

7. Physical Requirements

7.1 *General*—These devices incorporate an air filtering system enclosed in a hooded area intended to capture effluent from the cooking process. The hood assembly typically includes a fan, hood, and an air filtering system (consisting of a grease filter with or without other filtering means). In addition, the hood assembly includes a fire actuated damper, and a fire extinguishing system.

7.2 *Grease Removal Devices:*

7.2.1 Grease filters and extractors shall be installed in accordance with the terms of the approval and the manufacturer's instruction.

7.2.2 Filters shall be tight fitting and firmly held in place.