

**PURCHASE SPECIFICATIONS FOR NUAIRE
LABGARD ES ENERGY SAVER
NU-435 (Series 60) BIOLOGICAL SAFETY FUME HOOD**

The intent herein is to provide a concise statement of requirements for a quality Class II, Type B2 Laminar Airflow Biological Safety Fume Hood which may be used to augment your purchase request/order.

The LABGARD ES NU-435 is “NSF Listed” to the performance requirements of the NSF/ANSI 49. Your confidence is well placed in a Biological Safety Fume Hood that meets NSF Standard.

The LABGARD ES NU-435 is “UL Classified” to the UL requirements for Electrical/Mechanical Safety (UL 61010) and the UL requirements for Material Flammability and Effectiveness of Airflow Characteristics (UL1805).

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 ES NU-435 meets all of the requirements in the following SPECIFICATION.

1. Dimensions – Inches (mm)

Overall Dimensions	NU-435-400	NU-435-600
Width (W)	53 5/8 (1362)	77 5/8 (1972)
Depth (D) (Incl. Control Center)	32 7/8 (835)	32 7/8 (835)
Height (H) (Incl. Exhaust Connection)	61 (1549)	61 (1549)
Basestand, 30" W.S.	89 1/2 (2273)	89 1/2 (2273)
Basestand, 36" W.S.	95 1/2 (2426)	95 1/2 (2426)
 Interior Dimensions		
Width (W)	46 3/8 (1178)	70 3/8 (1788)
Depth (D)	23 1/2 (597)	23 1/2 (597)
Height (H)	25 1/2 (648)	25 1/2 (648)

2. Fume Hood shall provide airflows & biological safety performance as specified.

- a. Fume Hood 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. Fume Hood shall be single pass flow through design in which all HEPA filtered work zone and work access inflow air is drawn through the fume hood's internal exhaust HEPA filter and exhaust duct work to a remotely located roof exhaust blower.
- *c. Fume Hood shall be constructed from 16GA, Type 304 stainless steel forming an all welded, monolithic, seal structure.
- d. Fume Hood shall be easily fumigated employing an established procedure such as that recommended by NIH or NSF.
- e. Supply HEPA filter shall be of full fume hood 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).
- *f. Supply HEPA filter shall be protected by a perforated metal diffuser covering the entire top of the work zone.
- *g. 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.
- *h. Work access opening shall be 8 inches (203mm) high. Average inflow velocity shall nominally be 105 LFPM (.53 m/s).

- *3. The fume hood shall be ergonomically designed for maximum user comfort and adjust ability to meet the requirements of the American Disabilities Act (ADA.)
- Standard non-metallic armrest/airfoil incorporating a large 1-1/2 inch (38mm) forearm support area with 1/2-inch (12mm) recessed front grill, designed for arm rest comfort while maintaining containment performance.
 - Maximum visibility into fume hood workzone shall be at least 20-1/2 inches (521mm) from front access airfoil to exterior light housing.
 - Fume Hood shall have a centrally located instrument panel within the control center that is easily serviced with quick disconnects.
 - Fume Hood shall have the capability of incorporating a user adjustable Basestand or base storage cabinet as an option.
 - Fume Hood shall have a smooth operating sliding window from full closure to full opening at 18-1/2 inches (470mm).
 - Fume Hood shall have a large worktray (17.250 inch (438mm) depth) removable with coved corners for easy cleaning.
- * 4. The Fume Hood 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. Electrical supply should be 115 VAC, 60 Hz (current rating varies per fume hood size, reference Electrical Requirements Page 5) protected with thermal circuit breaker from distribution panel.
- *6. The Fume Hood shall use a DC ECM Motor with optimally determined forward-curved fan for each model size/width to maximize both energy efficiency and filter loading capacity.
7. The Fume Hood shall have three (115VAC) internal electrical circuits; one each for blower and lights and one for the duplex outlets (115VAC). Each circuit shall be protected with a fuse located in the control center on the electronic module.
8. The Fume Hood shall be classified by Underwriters Laboratories to meet the requirements of UL 61010 and UL 1805 for fire/electrical/mechanical integrity.
- *9. Fume Hood's 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.
 - Intelliflow™ - Fast, accurate, reliable dual thermister, airflow sensors and powered by TSI to control and monitor fume hood airflows to setpoints.
 - Control lights via solid state switch.
 - Control outlets via solid state switch.
 - Display date/time w/battery backup.
 - Display blower and optional UV light run timers.
 - Display alarm setpoints high/low for error conditions (downflow/inflow).
 - Display complete calibration, option menu and diagnostic functions.
- *10. The Fume Hood shall contain an exhaust interlock system that prevents operation of the internal supply blower unless the exhaust flow is sufficient to provide the correct air barrier inflow velocity at start up.
11. The Fume Hood shall be easily transportable through a standard 36 inch (914mm) wide door without disassembly.

