



## Standard Specification for Convection Oven Gas or Electric<sup>1</sup>

This standard is issued under the fixed designation F 2092; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This specification covers forced air convection ovens for baking, roasting or rethermalizing which utilize gas or electrical heat sources, or both for cooking food in the commercial and institutional food service establishments.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI values given in parentheses are provided for information only.

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- A 36/A 36M Specification for Carbon Structural Steel<sup>2</sup>
- A 167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip<sup>3</sup>
- A 176 Specification for Stainless and Heat-Resisting Chromium Steel Plate, Sheet and Strip<sup>3</sup>
- A 276 Specification for Stainless Steel Bars and Shapes<sup>2</sup>
- A 366/A 366M Specification for Steel, Sheet, Carbon, Cold Rolled, Commercial Quality<sup>3</sup>
- D 3951 Practice for Commercial Packaging<sup>4</sup>
- F 760 Specification for Food Service Equipment Manuals<sup>5</sup>
- F 1166 Practice for Human Engineering Design for Marine Systems, Equipment and Facilities<sup>6</sup>
- F 1495 Specification for Ovens, Combination, Electric<sup>5</sup>
- F 1496 Test Method for Performance of Convection Ovens<sup>5</sup>

#### 2.2 Other Publications:

- ANSI/NSF 4 Commercial Cooking, Rethermalization and Powered Hot Food Holding and Transport Equipment<sup>7</sup>
- ANSI Z223/NFPA 70 National Electrical Code<sup>7</sup>
- ANSI/UL 197 Commercial Electrical Cooking Appliances<sup>7</sup>
- ANSI B1.1 Unified in. Screw Threads (UN and UNR Thread Form)<sup>7</sup>
- ANSI Z21.41 Quick-Disconnect Devices for Use With<sup>7</sup>
- ANSI Z21.45 Flexible Connectors of Other Than All-Metal Construction for Gas Appliances<sup>7</sup>
- ANSI Z83.11 Gas Food Service Equipment<sup>7</sup>
- ANSI Z1.4 Sampling Procedures and Tables for Inspection and Attributes<sup>7</sup>
- ANSI/NFPA 54 National Fuel Gas Code<sup>7</sup>
- MIL-STD-167/1 Mechanical Vibration of Shipboard Equipment (Type 1—Environmental and Type 2—Internally Excited)<sup>8</sup>
- MIL-STD-461 Requirements For the Control Of Electromagnetic Interference Characteristics of Subsystems and Equipment<sup>8</sup>
- MIL-STD-1399/300 Interface Standard For Shipboard Systems Section 300A Electric Power, Alternating Current<sup>8</sup>

### 3. Terminology

#### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *capacity*—the capacity of a convection oven is determined by the number of bake or sheet pans that it is designed to hold during cooking. For capacity classification, the minimum vertical clearance between each row of pans shall be 1 in. (25 mm).

3.1.2 *convection oven*—as used in this specification—a device that, with a heat source combines the function of circulating hot convection air in an enclosed cavity by means of an electric motor-operated fan or blower, for the purpose of baking, roasting or rethermalizing of food.

3.1.3 *oven cavity*—space within the convection oven in which food products are heated or cooked.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F26 on Food Service and is the direct responsibility of Subcommittee F26.02 on Cooking and Warming Equipment.

Current edition approved April 10, 2001. Published September 2001.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 1.04

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 1.03

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 15.09

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 15.08

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 1.07

<sup>7</sup> Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036

<sup>8</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia PA 19111-5094, Attn: NPODS.

3.1.4 *pans*—containers used to hold the food product in the oven cavity.

3.1.4.1 *full size*—bake or sheet pan is nominally 18 by 26 by 1 in. (457 by 660 by 25 mm).

3.1.4.2 *half size*—bake or sheet pan is nominally 18 by 13 by 1 in. (457 by 330 by 25 mm).

#### 4. Classification

Convection ovens covered by this specification are classified by type, grade, class, size, style and capacity.

##### 4.1 Type:

4.1.1 *Type I*—Table or Counter top units,

4.1.2 *Type II*—Table or Counter top units stacked 2 high, and

4.1.3 *Type III*—Floor Installed or Roll-In units,

##### 4.2 Grade:

4.2.1 *Grade A*—Standard Depth, and

4.2.2 *Grade B*—Extended Depth.

