



SECTION 08300 [08 34 00]

CLEANROOM DOORS

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manual Cleanroom Doors.
- B. Fire Rated Cleanroom Doors.
- C. Automatic Swing Cleanroom Doors.

D. Automatic Sliding Cleanroom Doors.

E. Roll-Up Doors and Windows.

1.2 RELATED SECTIONS

A. Section 05500 [05 50 00] - Metal Fabrications.

B. Section 07900 [07 92 00] - Joint Sealants.

C. Section 08580 [08 56 00] - Cleanroom Windows.

D. Section 08710 [08 71 00] - Door Hardware.

E. Section 13037 [13 20 00] - Cleanroom Pass Thru Chamber.

F. Section 13700 [28 10 00] - Cleanroom Access Control and Interconnecting devices.

G. 15860 [23 41 33] - Cleanroom Filtration.

H. Section 16123 [26 05 23] - Control Voltage Electrical Power Cables and conduit.

- I. Section 16200 [26 05 13] - Electrical Power, service conduit and distribution.

1.3 REFERENCES

- A. FS 209E – Cleanroom and Workstation Requirements, Controlled Environments.
- B. ISO 146744-1 - Cleanrooms and associated controlled environments—Part 1: Classification of air cleanliness
- C. UL (Underwriters Laboratories, Inc.) - Electrical Appliance and Utilization Equipment Directory.
- D. FDA/cGMP Requirements – 21 CFR Section 211 and Proposed Guidelines 21 CFR Section 212.
- E. UL - Building Materials Directory; Underwriters Laboratories Inc.
- F. WH - Certification Listings; Warnock Hersey International Inc.
- G. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

1.4 DESIGN REQUIREMENTS

- A. Fire Rated Doors and Frames:

1. Fire Rated Doors and Frames: Provide ratings as indicated on Drawings, when tested in accordance with NFPA 252 or UL 10C and Labeled by UL, WH, or other agency acceptable to the authority having jurisdiction.

1.5 PERFORMANCE REQUIREMENTS

- A. Cleanroom Doors shall be capable of maintaining the following cleanroom performance requirements when installed as follows.
 1. Capable of maintaining Class 100 to 10,000 (ISO 5 to ISO 8) conditions in accordance with FS 209E and ISO 146744-1.
 2. Capable of meeting validation requirements of FDA/cGMP and the following requirements.
 - a. Nonviability Particle Count: Maximum of 10,000 per cf, 0.5 micron or larger measured 6 inches above work surface (Class 10,000/ISO 7). Other permissible counts accord with nominal cleanliness rating (1000 per cf. for ISO 6, 100 per cf. for ISO 5).
 - b. Viable Count: Less than 1.5 colony forming units per 10 cubic feet. Other permissible counts in accord with nominal cleanliness rating.
 3. Capable of maintaining a passive pressure differential of:
 - a. Area outside room: balance condition
 - b. Air lock: 0.05 inch w.g.
 - c. Cleanroom: 0.1 inch w.g.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and finish.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in the manufacture of products specified in this section with minimum 10 years documented experience.
- B. Installer Qualifications: Company specializing in performing work of this section with minimum 5 years documented experience.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Locate where designated by Architect.
 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 3. Refinish mock-up area as required to produce acceptable work.
 4. Accepted mock-ups shall be comparison standard for remaining Work

- D. Preinstallation Meetings: Conduct meeting to verify project requirements, substrate conditions, utility connections, manufacturer's installation instructions.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Mark products with Architect's opening number on all doors, frames, misc. parts and cartons
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Do not deliver materials or assemblies to site until installation spaces are ready to receive units.

1.9 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Terra Universal, Inc.; 800 S. Raymond Ave., Fullerton, CA 92381-5234. ASD. Phone: 714-578-6000. Fax: 714-578-6020. Web Site: www.TerraUniversal.com. Email: info@TerraUniversal.com.

- B. Substitutions: Not permitted.

- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MANUAL CLEANROOM DOORS

- A. General: Provide doors and frames of the material specified with swing as indicated on the Drawings. Swing doors that are either Left Hand Reverse (LHR) or Right Hand Reverse (RHR) when viewed from outside the cleanroom (dirty side) minimize particulate impact on cleanroom when door opens. For a swing into the cleanroom, either door can be mounted on the opposing jamb.

