



PURITY IS OUR QUALITY

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# INTRODUCTION

## Ebraco: Your Air Solution Partner

EBRACO is established in 2009 as a brand of air filtration products and equipment. Over the years with our expertise and quality, EBRACO has successfully developed its own full series of air filtration products covers the various of industries such as general HVAC for buildings and factories, cleanroom air filtration and equipment for semiconductor, pharmaceutical, F&B, and medical sector, exhaust air treatment for commercial and heavy industries facilities, as well as NOX and carbon dioxide reduction solutions for power plants. Besides, EBRACO also provides air quality testing and verification services for the controlled environments of manufacturing facilities.

Today, EBRACO is a member of KPT Group, a greentech company that headquartered in Ho Chi Minh City, Vietnam. EBRACO owns and partnerships its manufacturing and R&D facilities in Vietnam, China, Thailand and German, with each facilities has its own specialized product series that cater the local demand, furthermore support the distribution network over the global market. Our sales team operates in 8 countries and we have more than 100 employees worldwide.

We vision to be the top greentech air solution company in Asia Pacific by 2030, with mission to provide greener, safer and more productive air solutions to our customers. To achieve this vision and mission, our team aggressively research and implement innovations to search for breakthrough in our products. Through our continuous research and development, EBRACO has successfully developed its own range of sustainable air filtration products that are more efficient, cost effective and environmental friendly that bring more benefits to our end users.

EBRACO will always be the brand to strive and create a better value air filtration products to the human race. With what we do, we know and we understand, we always believe EBRACO will be the leader and play an important role in sustainable air filtration over the globe.

## Our Core Value



### COMMITMENT

We always proactively offer better solutions than promised, reliable, create shared value and always with integrity.



### ADAPTABILITY

We adapt quickly and flexibly to change, change for the better, innovate and improve constantly, thereby generating more creativity.



### RESPECT

We set criteria for fairness in all relationships, it helps us understand each other better and create success.



### EFFICIENCY

Thinking win-win, starting with the destination, being proactive and prioritizing the important things, we are a united team from which to forge excellent individuals.

## Our Global Reach

EBRACO sales and service team can be reached in 8 countries, that is Singapore, Malaysia, Vietnam, Thailand, Japan, Korea, China and Bangladesh. Our expert teams across the globe will able to provide you solutions on your air solution inquiry.



## OUR TECHNOLOGY

In EBRACO, we have continuous invest in research, development and upgrade new production facilities and machinery in order to ensure that we stay competitive.

### Super Deep & PTFE Pleater

We have invested one of the most modern filter media pleater that able to minipleat the material such as fiberglass cellulose, PP, PET and PTFE. This machine enable us to provide the market a series of revolutionary products with more compact size, lower pressure drop and higher air flow, without any tolerance to the filter efficiency.



### Robotic Gasket Foaming Station

All our filter gasket are foam by a robotic station with special polyurethane mixture to create a endless gasket on the filter frame. This is to ensure all our filter are fully sealed after installation and give the best performance for our clients.



### Advance HEPA Leak Test Station

EBRACO owns one of the most advance HEPA Filter leak test equipment which used to do integrity challenge up to ULPA grade. The test machine provide the full test result included the graph. In EBRACO, we test 100% of our HEPA and ULPA filters.



### Filter Air Flow & Pressure Drop Test Tunnel

EBRACO owns a in house filter pressure and air flow testing tunnel design accordance to EN 779 standard. The tunnel also enable in house filter efficiency test for prefilters and medium filters.



