NSF International Standard / American National Standard

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Air Curtain for Entranceways for Food and Food Service Establishments
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NSF International Standard/
American National Standard
for Food Equipment –

Air curtains for entranceways in food
and food service establishments

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American National Standards Institute
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Foreword

The purpose of this Standard is to establish minimum public health and sanitation requirements for the materials, design, construction, and performance of air curtains for entranceways in food and food service establishments.

This Standard uses inch-pound units as the primary units with equivalent decimal and SI (metric) conversions provided in parentheses. The Joint Committee carried a motion that this convention be adopted in future revisions to this Standard.

Issue 6

Additions and revisions to sections three (definitions) and six (performance) were made.

This Standard was developed by the NSF Joint Committee on Food Equipment using the consensus process described by the American National Standards Institute.

Suggestions for improvement of this Standard are welcome. This Standard is maintained on a Continuous Maintenance schedule and can be opened for comment at any time. Comments should be sent to Chair, Joint Committee on Food Equipment at standards@nsf.org, or c/o NSF International, Standards Department, P.O. Box 130140, Ann Arbor, Michigan, 48113-0140, USA.

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NSF/ANSI International Standard
for Food Equipment —

Air curtains for entranceways in food
and food service establishments

1 General

1.1 Purpose

This Standard establishes minimum sanitation and performance requirements for the materials, design, construction, and performance of air curtains and their related components.

1.2 Scope

Equipment covered by this Standard includes, but is not limited to, air curtains for entranceways in food and food service establishments (e.g., service and customer entries, service windows, cooler and cold storage entries). Housing, air moving equipment, air directional regulating devices, and other appurtenances to the air curtain are included.

This Standard does not establish equipment installation requirements. While the requirements of this Standard are intended to ensure that equipment may be installed in a sanitary manner, proper installation of equipment shall be governed by the applicable codes.

Equipment components and materials covered under other NSF or NSF/ANSI Standards or Criteria shall also comply with the requirements therein. This Standard is not intended to restrict new unit design, provided that such design meets the minimum specifications described herein.

1.3 Alternative materials, design, and construction

While specific materials, design, and construction may be stipulated in this Standard, equipment that incorporates alternate materials, design, or construction may be acceptable when such equipment meets the applicable requirements herein.

1.4 Measurement

Decimal and SI conversions provided parenthetically shall be considered equivalent. Metric conversions and significant figure rounding have been made according to IEEE/ASTM SI 10.

2 Normative references

The following documents contain provisions that, through reference, constitute provisions of this NSF/ANSI Standard. At the time this Standard was balloted, the editions listed below were valid. All documents are subject to revision, and parties are encouraged to investigate the possibility of applying the recent editions of the documents indicated below. The most recent published edition of the document shall be used for undated references.
3 Definitions

3.1 air curtain: A device that delivers a vertical stream of air across an opening for the purpose of keeping tempered air from moving out of the building and insects from moving into the building.

3.2 air curtain protected openings:

3.2.1 customer entry: Exterior passage for entrance into an establishment primarily intended for customers

3.2.2 service entry: an exterior passage for entrance into an establishment primarily intended for employees and the delivery of supplies.

3.2.3 service window: an exterior opening in the wall of an establishment primarily intended to pass finished goods to customers.

3.3 airstream: The directed flow of air generated by an air curtain assembly.

3.4 airstream discharge nozzle: The slot from which the airstream exits the air curtain assembly.

3.5 maximum effective airstream height: Manufacturer specified value indicating the maximum height of the airstream in compliance with the applicable performance test protocol in section 6. This value is measured from the bottom of the airstream discharge nozzle.

3.6 maximum effective airstream width: Manufacturer specified value indicating the maximum width of the airstream in compliance with the applicable performance test protocol in section 6.

3.7 Other definitions: Other terms used in this Standard that have special technical meaning are defined in NSF/ANSI 170.

4 Materials

The requirements contained in this section are intended to ensure that the materials used in construction of equipment resist wear; penetration by vermin; and resist the effects of food, heat, refrigerants, cleaning compounds, sanitizers, and other substances that may contact the materials in the intended use environment.