- B. Aluminum Framed Manual Swing Doors:
 - 1. Features:
 - a. Includes frame of the material specified to allow easy mounting
 - b. Includes concealed mechanical door closer
 - c. For use in positive or negative pressure cleanrooms where air movement is acceptable. Doors are not hermetically sealed and not intended for exposure to biohazards, chemicals, or nauseating odors.

 - 2. Type/Size:
 - a. Single Door: 36 inches W by 81 inches H (914 mm by 2057 mm).

- b. Double Door: 72 inches W by 81 inches H (1829 mm by 2057 mm).
- 3. Glazing:
 - a. Acrylic
 - b. Static-Dissipative PVC
 - c. Polypropylene
 - d. Polycarbonate
 - e. Tempered Glass
- 4. Finish:
 - a. Powder coated.
- 5. Door Closer:
 - a. Concealed mechanical door closer.

C. Aluminum Framed Manual Sliding Doors:

- 1. Features:
 - a. Door slides open along an extruded aluminum track
 - b. Includes frame of the material specified to allow easy mounting
 - c. For use in positive or negative pressure cleanrooms where air movement is acceptable. Doors are not hermetically sealed and not intended for exposure to biohazards, chemicals, or nauseating odors.
- 2. Type/Size:
 - a. Door slides open along an extruded aluminum track to an opening of 36 inches (914 mm). Requires two 4 foot (1219 mm) panels for installation.
 - b. Standard model slides open from left to the right side. Overall dimensions: 40 inches W by 82 inches H (1016 mm by 2083 mm).
- 3. Glazing:

- a. Acrylic
 - b. Static-Dissipative PVC
 - c. Polypropylene
 - d. Polycarbonate
 - e. Tempered Glass
4. Finish:
- a. Powder coated.

D. Partial Seam Weld Stainless Steel Framed Manual Swing Doors:

1. Features:
- a. Includes frame of the material specified to allow easy mounting
 - b. Dual-pane, flush-mount window design minimizes horizontal surfaces and crevices where contaminants can collect.
 - c. 304 stainless steel (Stands up to common disinfectants)
 - d. 316L stainless steel
 - e. Door frame includes external mount door closer
 - f. For use in positive or negative pressure cleanrooms where air movement is acceptable. Doors are not hermetically sealed and not intended for exposure to biohazards, chemicals, or nauseating odors.
2. Type/Size:
- a. Single Door: 36 inches W by 81 inches H (914 mm by 2057 mm).
 - b. Double Door: 72 inches W by 81 inches H (1829 mm by 2057 mm).
3. Viewing Window Size:
- a. Full View: 30 inches W by 66 inches H (762 mm by 1676 mm)
 - b. Partial View: 30 inches W by 30 inches H (762 mm by 762 mm)

4. Glazing:
 - a. Tempered Glass
 - b. Static-Dissipative PVC
 5. Finish:
 - a. Brush-finish, partial seam welded.
 6. Door Closer:
 - a. Concealed mechanical door closer.
- E. BioSafe Continuous-Seam Weld Stainless Steel Framed Manual Swing Doors
1. Features:
 - a. Continuous-seam welds eliminate cracks and crevices for easy cleaning and sterilization
 - b. Includes frame of the material specified to allow easy mounting
 - c. Dual-pane, flush-mount window design minimizes horizontal surfaces and crevices where contaminants can collect.
 - d. Dual-pane, flush-mount window design minimizes horizontal surfaces and crevices where contaminants can collect.
 - e. 304 stainless steel (Stands up to common disinfectants)
 - f. 316L stainless steel
 - g. Door frame includes built in door closer
 2. Type/Size:
 - a. Single Door: 36 inches W by 81 inches H (914 mm by 2057 mm).
 - b. Double Door: 72 inches W by 81 inches H (1829 mm by 2057 mm).
 3. Viewing Window Size:
 - a. Full View: 30 inches W by 66 inches H (762 mm by 1676 mm)
 - b. Partial View: 30 inches W by 30 inches H (762 mm by 762 mm)

4. Glazing:
 - a. Tempered Glass
5. Finish:
 - a. Brush-finish 304 stainless steel, continuous-seam welds
6. Door Closer
 - a. External mount mechanical door closer