# FILTER STANDARDS

| CLASSIFICATION          | ARRESTANCE OR DUST SPOT EFFICIENCY | ASHRAE STANDARD 52.2-2012       |   |         |         | ISO 16890:2016   |               |                         |                         | EN                     |   |              |
|-------------------------|------------------------------------|---------------------------------|---|---------|---------|--|---------------|-------------------------|-------------------------|------------------------|---|--------------|
|                         |                                    | Min. Efficiency Reporting Value | Composite Average Particle Size Efficiency (Em) % in Size Range, µm |         |         | Average of initial and discharged efficiency Em = (Ei +Ed)/2 |               | Initial efficiency (Ei) | Initial Arrestance (Am) | Filter Class           | Average Arrestance (Am) of Synthetic Dust |              |
|                         |                                    |                                 | Range 1   | Range 2 | Range 3 | ePM1 (%)   | ePM2.5 (%)    | ePM10 (%)               | Coarse (%)              |                        | Test Final dP 250Pa                       |              |
| (MERV)                  | 0.3-1.0                            | 1.0-3.0                         | 3.0-10.0  | 0.3-1.0 | 0.3-2.5 | 0.3-10   | ISO Fine Dust |                         | %                       |                        |   |              |
| PRE FILTER (G CLASS)    | AFI <65 %                          | MERV 1                          |   |         | Em <20  |  |               |                         |                         | Am <50                 | G1  | 50 ≤ Am ≤ 65 |
|                         | AFI 65%-70%                        | MERV 2                          |   |         | Em <20  |  |               |                         |                         | Final dP 200 Pa        | G2  | 65 ≤ Am <80  |
|                         | AFI 70%-75%                        | MERV 3                          |   |         | Em <20  |  |               |                         |                         |                        |   |              |
|                         | AFI 75%-80%                        | MERV 4                          |   |         | Em <20  |  |               |                         |                         |                        |   |              |
|                         | AFI 80%-85%                        | MERV 5                          |   |         | Em ≥20  |  |               |                         |                         | Am ≥50 Final dP 300 Pa | G3  | 80 ≤ Am <90  |
|                         | AFI 85%-90%                        | MERV 6                          |   |         | Em ≥35  |  |               |                         |                         |                        | G4  | Am ≤90       |
|                         | NBS 25%-30%                        | MERV 7                          |   |         | Em ≥50  |  |               |                         |                         |                        |   |              |
|                         | NBS 30%-35%                        | MERV 8                          |   | Em ≥20  | Em ≥70  |  |               |                         |                         |                        |   |              |
| MEDIUM FILTER (F CLASS) | NBS 40%-45%                        | MERV 9                          |   | Em ≥35  | Em ≥75  |  |               | Er >50                  |                         |                        | M5  |              |
|                         | NBS 50%-55%                        | MERV 10                         |   | Em ≥50  | Em ≥80  |  |               |                         |                         |                        |   |              |
|                         | NBS 60%-65%                        | MERV 11                         | Em ≥20  | Em ≥65  | Em ≥85  |  | Em ≥50        | Er >70                  |                         |                        | M6  |              |
|                         | NBS 70%-75%                        | MERV 12                         | Em ≥35  | Em ≥80  | Em ≥90  |  |               |                         |                         |                        |   |              |
|                         | NBS 80%-85%                        | MERV 13                         | Em ≥50  | Em ≥85  | Em ≥90  | Em ≥50   | Em ≥65        | Er >80                  |                         |                        | F7  |              |
|                         | NBS 90%-95%                        | MERV 14                         | Em ≥75  | Em ≥90  | Em ≥95  | Em ≥70   | Em ≥80        | Er >90                  |                         |                        | F8  |              |
|                         | NBS >95%                           | MERV 15                         | Em ≥85  | Em ≥90  | Em ≥95  | Em ≥70   |               |                         |                         |                        | F9  |              |
| HEPA FILTER (H CLASS)   |                                    | N/A                             | N/A   | N/A     | N/A     | N/A  | N/A           | N/A                     | N/A                     |                        | E10                                       |              |
|                         |                                    |                                 |   |         |         |  |               |                         |                         |                        | E11                                       |              |
|                         |                                    |                                 |   |         |         |  |               |                         |                         |                        | E12                                       |              |
|                         |                                    |                                 |   |         |         |  |               |                         |                         |                        | H13                                       |              |
|                         |                                    |                                 |   |         |         |  |               |                         |                         |                        | H14                                       |              |
| ULPA FILTER (U CLASS)   |                                    |                                 |   |         |         |  |               |                         |                         |                        | U15                                       |              |
|                         |                                    |                                 |   |         |         |  |               |                         |                         |                        | U16                                       |              |
|                         |                                    |                                 |   |         |         |  |               |                         |                         |                        | U17                                       |              |

