

Clean/Sterile Room Applications – Guidelines for Specifying Horton Automatics Slide & Swing Door Systems

The word “clean room” has many different meanings. The following is provided to associate the proper definition with the appropriate slide door product.

For guidance please contact either Frank Mobbs or Horton Marketing whenever a project involves clean room operators.

“ Class” rating applies to polluting particles emitted by the sliding door. There are two classification standards: an old one (US Federal, now expired) and a new one (ISO). ISO is the standard that should be used for all current specifications (chart attached).

Clean Room Classifications

ISO Class*	Maximum Particles per Cubic Meter (by size μm)						Federal Standard 209E
	$\geq 0.1 \mu\text{m}$	$\geq 0.2 \mu\text{m}$	$\geq 0.3 \mu\text{m}$	$\geq 0.5 \mu\text{m}$	$\geq 1 \mu\text{m}$	$\geq 5 \mu\text{m}$	
ISO 1	10	2					
ISO 2	100	24	10	4			
ISO 3	1,000	237	102	35	8		Class 1
ISO 4	10,000	2,370	1,020	352	83		Class 10
ISO 5	100,000	23,700	10,200	3,520	832	29	Class 100
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293	Class 1000
ISO 7				352,000	83,200	2,930	Class 10,000
ISO 8				3,520,000	832,000	29,300	Class 100,000
ISO 9				35,200,000	8,320,000	293,000	Room Air

* ISO 1466-1 Cleanroom Standards

Note: The US Federal Standard 209E was officially cancelled by the General Services Administration (US Department of Commerce) on November 29, 2001. However, this standard is still widely referenced.

Note that Horton Automatics is in the process of improving and expanding the available information and products to address this clean /sterile room market segment. There are essentially **five categories for clean/sterile room doors**:

Category 1 - Low Particulate clean room (slide): The objective is to minimize particles released in to the air. The appropriate slider for this application would be our “UltraClean Atmospheric I” with 2000 linear drive, sealed motor, sloped stops, all vinyl weather-stripping. Door panels can be clear anodized or stainless clad. **This unit satisfies up to ISO Class 3.** [NOTHING satisfies ISO Class 1 or 2, NOTHING]

Applications: Electronics manufacturing, micro chip production

Category 2 - Moderate Particulate clean room (slide): Same as above but less strict on the particle count. The appropriate slider for this application would still be our “UltraClean Atmospheric II” with

2000B belt drive. A standard construction unit is sufficient (sealed motor not req'd). Door panels can be clear anodized or stainless clad. **This unit satisfies up to ISO Class 5.**

IMPORTANT: Many clean/sterile room applications are not concerned with polluting particles and an ISO rating is not applicable. Rather, they need a door system appropriate for a clean or sterile environment or, perhaps as an entry to a sterile area. Our standard aluminum frame slide door system (type 2000, 2001, 2003) is appropriate...but with sloped stops & vinyl weather-stripping. Door panels might be anodized, painted, clad.

Applications: Hospital labs, pharmaceutical labs, sterile manufacturing/processing or cleanroom air shower entry

Category 3 - Moderate Particulate clean room (swing): Same as above but using a 7100 or 4100 swing operator...door & frame by other. Currently there is no ISO Class rating for this product.

Applications: Hospital labs, pharmaceutical labs, sterile manufacturing/processing or cleanroom air shower entry

Category 4 – Sterile/Wash Down clean room (slide): For a sterile area the appropriate slider would be our 2001 “UltraClean Sterile”. This unit is designed for wash down, routine cleaning. Eliminates glass stops, i.e., seams that might harbor contaminants. This unit is also appropriate for areas involving corrosive liquids, again requiring wash down. Door panels are flush stainless steel or FRP construction or all glass (Elegant). The ISO Class rating is generally not applicable.

Applications: Pharmaceutical production, food preparation, sterile laboratory

Category 5 – AIIR Isolation Door System (IDS): Our standard ICU products have applications outside the healthcare environment. Appropriate products are:

- ICU Profiler Series 2000-IDS automatic slide door, trackless (ISO Class3 w/ Linear & sealed motor; ISO Class 4.5 w/ 2000B belt drive & no sealed motor)
- ICU Profiler Self-Closing –IDS manual slide door, trackless
- ICU equal/unequal swing pair w/ & w/o hydraulic door closer or 7100/4100 operator

Applications: Healthcare isolation rooms, environmental containment rooms, negative/positive pressure labs (ISO standards do not apply)

Example: Harvard Univ insect study lab with ICU 2-panel Profiler trackless w/ self-closing

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