2.3 FIRE RATED CLEANROOM DOORS

- A. Fire-Rated Cleanroom Doors: Provide to the swing indicated on Drawings.
 1. Features:
 - a. Door/frame fabricated of 16 gauge steel and finished with white powder-coated steel.
 - b. Doors thermally insulated with honeycomb core.
 - c. Door are provided complete with frame and lock prep. Hinges, closer and lock mechanism are not included.
 - d. Vision panel windows are available for single doors only and are UL and ANSI rated for fire and impact-rated safety windows. Windows are wired glass 1/4 inch thick with a surface-applied fire-rated laminate. Windows are held in place using non-contaminating silicone caulk.
 - e. Cylindrical lock prep is government 161 with 2-3/4 inch backset. The 86 mortise lock prep has a 2-3/4 inch backset trim cutout.
 - f. For use in positive or negative pressure cleanrooms where air movement is acceptable. Doors are not hermetically sealed and not intended for exposure to biohazards, chemicals, or nauseating odors.
 2. Single Doors with Cylindrical Lock-Prep, 1-3/4 inches thick (197 mm)

- a. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: None. Rating: 3 hours
 - b. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: 10 inches W by 10 inches H (254 mm by 254 mm) . Rating: 90 minutes
 - c. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: 6 inches W by 36 inches H (152 mm by 914 mm) . Rating: 90 minutes
 - d. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: 22 inches W by 24 inches H (559 mm by 610 mm) . Rating: 45 minutes
 - e. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: None. Rating: 3 hours
 - f. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: 10 inches W by 10 inches H (254 mm by 254 mm) . Rating: 90 minutes
 - g. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: 6 inches W by 36 inches H (152 mm by 914 mm) . Rating: 90 minutes
 - h. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: 22 inches W by 24 inches H (559 mm by 610 mm) . Rating: 45 minutes
3. Single Doors with Mortise Lock-Prep, 1-3/4 inches thick (197 mm)
- a. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: None. Rating: 3 hours
 - b. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: 10 inches W by 10 inches H (254 mm by 254 mm) . Rating: 90 minutes
 - c. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: 6 inches W by 36 inches H (152 mm by 914 mm) . Rating: 90 minutes
 - d. 32 inches W by 80 inches H (813 mm by 2032 mm). Vision Panel: 22 inches W by 24 inches H (559 mm by 610 mm) . Rating: 45 minutes

- e. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: None. Rating: 3 hours
 - f. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: 10 inches W by 10 inches H (254 mm by 254 mm) . Rating: 90 minutes
 - g. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: 6 inches W by 36 inches H (152 mm by 914 mm) . Rating: 90 minutes
 - h. 36 inches W by 80 inches H (914 mm by 2032 mm). Vision Panel: 22 inches W by 24 inches H (559 mm by 610 mm) . Rating: 45 minutes
4. Double Doors with Cylindrical Lock-Prep, 1-3/4 inches thick (197 mm)
- a. 72 inches W by 80 inches H (1829 mm by 2032 mm). Vision Panel: None. Rating: 3 hours
5. Finish:
- a. Powder-coated steel

2.4 AUTOMATIC SWING CLEANROOM DOORS.

A. Automatic Swing Cleanroom Doors:

- 1. Standard Features:
 - a. Provided pre-hung on specified frame, ready to install with concealed pneumatic closing mechanism and door stop
 - b. Automatic swing doors for use in positive or negative pressure cleanrooms where air movement is acceptable. Doors are not hermetically sealed and not intended for exposure to biohazards, chemicals, or nauseating odors.
 - c. Whisper-quiet operation
 - d. Hands-free operation with motion sensor and sensor pad
 - e. Pull side track mount

- f. Advanced power assist during opening cycle; minimal effort when operated manually
- g. Precise controlled opening and closing speeds
- h. Blow-open feature for smoke ventilation (per NFPA 92B)
- i. Onboard power supply eliminates need for secondary power supply
- j. Twelve Programmable Options satisfy simple and complex door installations
- k. ADA compliant; ideal for persons carrying objects or pushing carts
- l. For use in positive or negative pressure cleanrooms where air movement is acceptable. Doors are not hermetically sealed and not intended for exposure to biohazards, chemicals, or nauseating odors.