4.1 Corrosion resistance

Exposed surfaces shall be corrosion resistant. Surfaces may be rendered corrosion resistant by the application of a coating or coatings. Coatings shall conform to the requirements in 4.3.
4.2 Smoothness and cleanability
Exposed surfaces shall be smooth and easily cleanable.

4.3 Coatings

4.3.1 Coatings containing lead as an intentional ingredient shall not be used. Coatings with an unintentional lead content (lead impurity) greater than 0.06% shall not be used.

4.3.2 Coatings shall resist cracking and chipping under use conditions.

4.4 Gaskets
Gaskets shall be made of resilient rubber, rubber-like materials, plastics, or a combination thereof.

5 Design and construction
This section contains design and construction requirements for equipment covered within the scope of this Standard.

5.1 General design and construction requirements

5.1.1 Sanitary design

5.1.1.1 Equipment shall be manufactured to prevent the harborage of vermin and the accumulation of dirt, debris, and moisture, and to permit the inspection, maintenance, servicing, and cleaning of the equipment and its components.

5.1.1.2 Exterior surfaces shall be easily cleanable. Interior surfaces of units subject to accumulation of soil shall be accessible for cleaning.

5.1.2 Joints and seams
Permanent joints and seams shall be closed. Joints formed by overlapping sheets of metal shall not create upwardly facing horizontal ledges (see figure 5).

5.1.3 Fasteners

5.1.3.1 Fasteners shall not have deep recesses in the head. Fasteners meeting this requirement include slot-head and Phillips-head screws, hex-head fasteners, and flush-break pop rivets. Non-flush break pop rivets shall be capped or filled. Allen head screws shall be capped or filled.

5.1.3.2 Fasteners shall be tight fitting to the surface.

5.1.3.3 No more than one locking washer and one flat washer shall be used per fastener head. The diameter of the washer adjacent to the fastening surface shall not be less than the diameter of the washer under the fastener head. External-tooth lock washers shall not be used.

5.1.3.4 There shall be no exposed threads, projecting screws, or studs on exterior surfaces. Exposed threads on electrical cord strain relief devices in a nonfood zone shall be exempt.
5.1.4 Reinforcing and framing

5.1.4.1 Exposed reinforcing and framing members and gussets shall be easily cleanable and manufactured to prevent the harborage of vermin (see figure 6).

5.1.4.2 Reinforcing and framing members and gussets shall not form ledges where debris may accumulate.

5.1.4.3 Vertical channels that form hollow sections shall be closed at each end, open at each end, or readily accessible along the entire channel. All other hollow sections shall be closed at each end.

5.1.5 Inspection and maintenance panels

Where necessary for equipment inspection and maintenance, removable panels of adequate size shall be provided. Each panel shall be sized to facilitate removal and replacement by one person.

5.1.6 Veneers

When applied to panels and equipment surfaces, veneers shall be permanently affixed. All air pockets and open spaces between veneer materials and equipment surfaces shall be eliminated.

5.1.7 Tracks and guides

5.1.7.1 Tracks and guides for doors, covers, and access panels shall be easily cleanable.

5.1.7.2 Tracks and guides shall:

- have clear open slots continuously or at intervals along their entire length; or
- have clean-out holes at each end; or
- terminate at least ½ in (0.50 in, 13 mm) short of framing at each end; or
- be integral with the equipment surface and have no square corners.

5.1.8 Equipment mounting

Equipment intended to be sealed to walls shall not create inaccessible cavities or areas that may be subject to soiling or vermin harborage.

5.1.9 Insulation

5.1.9.1 Insulation shall be installed so as to prevent it from separating, settling, or becoming compacted under use conditions.

5.1.9.2 Insulated space shall be closed and sealed to protect it from condensation, spills, and seepage. Tight fitting, readily removable plugs complying with material requirements may be used to seal off openings to insulated spaces.

5.2 Specific equipment design and construction

5.2.1 Fixed panels

Fixed panels shall be manufactured and fastened to minimize projections and openings.

