

Stability Studies

Percival® model FR-41NL

Applications

- Designed for rigorous compliance with ICH Q1A(R2) and ICH Q5C guidelines, this stability chamber operates across a wide subzero to ambient temperature range of -25°C to +30°C, with temperature control to ±0.5°C during regular operation (excluding defrost). The chamber delivers precise long-term stability at the mandatory -20°C frozen storage condition required for API and finished drug product shelf-life determination, with daily programmable defrost cycle spikes limited to +5°C above setpoint and lasting no longer than 10 minutes. Additionally, its dynamic temperature ramp capability enables automated, repeatable freeze-thaw thermal cycling between subzero temperatures (down to -25°C) and ambient conditions (up to +30°C), allowing pharmaceutical manufacturers and biologics developers to rigorously evaluate physical degradation, protein aggregation, phase separation and container-closure integrity under simulated excursion, transport and stress conditions without transferring product to separate units.

IntellusUltra Controller

The IntellusUltra (C8) control system adapts to nearly any programming style with a large range of options for optimal control over experiments.

- Robust and reliable, industrial-grade integrated hardware design
- Highly flexible programming capabilities for customized configurations and expansion
- Precise, simultaneous control of up to 7 environmental parameters
- Industry-leading experiment protection and system diagnostics

Cabinet Construction

- Interior constructed of 24-gauge #304-4 stainless steel
- 24-gauge smooth white galvanized exterior
- NSF-compliant seam design
- Overall wall thickness is 2" (5.1 cm)
- One 1.25" access port on right-hand wall with air-tight plug
- Integrated floor drain
- Contains casters assembly and adjustable leveling legs



Insulation

- Construction using 2" high-grade materials, such as closed-cell and non-CFC Urethane insulation

Door

- One door opening 36.8" x 57.5" (93.3 cm x 146.1 cm) provides full access to the chamber interior
- Magnetic gasket provides a tight seal to door frame

Interior Space

- 37.2 ft³ (1.1 m³) with work area of 40.8 ft² (3.8 m²) provided on six tiers

FR-41NL specifications (subject to change without notice)

Temp Range with all lights on	Interior Space volume		Total Shelving Floor Area		Maximum Growing Height		Exterior Dimensions						Tiers
							width		depth		height		
°C	ft³	m³	ft²	m²	in	cm	in	cm	in	cm	in	cm	
-25-30±0.5	37.2	1.1	40.8	3.8	8	20.3	41	104.1	33.6	85.4	77.2	196.1	6

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Shelving

- Six tiers of stainless steel wire shelving (each shelf is 27"D x 36.3"W [68.6 cm x 92.2 cm])
- Shelves are supported by shelf clips allowing ½" vertical adjustments
- Maximum clearance between shelves is 8" (20.3 cm) per tier with all six shelves installed

Finish

- Interior is stainless steel
- Exterior painted with highly reflective, environmentally friendly, high-temperature baked white powder coating

Refrigeration

- Self-contained air-cooled condensing unit with hot gas bypass system (continuous running condensing unit ensures precise temperature control by alternately cycling refrigerant and hot gas to coil; this also prolongs life of compressor and eliminates risk of ice buildup in coil)
- Top-mounted refrigeration system allows easy access for maintenance and cleaning
- As heat is rejected, it rises and is dissipated into room without having any effect on inside temperature of cabinet
- Extended stem solenoid valves for quiet and long life operation
- Ceiling-mounted evaporator coils incorporate dual air circulation fans in aluminum housing
- Heat rejection to ambient (standard chamber) = 2,410 BTU/hr
- Utilizes A2L refrigerant R-454C, in compliance with current EPA regulations and the Kigali Amendment to the Montreal Protocol for low-GWP refrigerant transition
- One daily defrost cycle: temperature spike during defrost not to exceed +5°C above the -20°C±5°C setpoint and not to exceed 10 minutes in duration

Temperature Range

- -25° to +30°C (±0.5°C)

Temperature Safety Limit Controls

- Experiment protection (adjustable high/low temperature control, audible alarms and visual indicators)
- Controls shut down all power to the chamber, activating alarms
- System automatically resets when temperature returns to normal range

Options (most popular)

- Coated coils (required for Drosophila research) (Q9)
- Internal plexiglass doors
- IntellusUltra Connect (C9)
- IntellusUltra Connect and Android-based touchscreen (C9T)
- IntellusUltra (standard) and Android-based touchscreen (C8T)
- Door with observation window and cover (Q2)
- Door with fresh air ports (Q1)
- Self-contained water-cooled condensing unit
- Dry alarm contacts
- LED working light (Q24)
- Convenience receptacles
- Slideable shelves
- White powder coated painted steel interior in place of stainless (price deduction)
- Humidity control (contact Percival Scientific with requirements)
Contact info@percival-scientific.com for additional information.

Electrical Service Requirements

- 120/1/60 with NEMA 5-20P plug provided (with standard chamber) RLA=12.6A (MCA=16A)

Helping You Create Better Science

Percival Scientific controlled environment systems are the culmination of over 60 years of design and manufacturing experience. We developed our high-quality products through direct partnerships within the scientific community. Our controlled environments are known for their customizable designs and superior, long-lasting performance. Creativity, passion, technical expertise and attention to detail drive our scientific innovation, and we are proud to help you create better science.



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