B. Aluminum Framed Automatic Swing Doors:

- 1. Type/Size:
 - a. Single Door: 36 inches W by 81 inches H (914 mm by 2057 mm).
 - b. Double Door: 72 inches W by 81 inches H (1829 mm by 2057 mm).
- 2. Glazing:
 - a. Static-Dissipative PVC
 - b. Polycarbonate
 - c. Tempered Glass
- 3. Finish:
 - a. Powder coated

C. Stainless Steel Partial-Seam Weld Automatic Swing Doors:

- 1. Features:

- a. Dual-pane, flush-mount window design minimizes horizontal surfaces and crevices where contaminants can collect.
 - 2. Type/Size:
 - a. Single Door: 36 inches W by 81 inches H (914 mm by 2057 mm).
 - b. Double Door: 72 inches W by 81 inches H (1829 mm by 2057 mm).
 - 3. Glazing:
 - a. Static-Dissipative PVC
 - b. Tempered Glass
 - 4. Finish:
 - a. Brush-finish 304 stainless steel, partial-seam welds
- D. BioSafe Stainless Steel Continuous-Seam Weld Automatic Swing Doors:
- 1. Features:
 - a. Continuous-seam welds eliminate cracks and crevices for easy cleaning and sterilization
 - b. Dual-pane, flush-mount window design minimizes horizontal surfaces and crevices where contaminants can collect.
 - 2. Type/Size:
 - a. Single Door: 36 inches W by 81 inches H (914 mm by 2057 mm).
 - b. Double Door: 72 inches W by 81 inches H (1829 mm by 2057 mm).
 - 3. Glazing:
 - a. Tempered Glass
 - 4. Finish:
 - a. Brush-finish 304 stainless steel, continuous-seam welds

2.5 AUTOMATIC SLIDING CLEANROOM DOORS

A. Automatic Sliding Cleanroom Doors:

1. Standard Features:

- a. Touchless motion door pad for hands-free operation
- b. Elastomeric door seals and fiberglass reinforced timing belt ensures cleanliness, durability and uniform closing
- c. Microprocessor controller continually monitors door position with adjustable opening and closing speed, distance and speed of braking reduces opening and time delay
- d. Auto reverse on obstruction; slow speed search for obstruction
- e. Load-bearing wheels of cast urethane for long-lasting, smooth and trouble-free operation
- f. Adjustable anti-riser wheels lock each door in its overhead track
- g. Pre-assembled header and panel sub-assemblies
- h. ANSI compliant
- i. Custom sizes and configurations are available.
- j. For use in positive or negative pressure cleanrooms where air movement is acceptable. Doors are not hermetically sealed and not intended for exposure to biohazards, chemicals, or nauseating odors.

B. Aluminum Framed External Mount Automatic Sliding Doors:

1. Standard Features

- a. Door track is mounted externally to wall surface
- b. Well suited for retrofit construction and easy installation where a large opening is not possible for recessed door frames

2. Type/Size:

- a. Single Door: 34 inches W by 80 inches H

- b. Single Door: 40 inches W by 80 inches H
 - c. Single Door: 46 inches W by 80 inches H
 - d. Double Door: 60 inches W by 80 inches H
 - e. Double Door: 80 inches W by 80 inches H
3. Glazing:
- a. Static-Dissipative PVC
 - b. Tempered Glass
4. Finish:
- a. Powder coated

C. Aluminum Framed Recessed Mount Automatic Sliding Doors

1. Standard Features
- a. Includes frame of the material specified to allow easy mounting
 - b. Frame and track are installed inside existing wall cutout/partition
 - c. Well suited for room partitions or openings larger than desired door size; can be configured to include side lights for additional visibility
2. Type/Size:
- a. Single Door: 34 inches W by 80 inches H
 - b. Single Door: 40 inches W by 80 inches H
 - c. Single Door: 46 inches W by 80 inches H
 - d. Double Door: 60 inches W by 80 inches H
 - e. Double Door: 80 inches W by 80 inches H
3. Glazing:
- a. Static-Dissipative PVC

