



**PURCHASE SPECIFICATIONS : NUAIRE LABGARD® HD ES ENERGY SAVER NU-581 BIOSAFETY CABINET**

The intent herein is to provide a concise statement of requirements for a quality Class II Type A2 Laminar Airflow Biosafety Cabinet which may be used to augment your purchase request/order.

The LABGARD® HD ES NU-581 meets the performance requirements of the NSF/ANSI 49. Your confidence is well placed in a Biosafety Cabinet that meets the NSF standard.

NuAire sales representatives will be pleased to explain the importance of the performance and control affected by each of the following requirements. The NuAire LABGARD® HD ES NU-581 meets all of the requirements in the following SPECIFICATION.

1. Dimensions Inches (mm)

<b>Overall Dimensions</b>	<b>NU-581-400</b>	<b>NU-581-500</b>	<b>NU-581-600</b>
Width (W)	54 7/8 (1394)	66 7/8 (1699)	78 7/8 (2003)
Depth (D) (Armrest Removed) (Incl. Control Center)	33 (838)	33 (838)	33 (838)
Height (H) (Incl. Exhaust Grill) w/Legs Adjustable to 30" W.S.	86 7/8 (2207)	86 7/8 (2207)	86 7/8 (2207)
w/Legs Adjustable to 36" W.S.	92 7/8 (2359)	92 7/8 (2359)	92 7/8 (2359)
<b>Interior Dimensions</b>			
Width (W)	46 3/8 (1178)	58 3/8 (1483)	70 3/8 (1788)
Depth (D)+	26 (660)	26 (660)	26 (660)
Height (H)	28 1/2 (724)	28 1/2 (724)	28 1/2 (724)

+ Measured at 10 inch (254) window height.

2. Cabinet shall provide airflows & Biosafety performance as specified.

- a. Cabinet shall provide biological containment protection for both operator and product proven by an actual test, (e.g. test conducted validated by NuAire).
- \* b. Cabinet shall be constructed from 16 GA, Type 304 stainless steel forming a monolithic, sealed structure.
- c. Cabinet shall be easily fumigated employing an established procedure such as that recommended by NIH or NSF, Annex G in conjunction with cabinet automated process.
- d. Supply HEPA filter 99.99% efficient at 0.3 micron shall be of full cabinet work zone width and depth and be protected by a perforated metal diffuser covering the entire top of the work zone.
- \* e. Exhaust HEPA filter shall be 99.99% efficient at 0.3 micron.
- \* f. Wedge HEPA Prefilters shall be 99.97% efficient at 0.3 micron.
- \* g. Air Velocity from the supply filter shall average 55 to 65 FPM (.28 to .32 m/s) with no single point outside the 20% of average range measured in a horizontal plane defined by 4 inches (102mm) above the bottom edge of window.
- \* h. Work access opening shall be 10 inches (254 mm) high. Average Inflow velocity shall nominally be 105 LFPM (.53m/s).

\*Having all of these features is unique ONLY to NuAire cabinets.

