Powdermax™

Powder Weighing Balance Enclosure

*Esco Powdermax™ 1 Powder Weighing Balance Enclosure Model PW1-3A_*

Introduction

Laboratory operations involving weighing, mixing and dispensing hazardous powders can now be performed safely and economically with the Esco Powdermax™ 1 Powder Weighing Balance Enclosure. The enclosure's unique design maintains balance stability to 4 decimal places without compromising containment.

Designed specifically for powder containment applications, the Powdermax Enclosure employs carefully directed inward airflow at the face of the enclosure to protect the operator from exposure to hazardous powders or potent pharmaceutical compounds. The aerodynamically designed enclosure reduces airflow turbulence for maximum containment while minimizing the effect that air drafts may have on sensitive weighing balances. The enclosure design exceeds the containment requirements of ANSI/ASHRAE 110 as proven by independent type testing. All exhaust air is HEPA-filtered, removing virtually all particulate matter, before recirculation to the laboratory.

Designed for Enhanced Usability and Efficiency

The Powdermax™ is designed specifically to provide the operator with a high level of usability, comfort and visibility.

- A 13-degree sloped front allows easy access to the work zone, eliminating operator fatigue and increasing productivity.
- Transparent 6 mm (0.2") frameless acrylic front and sides enhance visibility and operator comfort during longer periods of operation. The self-supporting pre-tensioned hinges on the front window provide easy access during loading and start-up.
- Ergonomically designed apertures for hands simultaneously provide maximum movement within the work zone while protecting the operator. The curved front edge minimizes airflow turbulence and improves user comfort.
- Electronic ballast for the fluorescent lighting provides zero-flicker with increased energy efficiency, reliability and service life with a lower heat output.
- Two electrical pass throughs on the back wall of the unit provide convenient access to power sources for equipment.
- The spacious interior dimensions will easily accommodate large analytical balances.

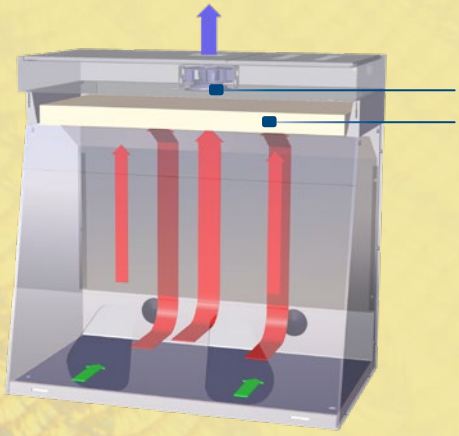
Enhanced Filtration System

The enclosure's unique filtration system ensures the highest level of protection for the operator.

- The Powdermax™ provides enhanced safety to laboratory personnel by drawing air across the front opening in the hood at a controlled rate, preventing the escape of powders and particulate matters into the general laboratory environment.
- A unique filter mounting system eliminates bypass leaks inherent in conventional clamping systems.
- The Powdermax™ is equipped with a generously sized HEPA filter system, rated at >99.99% efficiency for 0.3 micron sized particles.
- The aerodynamically designed system constructed of 1.2 mm (18 gauge) epoxy powder-coated electrogalvanized steel delivers maximum containment by ensuring airflow uniformity throughout the work chamber of the cabinet.
- Since HEPA-filtered air is recirculated to the laboratory, the enclosure does not have to be connected to an extraction/exhaust system, resulting in low operating costs and mobility.

User-Friendly Control System

The user-friendly Esco Sentinel™ Silver microprocessor based control system is fully configurable according to operator's requirements and comes equipped with a number of enhanced features to promote cabinet usability.



Filtration System

- HEPA-filtered air
- Unfiltered / potentially contaminated air
- Inflow air

- Room air is drawn in across the front of the cabinet with an average velocity of 0.5 m/s (100 fpm).
- Air is drawn up through the cabinet's work zone and forced through the HEPA filter (>99.99% typical efficiency for 0.3 micron sized particles).
- The state-of-the-art baffle system ensures airflow uniformity throughout the cabinet's main chamber.
- The HEPA filtered air then returns to the laboratory stripped of all airborne contaminants or is vented through the optional exhaust collar to exhaust ducting for enhanced safety.