- b. Tempered Glass
4. Finish:
- a. Powder coated

D. Stainless Steel Framed External Mount Automatic Sliding Doors:

- 1. Standard Features
 - a. Door track is mounted externally to wall surface
 - b. Well suited for retrofit construction and easy installation where a large opening is not possible for recessed door frames
- 2. Type/Size:
 - a. Single Door: 34 inches W by 80 inches H
 - b. Single Door: 40 inches W by 80 inches H
 - c. Single Door: 46 inches W by 80 inches H
 - d. Double Door: 60 inches W by 80 inches H
 - e. Double Door: 80 inches W by 80 inches H
- 3. Glazing:
 - a. Static-Dissipative PVC
 - b. Tempered Glass
- 4. Finish:
 - a. Brush-finish 304 stainless steel, partial-seam welds

E. Stainless Steel Framed Recessed Mount Automatic Sliding Doors

- 1. Standard Features
 - a. Includes frame of the material specified to allow easy mounting
 - b. Frame and track are installed inside existing wall cutout/partition

- c. Well suited for room partitions or openings larger than desired door size; can be configured to include side lights for additional visibility
- 2. Type/Size:
 - a. Single Door: 34 inches W by 80 inches H
 - b. Single Door: 40 inches W by 80 inches H
 - c. Single Door: 46 inches W by 80 inches H
 - d. Double Door: 60 inches W by 80 inches H
 - e. Double Door: 80 inches W by 80 inches H
- 3. Glazing:
 - a. Tempered Glass
- 4. Finish:
 - a. Brush-finish 304 stainless steel, partial-seam welds

2.6 ROLL-UP DOORS AND WINDOWS

- A. Roll-Up Doors and Windows:
 - 1. Standard Features:
 - a. Segmented roll-up access doors, powder-coated insulated aluminum.
 - b. Powered door with bi-directional motor and disk brake.
 - c. Doors roll into a stainless steel housing at the top of the unit.
 - d. Touch panel buttons are easy to operate and respond to gloved fingertips.
 - e. Electronic key-switch interlock.
 - f. Safety circuit to stops door motion if path is obstructed.

- g. Lock-down function closes the door and emits an audible alarm until lock-down is deactivated
 - h. Frame and door/motor housings are constructed of 304-stainless steel for durability and cleanability
 - i. LED logo glows to indicate the unit is receiving power and flashes when the lockdown or the emergency stop function has been activated
 - j. Speed: 4 inches per second
 - k. 6 cycles per hour
 - l. Power Requirements: 120VAC, 60Hz.
2. Roll-Up Door Models: Floor Mount
- a. Inside Clearance: 31 inches W by 63 inches H (737 mm W by 1600 mm H) for 5.125 inch (130 mm) wall thickness Cat. # 1999-01.
 - b. Inside Clearance: 52.75 inches W by 66.75 inches H (1340 mm W by 1695 mm H) for 5.125 inch (130 mm) wall thickness Cat. # 1999-02.
 - c. Inside Clearance: 69 inches W by 72.5 inches H (1753 mm W by 1842 mm H) for 5.125 inch (130 mm) wall thickness Cat. # 1999-02.
3. Roll-Up Window Models: Wall Mount
- a. Inside Clearance: 31 inches W by 63 inches H (787 mm W by 1600 mm H) for 5.125 inch (130 mm) wall thickness Cat. # 1999-00.
 - b. Inside Clearance: 33 inches W by 37 inches H (849 mm W by 940 mm H) for 5.125 inch (130 mm) wall thickness Cat. # 1999-10.

PART 3 EXECUTION

- A. Do not begin installation until window openings and substrates have been properly prepared.
- B. Verify exact location of clean room doors for installation.
- C. Verify that rough openings and surfaces are ready to receive work.
- D. If opening and substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Provide templates and rough-in measurements as required.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install doors, plumb and level. Seal the perimeter of both sides of the opening as required.

3.4 ADJUST AND CLEAN

- A. Adjust doors for proper operation, free from binding or other defects.

- B. Clean and restore soiled surfaces. Remove scraps and debris and leave site in a clean condition.

3.5 PROTECTION

- A. Protect installed products until completion of project.

- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 SCHEDULES

A. :

- 1.
- 2.
- 3.

B. :

- 1.
- 2.
- 3.

END OF SECTION

08300-23