5.2.2 Air directional controls

The air discharge opening shall be manufactured to permit the outward adjustment of the discharge air direction. Directional controls on air curtains shall be easily cleanable or readily removable. If directional
controls are readily removable, they shall be keyed so they will only fit the position from which they are to be removed.

### 5.2.3 Air velocity adjustment

Air curtains shall be manufactured to prevent adjustment of air velocities less than those required in 6, except as provided in 6.4.

### 5.2.4 Motors

Electrical motors shall be of a totally enclosed type or totally enclosed within a protective housing.

### 5.2.5 Air intake protection

Air intake openings shall be protected by a screen with openings that do not exceed the dimensions of \( \frac{3}{4} \) in (0.75 in, 19 mm) diamond-patterned expanded metal filter or other means provided to minimize entrance of foreign articles (e.g., paper) into the air moving equipment.

### 5.2.6 Filters

Readily removable filters shall be provided at the air intake inlet of air curtains for service windows.

### 6 Performance

#### 6.1 Service window air curtains

##### 6.1.1 Apparatus

- a thermal anemometer with an accuracy of:
  - \( \pm 3 \) ft/min (0.015 m/s) for readings from 30 to 100 ft/min (0.15 to 0.51 m/s); or
  - \( \pm 3\% \) for readings greater than 100 ft/min (0.51 m/s)

- the device shall be calibrated in accordance with the thermal anemometer manufacturer's instructions or in accordance with IEST-RP-CC-013 if instructions are not provided. When barometric pressure and air stream temperature (in the location where velocity readings are taken) deviate from standard conditions listed for the thermal anemometer being used, the manufacturer's manual for the thermal anemometer shall be consulted for the appropriate correction calculation;

- a rigid stand to which the thermal anemometer probe is attached, held in the proper position and does not significantly alter or interfere with the airstream;

- a plumb bob; and

- a rigid test stand that permits the air curtain to be mounted in accordance with the manufacturer's installation instructions. The test stand shall not interfere with the operation of the air curtain or the air stream.

##### 6.1.2 Test method

**6.1.2.1** The test shall be performed at an ambient temperature of \( 70 \pm 10 \) °F (21 ± 5 °C), with background air velocity not exceeding 30 ft/min (≤ 0.15 m/s) prior to operating the air curtain. The background air velocity shall be measured vertically and horizontally at the center of the first (lower) grid specified in section 6.1.2.2. The manufacturer shall specify the maximum height of the opening that the air curtain can operate in (maximum
6.1.2.2 On the floor, centered under the air curtain airstream discharge nozzle, a grid pattern shall be laid out that is 6.0 in (150 mm) deep. The grid shall begin 1.0 in (25 mm) from the edges of the manufacturer’s specified maximum effective airstream width for a service window opening. Four rows of points spaced 2.0 in (51 mm) apart shall be marked. Columns of points shall be evenly spaced from side to side, with spacing not exceeding 6.0 in (150 mm). A plumb bob shall be used to ensure that the grid pattern is centered from front to rear and side to side under the airstream discharge nozzle. Measurements on this grid shall be made in the plane 1/3 the distance of the vertical opening above the service window counter top. The service window lower test grid is shown in figures 1 and 2.

6.1.2.3 A second grid shall be used consisting of a single row of points, beginning 1.0 in (25 mm) from the edges of the manufacturer’s maximum specified service window width. Points shall be spaced an equal distance apart as close to but no greater than 6.0 in (150 mm). This grid shall be centered from front to rear and side to side directly under the airstream discharge nozzle. Measurements along this grid shall be made in the plane 10 in (250 mm) below the airstream discharge nozzle. The service window upper test grid is shown in figure 3.

6.1.2.4 The air curtain shall be turned on and allowed to stabilize for at least 3 min. If an air heating or cooling feature is present, it shall be turned off during all testing.

6.1.2.5 Measure and record the air velocity at each point on both grids with the anemometer time constant or averaging function set to a minimum of 15 seconds.

