

**PURCHASE SPECIFICATIONS FOR NUAIRE
LABGARD ES ENERGY SAVER
NU-440 (Series 60) BIOLOGICAL SAFETY CABINET**

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

The LABGARD NU-440 meets the performance requirements of the NSF/ANSI 49. Your confidence is well placed in a Biological Safety Cabinet that meets 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 NU-440 meets all of the requirements in the following SPECIFICATION.

1. Dimensions Inches (mm)

Overall Dimensions	NU-440-300	NU-440-400	NU-440-500	NU-440-600
Width (W)	41 5/8 (1057)	53 5/8 (1362)	65 5/8 (1667)	77 5/8 (1972)
Depth (D) (Incl. Control Center)	32 7/8 (835)	32 7/8 (835)	32 7/8 (835)	32 7/8 (835)
Height (H) (Incl. Exhaust Grill)	63 (1600)	63 (1600)	63 (1600)	63 (1600)
Basestand, 30" W.S.	89 1/2 (2273)	89 1/2 (2273)	89 1/2 (2273)	89 1/2 (2273)
Basestand, 36" W.S.	95 1/2 (2426)	95 1/2 (2426)	95 1/2 (2426)	95 1/2 (2426)
Interior Dimensions				
Width (W)	34 3/8 (873)	46 3/8 (1178)	58 3/8 (1483)	70 3/8 (1788)
Depth (D)	23 1/2 (597)	23 1/2 (597)	23 1/2 (497)	23 1/2 (597)
Height (H)	28 1/2 (724)	28 1/2 (724)	28 1/2 (724)	28 1/2 (724)

2. Cabinet shall provide airflows & biological safety performance as specified.

- **a. Cabinet shall provide biological containment protection for both operator and product proven by an actual test, (e.g. test conducted by NSF) and routinely validated by NuAire.
- *b. Cabinet shall be constructed from 16GA, Type 304 stainless steel forming an all welded, monolithic, sealed structure.
- c. Cabinet shall be easily fumigated employing an established procedure such as that recommended by NIH or NSF.
- d. Supply HEPA filter shall be of full cabinet work zone width and depth; work zone below supply HEPA shall be of fixed cross-sectional area (sloping back wall or viewing window is unacceptable).
- *e. Supply HEPA filter shall be protected by a perforated metal diffuser covering the entire top of the work zone.
- *f. Air Velocity from the supply filter shall average 55 to 65 FPM (.28 to .33 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.
- *g. Work access opening shall be 10 inches (254mm) high (8 inches (203mm) on NU-440-300). Average inflow velocity shall nominally be 105 LFPM (.53 m/s).

- *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 1-1/2 inch (38mm) 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 22-1/4 inches (565mm) 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 the capability of incorporating a user adjustable basestand or base storage cabinet as an option.
 - The cabinet shall have a smooth operating sliding window from full closure to full opening at 19-1/2 inches (495mm).
 - Cabinet shall have a large worktray (17.250 inch (438mm) depth) removable with coved corners for easy cleaning.
- *4. The cabinet shall have all positive pressure plenums surrounded by a vacuum relative to the room (the LABGARD 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 contain a control system which is a self contained electronic module 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.
 - Monitor the display and control downflow via digital dual thermistor airflow probe.
 - Disable audible alarm switch with ring back function.
 - Clock display (24 hours) and timer function.
 - Control lights via solid state switch.
 - Control outlets via solid state switch.
 - Complete diagnostic functions.
 - Monitor and display exhaust flow (inflow) via digital dual thermistor airflow probe.
 - 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 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 with screwdriver
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 63 dbA measured 15 inches (381mm) above the work tray and 12 inches (305mm) in front of viewing window.
14. Fluorescent 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 GFI duplex outlet for NU-440-300); one gas valve/service coupling on right side wall; one service coupling on right side wall.
16. Cabinet shall be easily converted to a free-standing console model with the addition of the optional Base Support Stand.
- *17. Cabinet work zone shall be all 16 GA. stainless steel and reinforced with stainless steel U channels to minimize vibration.
18. A 3/8 (10 mm) inch ball valve shall be provided in the drain trough beneath the work tray.
- *19. Cabinet shall have a permanent positive pressure plenum with quick release supply filter removal.
- *20. Motor/blower shall be positioned so as to create an even filter loading, thereby prolonging the life of HEPA filters, automatically handling a 250% minimum increase in filter loading without reducing total air delivery by more than 10%.
- *21. Cabinet shall be capable of front filter removal without disassembly of the control panel and sliding window tracks/hardware.
22. The following optional equipment shall be available to support installation and user requirements:
 - 8 Inch (203mm) Access Opening @ 105 (.53 m/s) Inflow
 - Ultraviolet Light
 - Additional Service Valves for Gas, Air, Vacuum
 - Remote Service Valves
 - Additional Duplex Outlet
 - IV Bar with 6 Stainless Steel Hooks
 - Exhaust Transitions - Thimble or Gas Tight
 - Base Support Stand (available in standard working surface heights of 30 or 36 inches) (762 or 914mm) With or Without Storage Shelves
 - Adjustable Control for Support Stand or Storage Cabinet
 - Hinged Viewing Window
 - Microscope Viewing Window
 - Sinks with Hot/Cold or DI Water Faucets
 - Storage Pull-Out Trays
 - Lay in Sorbent Exhaust Filter
 - Decorative Side Panels (hides plumbing fixture connections)
 - Metal Framed HEPA Filters
 - HEPA Filters 99.999% @ 0.3 Micron
 - Arm Rest (Stainless Steel)