- Accurate true airflow velocity sensing technology measures all critical cabinet airflow parameters allowing superior monitoring. Temperature compensated sensors ensure increased accuracy.
- Password-protected administration can be set to restrict access to the main menu.
- Solid state variable speed controllers offer superior control over conventional "step" controllers. The built in RFI and noise filters eliminate interference with adjacent instrumentation.
- A bright, easy-to-read, LCD display provides continuous monitoring of cabinet airflow.
- Audible and visual alarms ensure operator and environmental protection by alerting the user in the event of low airflow or unsafe sash positions.
- When the cabinet is switched on, its automatic warm-up cycle is activated, purging all contaminants from the work zone prior to use.
- An automatic post-purge cycle can be configured on shutdown, purging all residual contaminants before deactivation.

Highest Quality Enclosure Construction

All Esco cabinets are constructed to the highest quality using the finest materials.

- The enclosure's head unit is constructed of electrogalvanized steel with abrasion-resistant powder-coated finish.
- External surfaces are coated with Esco ISOCIDE™ antimicrobial coating to protect against surface contamination and inhibit bacterial growth. Isocide eliminates 99.9% of surface bacteria within 24 hours of exposure.
- The enclosure is supplied with a chemical and abrasion resistant phenolic resin removable work surface. The solid work surface minimizes transmission of fan vibration to the user's weighing balance.

Blower Efficiency

The Powdermax™ incorporates an energy efficient external rotor motor design which reduces operating costs and has extremely low noise and vibration levels. The cabinet blower system creates an inflow of air from the ambient environment into the cabinet with an average velocity of 0.5 m/s (100 fpm).

Designed and Built to Exceed Safety Criteria

All components used in Esco products meet or exceed all the applicable safety requirements and are UL listed/recognized. The Powdermax™ is compliant with Inter-national Standards. The cabinet is designed to meet the general safety requirements of EN 61010-1, EN 61326 Class B.

Options and Accessories

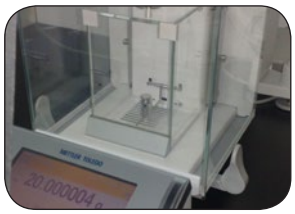
The Powdermax™ is available with a number of options and accessories to meet your needs. These include:

- Mobile cart with foldable trays
- Height-adjustable lab chair
- Ergonomic foot rest

Further customization specifications are available upon request.

Microbalance Stability Testing

Weighing Accuracy Test on Esco Powdermax™ Powder Weighing Balance Enclosure



The Esco PowderMax™ cabinet at nominal airflow can provide a stable work condition for sensitive powder weighing work with extremely low standard deviation in the range of 0.000001 to 0.000011 for weighing 20g, 5g, and even 0.5g objects.

