



PURCHASE SPECIFICATIONS: NUAIRE LABGARD® ES ENERGY SAVER NU-540E BIOSAFETY CABINET

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

The LABGARD® ES NU-540E meets the performance requirements of the EN 12469 and NSF/ANSI 49. Your confidence is well placed in a Biosafety Cabinet that meets these standards.

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-540E meets all of the requirements in the following SPECIFICATION.

1. Dimensions Inches (mm)

Overall Dimensions	NU-540-300E	NU-540-400E	NU-540-500E	NU-540-600E
Width (W)	41 5/8 (1057)	53 5/8 (1362)	65 5/8 (1669)	77 5/8 (1972)
Depth (D) (Armrest Removed) (Incl. Control Center)	31 7/16 (799)	31 7/16 (799)	31 7/16 (799)	31 7/16 (799)
Height (H) (Incl. Exhaust Grill)	60 7/8 (1546)	60 7/8 (1546)	60 7/8 (1546)	60 7/8 (1546)
Basestand, 30" W.S.	88 3/8 (2245)	88 3/8 (2245)	88 3/8 (2245)	88 3/8 (2245)
Basestand, 36" W.S.	94 3/8 (2397)	94 3/8 (2397)	94 3/8 (2397)	94 3/8 (2397)
Interior Dimensions				
Width (W)	34 3/8 (873)	46 3/8 (1178)	58 3/8 (1483)	70 3/8 (1788)
Depth (D)+	25 3/4 (654)	25 3/4 (654)	25 3/4 (654)	25 3/4 (654)
Height (H)	28 1/2 (724)	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 by NSF) and routinely validated by NuAire.
 - * b. Cabinet shall be constructed from 16/18 gauge, Type 304 stainless steel forming a monolithic, sealed structure.
 - c. Cabinet shall be easily fumigated employing an established procedure such as that recommended by EN 12469, NIH or NSF.
 - d. Supply HEPA filter 99.99% efficient @ 0.3 microns shall be of full cabinet work zone width and depth.
 - * 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 .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.
 - * g. Work access opening shall be 10 inches (254 mm) high standard.
Average Inflow velocity shall nominally be 105 LFPM (.53m/s).
 - h. Exhaust HEPA filter 99.99% efficient @ 0.3 microns

*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 23-3/4 inches (603mm) 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 21 inches (533mm).
 - Cabinet shall have a large worktray (20-3/4 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® 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 230 VAC, 50/60 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 outlets. Each circuit shall be protected with a fuse located in the Control Center on the electronic module.
- 8.* The cabinet shall be CE compliant to meet the requirements for electrical/mechanical integrity.
- 9.* Cabinet shall contain the Aeromax™ control system consisting of electronic modules that will perform the following functions:
 - Easy user interface via LED's and function keys
 - Control blower via solid state switch.
 - Control lights via solid state switch.
 - Control outlets via solid state switch.
 - Disable audible alarm switch with ring back function.
 - Control blower DC ECM motor with solid-state DC Motor Controller that provides automatic compensation (constant volume control) for both filter loading and line voltage variances.
 - Monitor and display airflow system performance via PresurFlow™ monitor.
- 10.* Cabinet shall contain the Aeromax™ 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 window opening.
 - Cabinet usage sync functions with blower, fluorescent light, outlets and accessory outlet.
 - Cabinet usage auto duration timers, Nite Care, fluorescent light, UV light and outlets.
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 60 dbA measured 19-11/16 inches (.5 m) in front center of the cabinet and 59 inches (1.5 m) above the floor.
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 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 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 welded 16/18 gauge stainless steel (silicone free) and reinforced with stainless steel U channels to minimize vibration.
18. A 3/8 inch (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:
 - Ultraviolet Light
 - LED Lighting
 - Additional Service Valves for Gas, Air, Vacuum
 - Additional Outlet
 - IV Bar with 6 Stainless Steel Hooks
 - Exhaust Transition Canopy
 - Base Support Stand (available as telescoping for work surface heights of 30 to 36 inches) (762 to 914mm) with or without Storage Shelves
 - Adjustable Control for Support Stand or Storage Cabinet
 - Sinks with Hot/Cold or DI Water Faucets
 - Storage Pull-Out Trays
 - Lay in Sorbent Exhaust Filter
 - Decorative Side Panels (hides plumbing fixture connections)
 - HEPA Filters 99.999% @ 0.3 Micron
 - Arm Rest (Stainless Steel)

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LabGard® ES Energy Saver Class II Laminar Flow Biosafety Cabinet
Models NU-540-300E/400E/500E/600E