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

**NU-440-300 containment test performed by NuAire, Inc.

Labgard ES Energy Saver
Class II, Type A2
Laminar Flow Biological Safety Cabinet
Models NU-440-300/400/500/600

Catalog Number	Catalog Number			
	NU-440-300 Nominal 3 foot (0.9m)	NU-440-400 Nominal 4 foot (1.2m)	NU-440-500 Nominal 5 foot (1.5m)	NU-440-600 Nominal 6 foot (1.8m)
Performance Specifications 1. Personal Protection 2. Product Protection	NSF /ANSI 49	NSF /ANSI 49	NSF/ANSI 49-2004	NSF /ANSI 49
NSF Std. No. 49 Class	Class 11, Type A2	Class 11, Type A2	Class 11, Type A2	Class 11, Type A2
Style of Cabinet	Bench top/console w/base stand/storage cabinet	Bench top/console w/base stand/storage cabinet	Bench top/console w/base stand/storage cabinet	Bench top/console w/base stand/storage cabinet
Cabinet Construction	All welded stainless steel 16GA, Type 304 pressure tight design	All welded stainless steel 16GA, Type 304 pressure tight design	All welded stainless steel 16GA, Type 304 pressure tight design	All welded stainless steel 16GA, Type 304 pressure tight design
Diffuser for Air Supply (Metal)	Non-flammable	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	HEPEX Seal Neoprene, Springloaded	HEPEX Seal Neoprene, Springloaded	HEPEX Seal Neoprene, Springloaded	HEPEX Seal Neoprene, Springloaded
Fumigation per NIH/NSF Procedure	Yes	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 One, Backwall Center	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 Remote Controlled Valves** Ultraviolet Light Standard/Cup Sinks	Up to 3 ea. Sidewall Up to 3 ea. Sidewall One, Backwall Left or Right Work Surface	Up to 3 ea. Sidewall Up to 3 ea. Sidewall One, Backwall Left or Right Work Surface	Up to 3 ea. Sidewall Up to 3 ea. Sidewall One, Backwall Left or Right Work Surface	Up to 3 ea. Sidewall Up to 3 ea. Sidewall One, Backwall Left or Right Work Surface
Cabinet Size Inches (mm): Height (Fully Assembled) Height (Minimum for Transport) Width Depth (with Control Center)	63 (1600) 60 (1524) 41 5/8 (1057) 32 7/8 (835)	63 (1600) 60 (1524) 53 5/8 (1362) 32 7/8 (835)	63 (1600) 60 (1524) 65 5/8 (1667) 32 7/8 (835)	63 (1600) 60 (1524) 77 5/8 (1972) 32 7/8 (835)
Work Access Opening Inches (mm): Standard Opening Height/Optional Standard Inflow Velocity	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)	10 (254) /8 (203) 105 FPM (.53 m/s)
Work Zone Inches (mm): Height Width Depth	28 1/2 (724) 34 3/8 (873) 23 1/2 (597)	28 1/2 (724) 46 3/8 (1178) 23 1/2 (597)	28 1/2 (724) 58 3/8 (1483) 23 1/2 (597)	28 1/2 (724) 70 3/8 (1788) 23 1/2 (597)
Viewing Window Inches (mm): Standard is tempered sliding glass Hinged Tempered Glass (optional)	Fully closed to 19 1/2 (495) open 8 (203) opening	Fully closed to 19 1/2 (495) open 8 (203) & 10 (254) openings	Fully closed to 19 1/2 (495) open 8 (203) & 10 (254) openings	Fully closed to 19 1/2 (495) open 8 (203) & 10 (254) openings
Required Exhaust CFM/CMH Standard/Optional: Thimble (NU-918/917) Thimble (NU-916)	8 (203) opening 282 (479) 306 (519)	10(254) / 8(203) opening 438 (739) / 370 (624) 462 (783) / 394 (667)	10(254) / 8(203) opening 542 (921) / 456 (775) 566 (962) / 480 (813)	10(254) / 8(203) opening 647 (1100) / 545 (925) 669 (1139) / 567 (964)
Plant Duct Static Pressure Eng/Metric	0.05-0.1"/1.27-2.54mm	0.05-0.1"/1.27-2.54mm	0.05-0.1"/1.27-2.54mm	0.05-0.1"/1.27-2.54mm
Heat Rejected, BTU, Per Hour (non-vented) (vented)	8 (203) opening 826 120	10(254) / 8(203) opening 1140/1020 157	10(254) / 8(203) opening 1768/1611 198	10(254) / 8(203) opening 1884/1768 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 2.1 3 10 14 GA - 3 Wire, 15A	U.L./U.L.-C Listed 115 2.9/2.6 3 12 14 GA - 3 Wire, 15A	U.L./U.L.-C Listed 115 4.5/4.1 3 14/*12 *12/14 GA-3 Wire, 20A Std., 15A Optional	U.L./U.L.-C Listed 115 4.8/4.5 3 14/*12 *12/14 GA-3 Wire, 20A Std., 15A Optional
Crated Shipping Weight: *** Net Weight	475 lbs. / 215 kg. 425 lbs. / 193 kg.	550 lbs. / 249 kg. 500 lbs. / 227 kg.	650 lbs. / 295 kg. 600 lbs. / 273 kg.	730 lbs. / 331 kg. 680 lbs. / 308 kg.

*15A Configuration does not include accessory outlet.

**Remote controlled valve handles project through front faring. Decorative side panels are available to cover plumbing.

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

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