## NOTE

1. AFI : American Filter Institute

2. NBS : National Bureau of Standards

3. ASHRAE : American Society of Heating Refrigerating & Air-conditioning Engineers

7.ULPA : Ultra Low Penetration Air Filter

8. IEST : Institute of Environmental Sciences and Technology

9. Am : Average Arrestance Efficiency for Coarse Filters

13. E: Initial Efficiency

| EN779:2012                       |                                    | EN1822:2009                                       |   | Mean Fractional Efficiency | IEST RP-CC001.3  | Typical Controlled Contaminant   | Application  | EBRACO Range of Products  |
|----------------------------------|------------------------------------|---|---|----------------------------|--|--|--|---|
| Average Efficiency (Em) at 0.4µm | Minimum Efficiency (Emin) at 0.4µm | Initial Efficiency (Ei) (typically 0.08 - 0.15µm) | Test Final dP 450Pa                     |                            |  |  |  |   |
| %                                | %                                  | %   |   |                            |  |  |  |   |
|                                  |                                    |   |   |                            |  | Particle bigger than 10.0µm (Pollen) (Spanish moss) (Dust mites) (Sanding dust) (Spray paint dust) (Textile fibers)                | Gross filter, domestic and commercial  | W-Roll<br>Paint Booth Ceiling Filter - P600<br>FG 50/75/100<br>Paint Booth Plated Cardboard Paint Box<br>Paint Booth HoneyComb - PHH50                                      |
|                                  |                                    |   |   |                            |  | Particle size within 3.0µm-10.0µm (Mold) (Spores) (Hair spray) (Cement dust) (Snuff) (Powdered milk)                               | Commercial, industrial, paint shop   | Pura G<br>Pura D<br>Pura M<br>Pura Demister<br>Oven Mat<br>Activated Carbon Media<br>Coal Granular Activated Carbon<br>Activated Carbon Pleated Air Filter                  |
| 40 ≤ Em ≤ 60                     |                                    |   |   |                            |  | Particle Size within 1.0µm-3.0µm (Lead dust) (Milled flour) (Coal dust) (Auto emissions) (Nebulizer drop) (Welding fumes)          | IAQ concerned commercial & industrial, medical   | Puracel I<br>Puracel II<br>Puracel V<br>Pura Pak - S<br>Pura Pak<br>Puracel I HT<br>Puracel I XT<br>Puracel II HT<br>Activated Carbon Bag Filter<br>V-Bank Activated Carbon |
| 60 ≤ Em ≤ 80                     |                                    |   |   |                            |  |  |  |   |
| 80 ≤ Em ≤ 90                     | Emin ≥ 35                          |   |   |                            |  |  |  |   |
| 90 ≤ Em ≤ 95                     | Emin ≥ 55                          |   |   |                            |  |  |  |   |
| 95 ≤ Em                          | Emin ≥ 70                          |   |   |                            |  |  |  |   |
|                                  |                                    |   |   |                            |  | Particle size within 0.3µm-1.0µm (All bacteria) (cooking oil) (Most smoke) (Copier toner) (Most face powder) (Most paint pigments) | IAQ concerned commercial, industrial, medical, food etc  |   |
|                                  |                                    | E ≥ 85 at MPPS                                    | Em ≥ 95 at 0.3µm                        | N/A                        | Particle size bigger than 0.3µm (Virus [unattached]) (Carbon dust) (Sea salt) (All combustion smoke) (Radon progeny) | All types of cleanrooms  | Hepatec Macro<br>Hepatec Gel<br>Hepatec V<br>Hepatec II<br>Hepatec I<br>Hepatec I HT<br>Hepatec I XT |   |
|                                  |                                    | E ≥ 95 at MPPS                                    | Em ≥ 98 at 0.3µm<br>Em ≥ 99.97 at 0.3µm | TYPE A                     |  |  |  |   |
|                                  |                                    | E ≥ 99.5 at MPPS                                  | Em ≥ 99.99 at 0.3µm                     | TYPE C                     |  |  |  |   |
|                                  |                                    | E ≥ 99.95 at MPPS                                 | Em ≥ 99.995 at 0.3µm                    |                            |  |  |  |   |
|                                  |                                    | E ≥ 99.995 at MPPS                                | Em ≥ 99.999 at 0.3µm                    | TYPE D                     |  |  |  |   |
|                                  |                                    | E ≥ 99.9995 at MPPS                               | Em ≥ 99.9995 at 0.12µm                  | TYPE F                     |  |  |  |   |
|                                  |                                    | E ≥ 99.99995 at MPPS                              | Em ≥ 99.99995 at 0.12µm                 |                            | Particle size bigger than 0.12µm   | Super cleanroom  |  |   |
|                                  |                                    | E ≥ 99.999995 at MPPS                             | Em ≥ 99.999995 at 0.12µm                |                            |  |  |  |   |

4. MERV : Minimum Efficiency Reporting Value

5. MPPS : Most Penetrating Particle Size

6. HEPA : High Efficiency Particulate Air Filter

10. Em : Average Efficiency for Medium Filters

11. Emin : Minimum Efficiency

12. Eg : Discharged Efficiency



## W-Roll



Applications: Multiple Industries

### Specification

|                          |                           |
|--------------------------|---------------------------|
| EN779                    | G2, G3, G4, M5            |
| ISO 16890                | Coarse 40%, 50%, 65%, 85% |
| Roll Size(m)             | 2x20                      |
| Media Type               | Synthetic                 |
| Thickness(mm)            | 5, 10, 18, 20, 22         |
| Recomm. Final Resistance | 250                       |
| Temp.(°C)/Humidity(% RH) | 100/100                   |

## Paint Booth Ceiling Filter



Applications: Automotive

### Specification

|                          |            |
|--------------------------|------------|
| EN779                    | M5         |
| ISO 16890                | Coarse 80% |
| Roll Size(m)             | 2x20       |
| Media Type               | Synthetic  |
| Thickness(mm)            | 20         |
| Recomm. Final Resistance | 450        |
| Temp.(°C)/Humidity(% RH) | 100/100    |