Catalog Number	Catalog Number			
	NU-540-300E Nominal 3 foot (0.9m)	NU-540-400E Nominal 4 foot (1.2m)	NU-540-500E Nominal 5 foot (1.5m)	NU-540-600E Nominal 6 foot (1.8m)
Performance Specifications 1. Personal Protection 2. Product Protection	NSF/ANSI 49 EN 12469	NSF/ANSI 49 EN 12469	NSF/ANSI 49 EN 12469	NSF/ANSI 49 EN 12469
NSF/ANSI 49	Class II	Class II	Class II	Class II
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 16/18 GA, Type 304 pressure tight design	All welded stainless steel 16/18 GA, Type 304 pressure tight design	All welded stainless steel 16/18 GA, Type 304 pressure tight design	All welded stainless steel 16/18 GA, 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, Spring-loaded	HEPEX Seal Neoprene, Spring-loaded	HEPEX Seal Neoprene, Spring-loaded	HEPEX Seal Neoprene, Spring-loaded
Fumigation : per NIH/NSF Procedures	Yes	Yes	Yes	Yes
Standard Services: Service Coupling (3/8 inch NPT) Service Coupling (3/8 inch NPT) Gas Valve/Service Coupling (3/8inch NPT) Outlet	One Right Sidewall Two Left Sidewall One Right Sidewall Two Backwall	One Right Sidewall Two Left Sidewall One Right Sidewall Two Backwall	One Right Sidewall Two Left Sidewall One Right Sidewall Two Backwall	One Right Sidewall Two Left Sidewall One Right Sidewall Two Backwall
Optional Services: Gas Cocks 3/8" NPT Ultraviolet Light Standard/Cup Sinks	Up to 3 ea. Sidewall One, Backwall Left or Right Work Surface	Up to 3 ea. Sidewall One, Backwall Left or Right Work Surface	Up to 3 ea. Sidewall One, Backwall Left or Right Work Surface	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 Armrest Removed	60 7/8 (1546) 59 (1499) 41 5/8 (1057) 31 7/16 (799)	60 7/8 (1546) 59 (1499) 53 5/8 (1362) 31 7/16 (799)	60 7/8 (1546) 59 (1499) 65 5/8 (1669) 31 7/16 (799)	60 7/8 (1546) 59 (1499) 77 5/8 (1972) 31 7/16 (799)
Work Access Opening Inches (mm): Standard Opening Height Standard Inflow Velocity	10 (254) 105 FPM (.53 m/s)	10 (254) 105 FPM (.53 m/s)	10 (254) 105 FPM (.53 m/s)	10 (254) 105 FPM (.53 m/s)
Work Zone Inches (mm): Height Width Depth measured at 10 inches (254mm) window height	28 1/2 (724) 34 3/8 (873) 25 3/4 (654)	28 1/2 (724) 46 3/8 (1178) 25 3/4 (654)	28 1/2 (724) 46 3/8 (1178) 25 3/4 (654)	28 1/2 (724) 70 3/8 (1788) 25 3/4 (654)
Viewing Window Inches (mm): Standard is safety plate sliding glass	Fully closed to 21 (533) open	Fully closed to 21 (533) open	Fully closed to 21 (533) open	Fully closed to 21 (533) open
Required Exhaust CFM/CMH Standard/Optional: Canopy Variable Flow Thimble (NU-911) Canopy Fixed Flow Thimble (NU-907)	10(254) CFM (CMH) 276-501 (649-851) 320 (544)	10(254) CFM (CMH) 363-588 (617-1000) 426 (724)	10(254) CFM (CMH) 451-676 (766-1149) 531 (902)	10(254) CFM (CMH) 538-763 (915-1297) 634 (1077)
Plant Duct Static Pressure Eng./Metric	0.05-0.1"/1.27-2.54mm H2O	0.05-0.1"/1.27-2.54mm H2O	0.05-0.1"/1.27-2.54mm H2O	0.05-0.1"/1.27-2.54mm H2O
Heat Rejected, BTU, Per Hour (non-vented) (vented)	10(254) opening 903 120	10(254) opening 1140 157	10(254) opening 1768 198	10(254) opening 1884 198
Electrical: CE marked: Volts, AC 50/60 Hz +Amps: Blower/Lights (10 openings) Amps: Outlet Rated Amps: 12 ft. Power Cord (one)	230 2.3 3 8 14 GA - 3 Wire, 15A	230 2.9 3 10 14 GA - 3 Wire, 15A	230 4.5 3 11 14 GA-3 Wire, 15A Std.	230 4.8 3 11 14 GA-3 Wire, 15A Std.
Crated Shipping Weight:*** Net Weight	450 lbs. /204 kg. 400 lbs. /181 kg.	515 lbs. /234 kg. 465 lbs. /211 kg.	600 lbs. /272 kg. 550 lbs. /249 kg.	670 lbs. /304 kg. 620 lbs. /281 kg.
Sound Pressure Level per ISO 4871****	Not to Exceed 55 dbA ■	Not to Exceed 56 dbA ■	Not to Exceed 58 dbA ■	Not to Exceed 60 dbA ■

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

+ Based on cabinet with new filters running at 230VAC.

****Uncertainty is K = 2 dbA, measurement performed per ISO 11201 in normal running mode.

■Reference the customer test report for procedure and results.