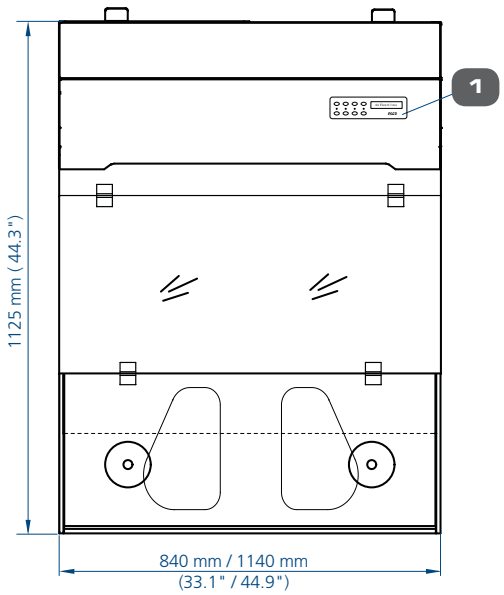
Surrogate Powder Testing

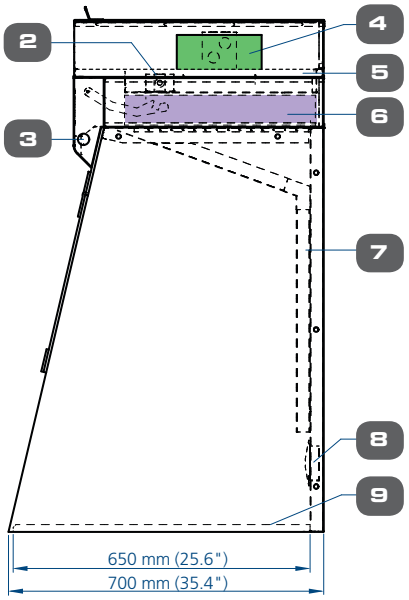
Active Pharmaceutical Ingredients (API) Surrogate Containment Testing on Esco Powdermax™ Powder Weighing Balance Enclosure

The Esco PowderMax™ Powder Weighing Balance Enclosure, operating at 0.50 m/s (100fpm) average inflow, was demonstrated to contain surrogate API (naproxen sodium), at an OEL of 26.3 nanogram / m^3, for a challenge of repetitive weighing of 20 x 1-gram quantities of API, independent of the operator's level of skill.

General Specifications, Powder Weighing Balance Enclosure			
Model	**220-240 VAC, 50 Hz**	**PW-3A1 2160001**	**PW-4A1 2160010**
	110-120 VAC, 60 Hz	**PW-3A2 2160003**	**PW-4A2 2160006**
	220-240 VAC, 60 Hz	**PW-3A3 2160004**	**PW-4A3 2160007**
Nominal Size		0.9 meters (3 ft)	1.2 meters (4 ft)
External Dimensions (W x D x H)		840 x 700 x 1125 mm (33.0" x 27.6" x 44.3")	1140 x 700 x 1125 mm (44.9" x 27.6" x 44.3")
Internal Work Area, Dimensions (W x D x H)		820 x 650 x 829 mm (32.3" x 25.6" x 32.6")	1120 x 650 x 848 mm (44.1" x 25.6" x 33.4")
Standard Filtration Elements	Main Filter	HEPA filter, typical efficiency of >99.99% at 0.3 microns, removes particles and aerosols	
Control System		Sentinel™ Silver Microprocessor Controller	
Inflow Air Velocity		Initial setpoint: average of 0.5 m/s (100 fpm)	
Sound Emission		<55 dBA at initial blower speed setting measured at typical operator work position	
Cabinet Construction	Main Body	1.2 mm (0.05") 18 gauge electrogalvanized steel with white oven-baked epoxy-polyester Isocide™ antimicrobial powder coated finish	
	Back Wall		
	Front Window	6 mm (0.2") Acrylic	
	Side Walls		
	Work Top	Phenolic Resin	
Fluorescent Lamp Intensity at Zero Ambient		>600 lux (>56 ft. candles)	
Sash Specification	Sloped Front	13°	
	Sash Type	Hinged	
Net Weight		110 kg (242.5 lbs)	160 kg (352.7 lbs)
Shipping Weight		120 kg (264.6 lbs)	170 kg (374.8 lbs)
Shipping Dimensions, Maximum (W x D x H)		1050 x 1100 x 720 mm (2314.9" x 2425.1" x 1587.33")	1300 x 1100 x 720 mm (2866.0" x 2425.1" x 1587.33")
Shipping Volume, Maximum		0.83 m³ (29.3 cu.ft.)	1.0 m³ (35.3 cu.ft.)