- 3.\* The cabinet shall be ergonomically designed for maximum user comfort and adjustability to meet the requirements of the American Disabilities Act (ADA).
  - Standard non-metallic armrest/airfoil incorporating large 2 inch (51mm) forearm support area 1/2 inch (12mm) recessed front grill designed for armrest comfort while maintaining containment performance.
  - Maximum visibility into cabinet workzone shall be at least 23-11/16 inches (601mm) from front access airfoil to exterior light housing.
  - Cabinet shall have a centrally located instrument panel within the control center that is easily serviced with quick disconnects.
  - Cabinet shall have an adjustable height leg assembly, manual standard or automated as an option.
  - The cabinet shall have a smooth operating sliding window from full closure to full opening at 18 inches (457mm).
  - Cabinet shall have a large worktray (20-7/8 inch (527mm) depth) removable with coved corners for easy cleaning.
  - Cabinet shall have a 10 degree slope.
- 4.\* The cabinet shall have all positive pressure plenums surrounded by a vacuum relative to the room (the LABGARD® HD ES employs the HEPEX™ Zero Leak Airflow System).
5. Electrical power shall be supplied with a 12-foot (2.5m), 3-wire cord with molded plug. Electrical supply should be 115 VAC, 60 Hz (Current rating varies per cabinet size. Reference electrical requirements page 4.) protected with thermal circuit breaker from distribution panel.
6. The cabinet shall use a DC ECM Motor with an optimally determined forward-curved fan for each model size/width to maximize both energy efficiency and filter loading capacity.
7. The cabinet shall have two internal electrical circuits; one for blower/lights and one for the duplex outlets. Each circuit shall be protected with a fuse located in the Control Center on the electronic module.
- 8.\* The cabinet shall be listed by Underwriters Laboratories to meet the requirements of both the U.S. and Canada for electrical/mechanical integrity.
- 9.\* Cabinet shall utilize a dual microprocessor control system that will perform the following functions:
  - Easy use interface via TouchLink™ color LCD.
  - Control blower DC ECM motor via solid-state DC Motor Controller that provides automatic compensation (constant volume control) for both filter loading and line voltage variances.
  - Intelliflow™ - Fast, accurate, reliable dual thermistor, airflow sensors powered by TSI to control and monitor cabinet airflows to setpoints
  - Clock display (24 hours) and timer function.
  - Control lights via solid state switch.
  - Control outlets via solid state switch.
  - Security pressured protection (optional).
  - Display blower and optional UV light run time.
  - Complete diagnostic functions.
  - Display alarm setpoints high/low for error conditions (downflow and exhaust flow).
10. Cabinet shall contain a control system that provides the following optional functional features (included with cabinet, but must be configured during certification):
  - Security password protection of cabinet use.
  - Night Care™ setback mode. Upon sliding window closure, blower will continue to operate at a lower rate to save energy and maintain interior clean air conditions ready for use upon sliding widow opening.
  - Auto run timer allows the cabinet to automatically turn on and off on a daily basis.
  - Timer/Interlock functions for fluorescent light, outlet and ultraviolet light.

11. Balancing of cabinet workzone downflow (recycling flow) to exhaust flow shall be accomplished with an internal exhaust flow damper, externally adjustable.
12. The cabinet shall be easily transportable through a standard 36 inch (914mm) wide door without disassembly.
13. Sound level shall be no more than 65 dbA measured 15 inches (381mm) above the work tray and 12 inches (305mm) in front of viewing window.
14. LED lighting shall be externally mounted and provide 90 (968) to 120 (1291) foot-candles (LUX) on work surface. The ballast is to be electronic containing thermal protection with automatic reset.
- 15.\* Cabinet shall come standard with two GFI duplex outlets with drip proof covers on back wall; one gas valve/service coupling on right side wall; one service coupling on right side wall; two service couplings on left side wall.
- 16.\* Cabinet work zone shall be all 16 GA. stainless steel and reinforced with stainless steel U channels to minimize vibration.
17. A 3/8 inch (10 mm) inch ball valve shall be provided in the drain trough beneath the work tray.
- 18.\* Cabinet shall have a permanent positive pressure plenum with quick release supply filter removal.
- 19.\* Motor/blower shall be positioned so as to create an even filter loading, thereby prolonging the life of HEPA filters, automatically handling a 150% minimum increase in filter loading without reducing total air delivery by more than 10%.
- 20.\* Cabinet shall be capable of front filter removal without disassembly of the control panel and sliding window tracks/hardware.
21. The following optional equipment shall be available to support installation and user requirements:
  - Ultraviolet Light
  - Additional Service Valves for Gas, Air, Vacuum
  - Additional Duplex Outlet
  - IV Bar with 6 Stainless Steel Hooks
  - Exhaust Transitions - Canopy
  - Automated Adjustable Control for Leg Assembly Height
  - Arm Rest (Stainless Steel)

\*Having all of these features is unique ONLY to NuAire cabinets.