6.1.3 Acceptance criteria

6.1.3.1 When operated in accordance with the manufacturer’s instructions, the air velocities measured below the airstream discharge nozzle at one-third of the maximum effective airstream height on the grid specified in 6.1.2.2, shall meet the following criteria:

— each individual air velocity measurement shall be 400 ft/min (2.03 m/s) or greater, and
— the mean value of all air velocity measurements shall be of 600 ft/min (3.05 m/s) or greater.

6.1.3.2 When operated in accordance with the manufacturer’s instructions, the air velocities measured 10 in (250 mm) below the airstream discharge nozzle on the grid specified in 6.1.2.3, shall meet the following criteria:

— each individual air velocity measurement shall be 600 ft/min (3.05 m/s) or greater.

6.2 Customer entry air curtains

6.2.1 Apparatus

— a thermal anemometer with an accuracy of:

— ± 3 ft/min (0.015 m/s) for readings from 30 to 100 ft/min (0.15 to 0.51 m/s); or
— ± 3% for readings greater than 100 ft/min (0.51 m/s)

— the device shall be calibrated in accordance with the thermal anemometer manufacturer’s instructions or in accordance with IEST-RP-CC-013 if instructions are not provided. When barometric pressure and air stream temperature (in the location where velocity readings are taken) deviate from standard conditions listed for the thermal anemometer being used, correction factors from the manufacturer’s manual for the thermal anemometer shall be consulted for the appropriate correction calculation;
— a rigid stand to which the thermal anemometer probe is attached, held in the proper position and does not significantly alter or interfere with the airstream;

— a plumb bob; and

— a rigid test stand that permits the air curtain to be mounted in accordance with the manufacturer’s installation instructions. The test stand shall not interfere with the operation of the air curtain or the airstream.

6.2.2 Test method

6.2.2.1 The test shall be performed at an ambient temperature of 70 ± 10 °F (21 ± 5 °C), with background air velocity not exceeding 30 ft/min (≤ 0.15 m/s) prior to operating the air curtain. The background air velocity shall be measured vertically and horizontally at the center of the first (lower) grid specified in section 6.2.2.2. The manufacturer shall specify the maximum height of the opening that the air curtain can operate in (maximum effective airstream height). The distance between the floor and the top of the test opening shall be equal to the manufacturer’s maximum effective airstream height.

6.2.2.2 On the floor, centered under the air curtain airstream discharge nozzle, a grid pattern shall be laid out that is 6.0 in (150 mm) deep. The grid shall begin 1.0 in (25 mm) from the edges of the manufacturer’s specified maximum effective airstream width for a service window opening. Four rows of points spaced 2.0 in (51 mm) apart shall be marked. Columns of points shall be evenly spaced from side to side, with spacing not exceeding 6.0 in (150 mm). A plumb bob shall be used to ensure that the grid pattern is centered from front to rear and side to side under the airstream discharge nozzle. Measurements on this grid shall be made in the plane 1/3 the distance of the vertical opening above the service window counter top. The service window lower test grid is shown in figures 1 and 2.

6.2.2.3 A second grid shall be used consisting of a single row of points, beginning 1.0 in (25 mm) from the edges of the manufacturer’s maximum specified service window width. Points shall be spaced an equal distance apart as close to but no greater than 6.0 in (150 mm). This grid shall be centered from front to rear and side to side directly under the airstream discharge nozzle. Measurements along this grid shall be made in the plane 10 in (250 mm) below the airstream discharge nozzle. The service window upper test grid is shown in figure 3.

6.2.2.4 The air curtain shall be turned on and allowed to stabilize for at least 3 min. If an air heating or cooling feature is present, it shall be turned off during all testing.

6.2.2.5 Measure and record the air velocity at each point on both grids with the anemometer time constant or averaging function set to a minimum of 15 seconds.

6.2.3 Acceptance criteria

6.2.3.1 When operated in accordance with the manufacturer’s instructions, the air velocities measured below the airstream discharge nozzle at 3.0 ft (0.91 m) above the floor on the grid specified in 6.2.2.2, shall meet the following criteria:

— each individual air velocity measurement shall be 400 ft/min (2.03 m/s) or greater, and
— the mean value of all air velocity measurements shall be of 600 ft/min (3.05 m/s) or greater.