Powdermax™ Powder Weighing Balance Enclosure Engineering Drawing



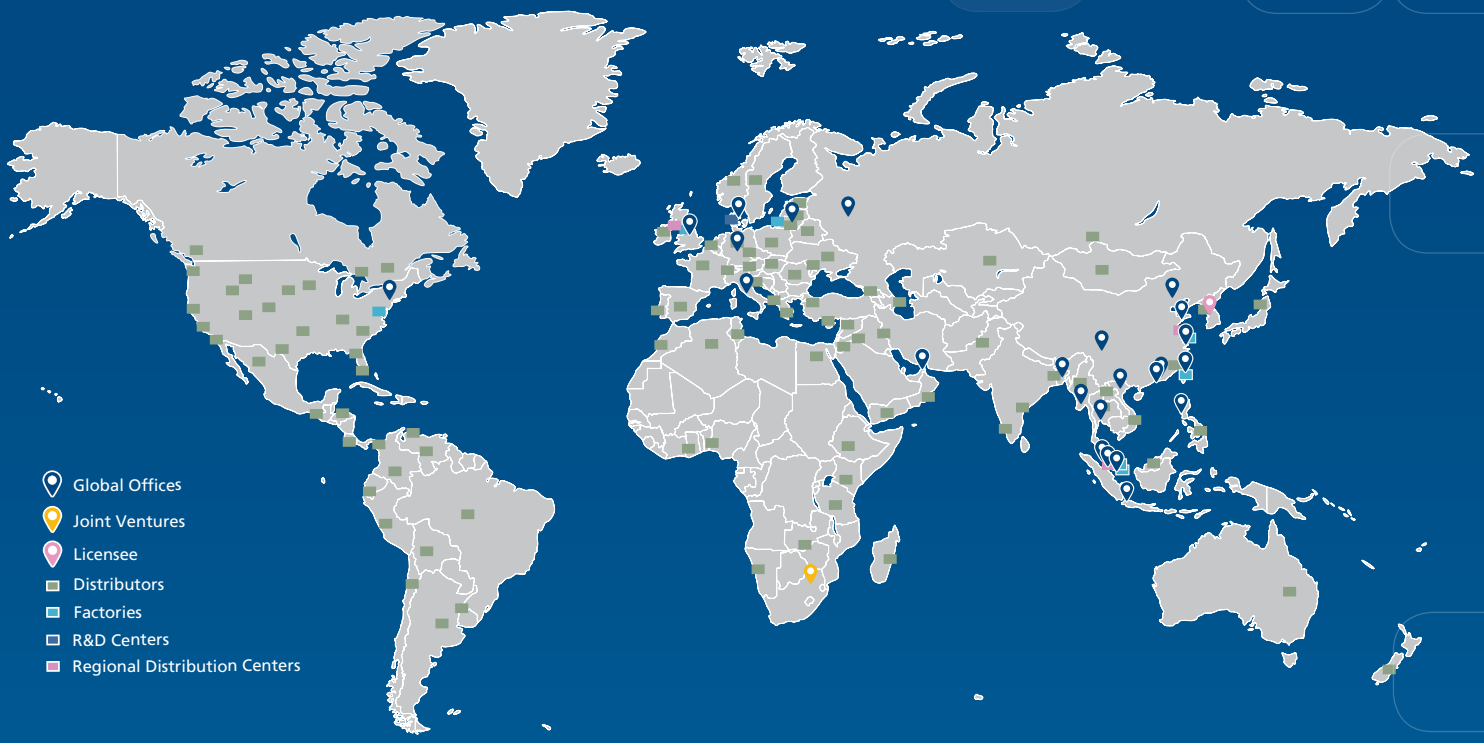


1. *Sentinel™ Silver Microprocessor Control System*
2. *Sensor Box*
3. *Fluorescent light*
4. *Blower*
5. *Electrical panel*
6. *HEPA filter*
7. *Baffles*
8. *Pass-through ports with cover*
9. *Phenolic work top*

Standards Compliance	Containment	Electrical Safety
	ANSI/ ASHRAE 110-1995, USA	UL-61010-1, USA CAN/CSA-C22-2 No.61010-1 EN-61010-1, Europe IEC61010-1, Worldwide

ESCO LIFESCIENCES GROUP

42 LOCATIONS IN 21 COUNTRIES ALL OVER THE WORLD



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