##### 4.3 Class:

4.3.1 *Class 1*—208 volts, 60 hertz, 1 phase,

4.3.2 *Class 2*—208 volts, 60 hertz, 3 phase,

4.3.3 *Class 3*—240 volts, 60 hertz, 1 phase,

4.3.4 *Class 4*—240 volts, 60 hertz, 3 phase,

4.3.5 *Class 5*—480 volts, 60 hertz, 3 phase,

4.3.6 *Class 6*—120 volts, 60 hertz, 1 phase,

4.3.7 *Class 7*—220 volts, 60 hertz, 3 phase,

4.3.8 *Class 8*—230 volts, 50 hertz, 1 phase,

4.3.9 *Class 9*—230 volts, 50 hertz, 3 phase,

4.3.10 *Class 10*—380 volts, 50 hertz, 3 phase, and

4.3.11 *Class 11*—440 volts, 60 hertz, 3 phase (shipboard use).

##### 4.4 Size:

4.4.1 *Size a*—Half Size, and

4.4.2 *Size b*—Full Size.

4.5 *Style*: [standards.iteh.ai/catalog/standards/sist/d3dc48f4-9a2d-644ca200ea95/astm-f2092-01](http://standards.iteh.ai/catalog/standards/sist/d3dc48f4-9a2d-644ca200ea95/astm-f2092-01)

4.5.1 *Style i*—Electric Heated Convection Oven, and

4.5.2 *Style ii*—Gas Fired Convection Oven.

##### 4.6 Capacity:

4.6.1 Minimum 3 half size bake sheets (for Type I, Grade A, Size a),

4.6.2 Minimum 6 half size bake sheets (for Type II, Grade A, Size a),

4.6.3 Minimum 5 full size bake sheets (for Type I, Grade A and B, Size b),

4.6.4 Minimum 10 full size bake sheets (for Type II, Grade A and B, Size b), and

4.6.5 Minimum 16 full size bake sheets (for Type III, Grade A, Size b).

#### 5. Ordering Information

5.1 An order for a convection oven(s) under this specification shall specify:

5.1.1 ASTM specification number and date of issue.

5.1.2 Quantity to be furnished.

5.1.3 Type,

5.1.4 Grade,

5.1.5 Class,

5.1.6 Size,

5.1.7 Style, and

5.1.8 Capacity.

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

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

5.2.2 Type of gas, if applicable: natural, propane or other (specify dry gas energy content in BTU's per cubic foot).

5.2.3 Electrical power connection if applicable - power cord with plug or conduit connection and size.

5.2.4 *Fan Speed*—single speed or 2 speed.

5.2.5 A cool down switch to manually override the fan shut-off referenced in 7.5.5.

5.2.6 *Type of Controls*—Electro-mechanical, solid state or programmable/computer controlled.

5.2.7 *Interior Finish*—porcelain enamel or stainless steel.

5.2.8 When specified, with a quick-disconnect gas supply, an approved quick disconnect (socket and plug) conforming to ANSI Z21.41, and a flexible metal connector conforming to ANSI Z21.45 and consisting of a male pipe thread fitting on one end and a union with female thread on the opposite end shall be provided with the convection oven.

5.2.9 When other than manufacturer's standard, commercial, domestic packaging is required, specify packaging requirements (13.1).

5.2.10 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 and/or test results shall be furnished to the purchaser.

5.2.11 When specified, additional accessories such as wire shelves, casters, oven stand, legs, wash-down hose assembly, and faucets shall be provided.

5.2.12 When specified, controls shall be waterproof.

#### 6. Material

##### 6.1 General:

6.1.1 Convection ovens shall conform to the applicable documents listed in section 2.2.

6.1.2 Materials used shall be free from defects, which would affect the performance or maintainability of individual components, or of the overall assembly.

6.1.3 Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice.

6.1.4 Use of used or rebuilt products is not allowed under this specification.

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

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

#### 7. Design and Construction

7.1 Type 1 and Type 2 shall be capable of being mounted on legs or stand.

7.2 *Electrical Characteristics*—All electric convection ovens shall be designed for operation on nominal voltage ratings, frequency and phases as specified by electrical class (4.3).