**LABGARD® ES Energy Saver**  
**Class II Type, A2**  
**Laminar Flow Biosafety Cabinet**  
Models NU-581-400/500/600

Catalog Number	Catalog Number		
	NU-581-400 Nominal 4 foot (1.2m)	NU-581-500 Nominal 5 foot (1.5m)	NU-581-600 Nominal 6 foot (1.8m)
Performance Specifications 1. Personal Protection 2. Product Protection	NSF/ANSI 49	NSF/ANSI 49	NSF/ANSI 49
NSF/ANSI 49	Class II, Type A2	Class II, Type A2	Class II, Type A2
Style of Cabinet	Console	Console	Console
Cabinet Construction Pressure Tight Design	All welded stainless steel 16GA, Type 304 14GA HRS Base	All welded stainless steel 16GA, Type 304 14GA HRS Base	All welded stainless steel 16GA, Type 304 14GA HRS Base
Diffuser for Air Supply (Metal)	Non-flammable	Non-flammable	Non-flammable
HEPA Filter Seal Type: Supply Filter-99.99% Eff. on 0.3 microns Exhaust Filter-99.99% Eff. on 0.3 microns Wedge Prefilter-99.997% Eff. on 0.3 microns	HEPEX Seal Neoprene Neoprene	HEPEX Seal Neoprene Neoprene	HEPEX Seal Neoprene Neoprene
Fumigation : per NIH/NSF Procedures	Yes	Yes	Yes
Standard Services: Service Coupling (3/8 inch NPT) Gas Valve/Service Coupling (3/8inch NPT) Duplex Outlet	One, Right Sidewall One, Right Sidewall Two, Backwall	One, Right Sidewall One, Right Sidewall Two, Backwall	One, Right Sidewall One, Right Sidewall Two, Backwall
Optional Services: Gas Cocks 3/8" NPT Ultraviolet Light	Up to 3 ea. Sidewall One, Backwall	Up to 3 ea. Sidewall One, Backwall	Up to 3 ea. Sidewall One, Backwall
Cabinet Size Inches (mm): Height (Fully Assembled) Min / Max Height (Minimum for Transport) Width Depth (with Control Center) And Armrest Removed	86 7/8 (2207) / 92 7/8 (2359) 79 3/8 (2016) 54 7/8 (1394) 33 (838)	86 7/8 (2207) / 92 7/8 (2359) 79 3/8 (2016) 66 7/8 (1699) 33 (838)	86 7/8 (2207) / 92 7/8 (2359) 79 3/8 (2016) 78 7/8 (2003) 33 (838)
Work Access Opening Inches (mm): Standard Opening Height/Optional Standard Inflow Velocity	10 (254) / 8 (203) 105 FPM (.53 m/s)	10 (254) / 8 (203) 105 FPM (.53 m/s)	10 (254) / 8 (203) 105 FPM (.53 m/s)
Work Zone Inches (mm): Height Width Depth measured at 10 inches (254mm) window height	28 1/2 (724) 46 3/8 (1178) 26 (660)	28 1/2 (724) 58 3/8 (1483) 26 (660)	28 1/2 (724) 70 3/8 (1788) 26 (660)
Viewing Window Inches (mm): Standard is safety plate sliding glass	Fully closed to 18 (457) open	Fully closed to 18 (457) open	Fully closed to 18 (457) open
Required Exhaust CFM/CMH Standard/Optional: Canopy Variable Flow Thimble (NU-911) Canopy Fixed Flow Thimble (NU-907)	10(254) / 8(203) opening CFM (CMH) 363-588 (617-1000) / 295-520 (502-884) 426 (724) / 359 (610)	10(254) / 8(203) opening CFM (CMH) 451-676 (766-1149) / 365-590 (621-1003) 531 (902) / 445 (756)	10(254) / 8(203) opening CFM (CMH) 538-763 (915-1297) / 436-661 (741-1124) 634 (1071) / 552 (904)
Plant Duct Static Pressure Eng./Metric	0.05-0.1"/1.27-2.54mm H <sub>2</sub> O	0.05-0.1"/1.27-2.54mm H <sub>2</sub> O	0.05-0.1"/1.27-2.54mm H <sub>2</sub> O
Heat Rejected, BTU, Per Hour (non-vented) (vented)	2669 157	2983 198	3140 198
Electrical: Volts, AC 60 Hz +Amps: Blower/Lights (10/8 openings) Amps: Duplex Rated Amps: 12 ft. Power Cord (one)	U.L./U.L.-C Listed 115 6.0 / 5.8 3 14 12 GA - 3 Wire, 20A	U.L./U.L.-C Listed 115 6.4 / 6.2 3 14 12 GA-3 Wire, 20A	U.L./U.L.-C Listed 115 6.6 / 6.4 3 14 12 GA-3 Wire, 20A
Crated Shipping Weight:*** Net Weight	750 lbs. /340 kg. 700 lbs. /318 kg.	840 lbs. /381 kg. 790 lbs. /358 kg.	930 lbs. /422 kg. 880 lbs. /399 kg.

\*\*\*Crated shipping weight does not include weight for accessories or options

+ Based on cabinet with new filters running at 115VAC.