6.2.3.2 When operated in accordance with the manufacturer’s instructions, the air velocities measured 10 in (250 mm) below the airstream discharge nozzle on the grid specified in 6.2.2.3, shall meet the following criteria:

— each individual air velocity measurement shall be 600 ft/min (3.05 m/s) or greater.
6.3 Service entry air curtains

6.3.1 Apparatus

— a thermal anemometer with an accuracy of:
  — ± 3 ft/min (0.015 m/s) for readings from 30 to 100 ft/min (0.15 to 0.51 m/s); or
  — ± 3% for readings greater than 100 ft/min (0.51 m/s)

— the device shall be calibrated in accordance with the thermal anemometer manufacturer's instructions or in accordance with IEST-RP-CC-013 if instructions are not provided. When barometric pressure and air stream temperature (in the location where velocity readings are taken) deviate from standard conditions listed for the thermal anemometer being used, correction factors from the manufacturer's manual for the thermal anemometer shall be consulted for the appropriate correction calculation;

— a rigid stand to which the thermal anemometer probe is attached, held in the proper position and does not significantly alter or interfere with the airstream;

— a plumb bob; and

— a rigid test stand that permits the air curtain to be mounted in accordance with the manufacturer's installation instructions. The test stand shall not interfere with the operation of the air curtain or the airstream.

6.3.2 Test method

6.3.2.1 The test shall be performed at an ambient temperature of 70 ± 10 °F (21 ± 5 °C), with background air velocity not exceeding 30 ft/min (≤ 0.15 m/s) prior to operating the air curtain. The background air velocity shall be measured vertically and horizontally at the center of the first (lower) grid specified in section 6.3.2.2. The manufacturer shall specify the maximum height of the opening that the air curtain can operate in (maximum effective airstream height). The distance between the counter top and the top of the test opening shall be equal to the manufacturer’s maximum effective airstream height.

6.3.2.2 On the floor, centered under the air curtain airstream discharge nozzle, a grid pattern shall be laid out that is 3.0 in (76 mm) deep. The grid shall begin 1.0 in (25 mm) from the edges of the manufacturer’s specified maximum effective airstream width for a service entry opening. Two rows of points spaced 3.0 in (76 mm) apart shall be marked. Columns of points shall be evenly spaced from side to side, with spacing not exceeding 6.0 in (150 mm). A plumb bob shall be used to ensure that the grid pattern is centered from front to rear and side to side under the airstream discharge nozzle. Measurements on this grid shall be made in the plane 1/3 the distance of the vertical opening above the floor. The service entry lower test grid is shown in figure 4.

6.3.2.3 A second grid shall be used consisting of a single row of points, beginning 1.0 in (25 mm) from the edges of the manufacturer’s maximum specified service entry width. Points shall be spaced an equal distance apart as close to but no greater than 6.0 in (150 mm). This grid shall be centered from front to rear and side to side under the airstream discharge nozzle. Measurements along this grid shall be made in the plane 10 in (250 mm) below the airstream discharge nozzle. The service window upper test grid is shown in figure 3.

6.3.2.4 The air curtain shall be turned on and allowed to stabilize for at least 3 min. If an air heating or cooling feature is present, it shall be turned off during all testing.

6.3.2.5 Measure and record the air velocity at each point on both grids with the anemometer time constant or averaging function set to a minimum of 15 seconds.
6.3.3 Acceptance criteria

6.3.3.1 When operated in accordance with the manufacturer’s instructions, the air velocities measured below the airstream discharge nozzle at 3.0 ft (0.91 m) above the floor on the grid specified in 6.3.2.2, shall meet the following criteria:

— each individual air velocity measurement shall be 1200 ft/min (6.1 m/s) or greater, and
— the mean value of all air velocity measurements shall be of 1600 ft/min (8.1 m/s) or greater.