12. 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.
13. Fluorescent lighting shall be externally mounted and provide 90 (968) to 120 (1291) foot-candles (LUX) on work surface. The ballast to be electronic containing thermal protection with automatic reset.
- *14. Fume Hood shall come standard with one duplex outlet with drip proof covers on left front faring. Two remote controlled valves on right side wall.
15. Both supply and exhaust fume hood duct connections shall be 12 inch (305mm) diameter.
16. Fume Hood shall be easily converted to a free-standing console model with the addition of the optional Base Support Stand.
- *17. Fume Hood 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. Fume Hood 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 the supply HEPA filter, automatically handling a 250% minimum increase in filter loading without reducing total air delivery by more than 10%.
- *21. Fume Hood shall be capable of front filter removal without disassembly of the control panel and sliding window tracks/hardware.
- *22. Fume Hood shall come standard with decorative side panels to conceal plumbing fixture connections.
23. The following optional equipment shall be available to support installation and user requirements:

Bag In/Bag Out of Exhaust HEPA Filter with Single Point External Filter Release
 Additional Remote Service Valves
 Additional Duplex Outlet
 Ground Fault Interrupter for Electrical System
 IV Bar with 6 Stainless Steel Hooks
 Gas Tight Butterfly Valves (Manual or Automatic)
 Base Support Stand (available in standard working surface heights of 30 or 36 inches) (762mm or 914mm)
 With or Without Storage Shelves
 Adjustable Control for Support Stand or Storage Cabinet
 Hinged Viewing Window
 Microscope Viewing Window
 Sink with Hot/Cold or DI Water Faucets
 Storage Pull-Out Trays
 Sorbent Exhaust Filter Module
 Prefilter for Supply Air
 Metal Framed HEPA Filters
 HEPA Filters 99.999% @ 0.3 Micron
 Arm Rest (Stainless Steel)
 Elbow Rests

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

**Labgard ES Energy Saver Class II, Type B2
Laminar Flow Biological Safety Fume Hood
Models NU-435-400/600**

Catalog Number	Catalog Number	
	NU-435-400 Nominal 4 foot (1.2m)	NU-435-600 Nominal 6 foot (1.8m)
Performance Specifications 1. Personal Protection 2. Product Protection	ASHRAE-110 NSF/ANSI 49	ASHRAE-110 NSF/ANSI 49
NSF Std. No. 49 Class	Class II, Type B2	Class II, Type B2
Style of Fume Hood	Bench Top/Console w/Base Stand/ Storage Cabinet	Bench Top/Console w/Base Stand/ Storage Cabinet
Fume Hood Construction	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
HEPA Filter Seal Type, HEPA Type: Supply Filter-99.99% Eff. on 0.3 Microns Exhaust Filter-99.99% Eff. on 0.3 Microns	HEPEX Seal, UL Class I Neoprene, Spring loaded, UL Class 586	HEPEX Seal, UL Class I Neoprene, Spring loaded, UL Class 586
Fumigation per NIH/NSF Procedure	Yes	Yes
Standard Services: Remote Controlled Valves ** Duplex Outlet	Two, Right Sidewall One, Left Front Faring	Two, Right Sidewall One, Left Front Faring
Optional Services: Remote Controlled Valves** Standard/Cup Sinks	Up to 3 ea. Sidewall Left or Right Work Surface	Up to 3 ea. Sidewall Left or Right Work Surface
Fume Hood Size Inches (mm): Height (Fully Assembled) Height (Minimum for Transport) Width Depth (with Control Center)	61 (1549) 61 (1549) 53 5/8 (1362) 32 7/8 (835)	61 (1549) 61 (1549) 77 5/8 (1972) 32 7/8 (835)
Work Access Opening Inches (mm): Standard Opening Height Standard Inflow Velocity	8 (203) 105 FPM (.53 m/s)	8 (203) 105 FPM (.53 m/s)
Work Zone Inches (mm): Height Width Depth	25 1/2 (648) 46 3/8 (1178) 23 1/2 (597)	25 1/2 (648) 70 3/8 (1788) 23 1/2 (597)
Viewing Window Inches (mm): Standard is Tempered Sliding Glass Hinged Tempered Glass (optional)	1.0 (25) Closed 18 1/2 (470) Open 8 (203) Access Opening	1.0 (25) Closed 18 1/2 (470) Open 8 (203) Access Opening
Certification Exhaust Value CFM/CMH Concurrent Balance Value CFM/CMH +	754/1281 785/1334	1100/1867 1250/2124
Plant Duct Static Pressure Eng/Metric	1.7" w.g./43mm w.g.	1.8" w.g./46mm w.g.
Heat Rejected, BTU, Per Hour	474	584
Electrical: Volts, AC 60 Hz ++Amps: Blower/Lights Amps: Duplex Amps: Total 12 ft. Power Cord (one)	U.L. Classified 115, 60Hz 2.1 3 8 14 GA - 3 Wire, 15A	U.L. Classified 115, 60Hz 2.6 3 10 14 GA-3 Wire, 15A
Crated Shipping Weight: Net Weight	570 lbs./259 kg. 520 lbs./236 kg.	760 lbs./345 kg. 710 lbs./322 kg.

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

+Concurrent Balance Value shall be used for design and balance exhaust/supply HVAC requirements.

++Based on Fume Hood with new filters running at 115VAC.