PHCbi

Life Science Innovator Since 1966

Model MDF-C2156VANC-PA, 8.2 cu.ft. (231 L) air phase storage volume.

The Refrigeration Spectrum

Ultra-low Temperature Freezer	-50°C to -86°C
Recrystallization Point of Water	-130°C
Cryogenic Freezer, Mechanically Refrigerated, Air Phase	-150°C
Cryogenic Freezer, Liquid Nitrogen, Vapor Phase	-100°C to -196°C
Cryogenic Freezer, Liquid Nitrogen, Liquid Phase	-196°C

The Benefits of Air Phase Cryogenic Storage at -150°C

The PHCbi brand mechanically refrigerated cryogenic freezer uses a reliable, high performance, hybrid cascade refrigeration system designed to achieve cryogenic temperature of -150°C. This freezer does not use LN_2 as a primary cooling medium, but includes a provision for connection to a facility LN_2 supply to assure vapor phase backup if needed.

At or below the -130°C glass transition temperature of water, metabolic activity in the cell is suspended indefinitely and viability of properly prepared cell cultures is protected.[1] Previously, liquid nitrogen offered the only method of cryogenic storage either in liquid (liquid phase) or liquid nitrogen vapor (vapor phase). With mechanical refrigeration, a more efficient storage medium known as “air phase” offers a more economical alternative to liquid nitrogen-based systems, with built-in redundancy safeguards for the ultimate in safe cryogenic preservation.

[1)] ASHRAE Handbook, Applications, ©1978, American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc, Chapter 53, Biomedical Applications.

Model MDF-C2156VANC-PA Features

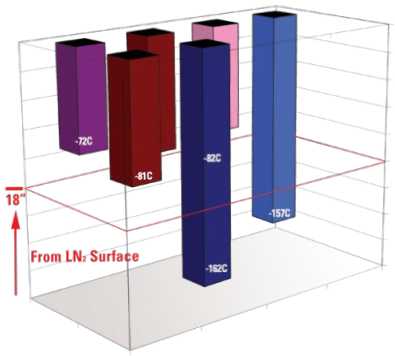
- Creates reproducible temperature storage at any location within the chamber
- Factory configured to use standard LN_2 back-up system
- Inventory flexibility; uses conventional chest freezer inventory boxes and racks
- Chest design with sub-lids minimizes cold air loss during lid openings
- VIP® Plus vacuum insulation protects load, protects against high ambient temperatures
- Graphic LCD control panel with pop-up menus provides a visual display of operating data, predictive analytics, status reminders, data capture, storage and communication
- Comprehensive audible and visual alarms for high/low temperature, power, filter, lid, diagnostics

Benefits of Mechanical Cryopreservation

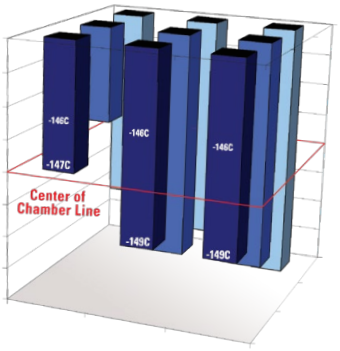
- Tight uniformity at -150°C, ±5°C
- Minimizes consumption of LN_2 where greater than 3% loss per day is typical
- Reduces the LN_2 handling safety hazard
- Lowers total costs of ownership, reduces global energy costs of LN_2 production to help meet facility sustainability objectives
- Eliminates cross contamination potential of liquid phase storage

Model MDF-C2156VANC-PA
(mechanically refrigerated cryogenic freezer)

Uniformity of specimen temperature is a critical feature of the MDF-C2156VANC-PA cryogenic freezer. Representative profile. Actual data available upon request.



Liquid Nitrogen Freezer, Uniformity Gradient Potential
(vapor phase)



PHCbi Brand Cryogenic Freezer Uniformity Performance
(mechanically refrigerated cryogenic freezer)

Model Number		MDF-C2156VANC-PA
External Dimensions (W × D × H)	inches | mm	68.1 × 30.1 × 39.8 | 1730 × 765 × 1010
Internal Dimensions (W × D × H)	inches | mm	29.9 × 19.5 × 24.2 | 760 × 495 × 615
Capacity (2" cardboard boxes), Vertical Racks	qty	165
Capacity (2" plastic boxes), Vertical Racks	qty	150
Capacity (3" plastic boxes), Vertical Racks	qty	105
Net Weight, Empty	lbs. | kg	716 | 325
Control		
Controller		Microprocessor, touchscreen data entry, password protected
Display		LCD color touchscreen
Refrigeration		
Temperature Range		-125°C to -152°C
Refrigeration System		CFC free refrigerants
Construction		
Access Port		1.5"
Electrical		208/230V, AC, 60 Hz, 1 phase, standard NEMA 6-15 plug

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