6.3.3.2 When operated in accordance with the manufacturer’s instructions, the air velocities measured 10 in (250 mm) below the airstream discharge nozzle on the grid specified in 6.3.2.3, shall meet the following criteria:

— each individual air velocity measurement shall be 1600 ft/min (8.1 m/s) or greater.

6.4 Automatic activation air curtain test

6.4.1 Performance requirement

When the air curtain is operated in accordance with the manufacturer’s instructions, an airflow shall begin within 2.0 s of activation. The airflow must match the air velocity requirements for the particular type of air curtain.

6.4.2 Apparatus

— a thermal anemometer with an accuracy of:
  — ± 3 ft/min (0.015 m/s) for readings from 30 to 100 ft/min (0.15 to 0.51 m/s); or
  — ± 3% for readings greater than 100 ft/min (0.51 m/s)

— the device shall be calibrated in accordance with the thermal anemometer manufacturer's instructions or in accordance with IEST-RP-CC-013 if instructions are not provided. When barometric pressure and air stream temperature (in the location where velocity readings are taken) deviate from standard conditions listed for the thermal anemometer being used, correction factors from the manufacturer's manual for the thermal anemometer shall be consulted for the appropriate correction calculation;

— a rigid stand to which the thermal anemometer probe is attached, held in the proper position and does not significantly alter or interfere with the airstream;

— a plumb bob; and

— a rigid test stand that permits the air curtain to be mounted in accordance with the manufacturer’s installation instructions. The test stand shall not interfere with the operation of the air curtain or the air stream.

6.4.3 Test method

6.4.3.1 The test shall be performed at an ambient temperature of 70 ± 10°F (21 ± 5°C), with background air velocity not exceeding 30 ft/min (≤ 0.15 m/s) prior to operating the air curtain. The background air velocity shall be measured vertically and horizontally at the center of the first (lower) grid specified in sections 6.1.2.2, 6.2.2.2, or 6.3.2.2, as applicable for the type of air curtain tested. The manufacturer shall specify the maximum height of the opening that the air curtain can operate in (maximum effective airstream height). The distance between the counter top or floor and the top of the test opening shall be equal to the manufacturer’s maximum effective airstream height.
6.4.3.2 The air curtain shall be turned on and allowed to stabilize for at least 3 min, then turned off. The air curtain shall then be triggered for automatic activation.

6.4.3.3 The thermal anemometer probe shall be placed at the center of the air curtain cross section at a distance that matches the height used for the particular air curtain type being tested. The anemometer time constant or averaging function shall be set to the shortest possible interval for this test. The air velocity activation time will be recorded.

6.4.4 Acceptance criteria

Within 2.0 s, the air curtain shall begin an airflow that, upon stabilization, will meet the minimum air velocity requirements specified in 6.1.3, 6.2.3, and 6.3.3.
Figure 1 - Service window and customer entry lower grid side view

(X = measurement points)
Figure 2 - Service window and customer entry lower grid plan view
(X = measurement points)

Air Curtain

Figure 3 - Service window, customer entry, and service entry upper grid side view
(X = measurement point)
7 Labeling

7.1 Product literature shall state the maximum design width and height of the opening to be protected.

7.2 The manufacturer of an air curtain shall specify the following on a permanently attached data plate:
   - manufacturer’s name and address; and
   - model number.
Figure 6 – Examples of acceptable reinforcing and framing
Annex A\textsuperscript{5} (informative)

A.1 Recommendations for installation

A.1.1 Air curtains for service windows and service entryways should be installed on the exterior (outside) of the window or entryway.

A.1.2 The air moving equipment on air curtains in service entryways should be interlocked with the entryway to ensure automatic activation of the motor when the door is opened.

A.1.3 Establishments using air curtains should maintain positive air pressure.

A.1.4 The air curtain or multiple unit installation shall be at least as wide as the opening to be protected.

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# Annex B

(Informative)

## Food Equipment Joint Committee

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Standards Development Liaison: Al Rose

Membership Balance:
- Industry: 10
- Regulatory: 10
- User: 10

\(^1\)Committee or task group chair

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6 The information contained in this Annex is not part of the American National Standard (ANS) and has not been processed in accordance with ANSI’s requirements for ANS. As such, this Annex may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

7 Food Equipment Joint Committee members on the date of publication - subject to change 7/10/2017
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The following standards established and adopted by NSF as minimum voluntary consensus standards are used internationally:

2 Food equipment
3 Commercial warewashing equipment
4 Commercial cooking, rethermalization, and powered hot food holding and transport equipment
5 Water heaters, hot water supply boilers, and heat recovery equipment
6 Dispensing freezers
7 Commercial refrigerators and freezers
8 Commercial powered food preparation equipment
12 Automatic ice making equipment
13 Plastics piping system components and related materials
18 Manual food and beverage dispensing equipment
20 Commercial bulk milk dispensing equipment
21 Thermoplastic refuse containers
24 Plumbing system components for recreational vehicles
25 Vending machines for food and beverages
29 Detergent and chemical feeders for commercial spray-type dishwashing machines
35 High pressure decorative laminates (HPDL) for surfacing food service equipment
36 Dinnerware
37 Air curtains for entranceways in food and food service establishments
40 Residential wastewater treatment systems
41 Non-liquid saturated treatment systems
42 Drinking water treatment units – Aesthetic effects
44 Residential cation exchange water softeners
46 Evaluation of components and devices used in wastewater treatment systems
49 Biosafety cabinetry: Design, construction, performance, and field certification
50 Equipment for swimming pools, spas, hot tubs, and other recreational water facilities
51 Food equipment materials
52 Supplemental flooring
53 Drinking water treatment units – Health effects
55 Ultraviolet microbiological water treatment systems
56 Reverse osmosis drinking water treatment systems
58 Mobile food carts
60 Drinking water treatment chemicals – Health effects
61 Drinking water system components – Health effects
62 Drinking water distillation systems
140 Sustainable carpet assessment
149 Special purpose food equipment and devices
170 Glossary of food equipment terminology
173 Dietary supplements
177 Shower filtration systems – Aesthetic effects
184 Residential dishwashers
222 Ozone generators
223 Conformity assessment requirements for certification bodies that certify products pursuant to NSF/ANSI 60: Drinking water treatment chemicals – health effects
240 Drainfield trench product sizing for gravity dispersal onsite wastewater treatment and dispersal systems
245 Wastewater treatment systems - nitrogen reduction
305 Personal care products containing organic ingredients
321 Goldenseal root (Hydrastis canadensis)
330 Glossary of drinking water treatment unit terminology
332 Sustainability assessment for resilient floor coverings
336 Sustainability assessment for commercial furnishings fabric
342 Sustainability assessment for wallcovering products
347 Sustainability assessment for single ply roofing membranes
350 Onsite residential and commercial water reuse treatment systems
350-1 Onsite residential and commercial greywater treatment systems for subsurface discharge
351 Greener chemicals and processes information
358-1 Polyethylene pipe and fittings for water-based ground-source “geothermal” heat pump systems
358-2 Polypropylene pipe and fittings for water-based ground-source “geothermal” heat pump systems
359 Valves for crosslinked polyethylene (PEX) water distribution tubing systems
360 Wastewater treatment systems – Field performance verification
363 Good Manufacturing Practices (GMP) for Pharmaceutical Excipients
372 Drinking water treatment system components – Lead content
401 Drinking water treatment units - Emerging compounds / incidental contaminants
416 Sustainability Assessment for Water Treatment Chemical Products
418 Residential wastewater effluent filters longevity testing
419 Public Drinking Water Equipment Performance – Filtration
41519-1 Hygiene requirements for the design of meat and poultry processing equipment
41519-2 Hygiene requirements for the design of hand held tools used in meat and poultry processing equipment
41519-3 Hygiene requirements for the design of mechanical belt conveyors used in meat and poultry processing equipment

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THE HOPE OF MANKIND rests in the ability of man to define and seek out the environment which will permit him to live with fellow creatures of the earth, in health, in peace, and in mutual respect.