## FG Roll

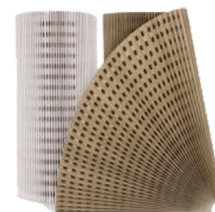


Applications: Automotive

### Specification

|                          |                      |
|--------------------------|----------------------|
| EN779                    | G2, G3, G4           |
| ISO 16890                | Coarse 50%, 60%, 65% |
| Roll Size(m)             | 2x20                 |
| Media Type               | Glass Fiber          |
| Thickness(mm)            | 50, 75, 100          |
| Recomm. Final Resistance | 250                  |
| Temp.(°C)/Humidity(% RH) | 250/100              |

## Paint Booth Plated Carboard



Applications: Automotive

### Specification

|                               |                              |
|-------------------------------|------------------------------|
| Average Filter Efficiency (%) | ≥ 90                         |
| Roll Size(m)                  | 1x10                         |
| Media Type                    | Pleated perforated cardboard |
| Thickness(mm)                 | 50, 60                       |
| Rated Speed(m³/h/Pa)          | 0.5-1.0 / 20-40              |
| Recomm. Final Resistance      | 450                          |
| Temp.(°C)/Humidity(% RH)      | 80/80                        |

## Paint Box



Applications: Automotive

### Specification

|                               |                         |
|-------------------------------|-------------------------|
| Retention Capacity (kg/m³)    | 12-15                   |
| Average Filter Efficiency (%) | ≥ 98                    |
| Media Type                    | Layered Paper Honeycomb |
| Frame Material                | Carboard                |
| Rated Speed(m³/h/Pa)          | 0.75-1.5 / 8-22.5       |
| Recomm. Final Resistance      | 500                     |
| Temp.(°C)/Humidity(% RH)      | 80/80                   |

## Paint Booth Honey Comb



Applications: Automotive

### Specification

|                            |                         |
|----------------------------|-------------------------|
| Retention Capacity (kg/m³) | 12-15                   |
| Roll Size(m)               | 1x10                    |
| Media Type                 | Layered Paper Honeycomb |
| Thickness(mm)              | 100, 180                |
| Rated Speed(m³/h/Pa)       | 0.75-1.5 / 8-22.5       |
| Recomm. Final Resistance   | 500                     |
| Temp.(°C)/Humidity(% RH)   | 80/80                   |

## Pura G Rod



Applications: Multiple Industries

### Thông Số Kỹ Thuật

|                          |                           |
|--------------------------|---------------------------|
| EN779                    | G2, G3, G4, M5            |
| ISO 16890                | Coarse 40%, 50%, 65%, 85% |
| Media Type               | Synthetic                 |
| Frame Material           | Aluminum                  |
| Thickness(mm)            | 46                        |
| Recomm. Final Resistance | 250                       |
| Temp.(°C)/Humidity(% RH) | 100/100                   |

## Pura G Pleat 1F



Applications: Multiple Industries

### Thông Số Kỹ Thuật

|                          |            |
|--------------------------|------------|
| EN779                    | G4         |
| ISO 16890                | Coarse 65% |
| Media Type               | Synthetic  |
| Frame Material           | Aluminum   |
| Thickness(mm)            | 90         |
| Recomm. Final Resistance | 250        |
| Temp.(°C)/Humidity(% RH) | 100/100    |

## Pura G Pleat 2F

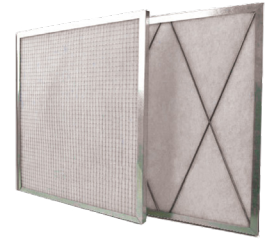


Applications: Multiple Industries

### Thông Số Kỹ Thuật

|                          |                      |
|--------------------------|----------------------|
| EN779                    | G2, G3, G4, M5       |
| ISO 16890                | Coarse 40%, 50%, 65% |
| Media Type               | Synthetic            |
| Frame Material           | Aluminum             |
| Thickness(mm)            | 46                   |
| Recomm. Final Resistance | 250                  |
| Temp.(°C)/Humidity(% RH) | 100/100              |

## Pura G Plank 1F



Applications: Multiple Industries

### Thông Số Kỹ Thuật

|                          |                            |
|--------------------------|----------------------------|
| EN779                    | G2, G3, G4, M5             |
| ISO 16890                | Coarse 40%, 50%, 65%, 85%  |
| Media Type               | Synthetic                  |
| Frame Material           | Aluminum, Galvanized steel |
| Thickness(mm)            | 21                         |
| Recomm. Final Resistance | 250                        |
| Temp.(°C)/Humidity(% RH) | 100/100                    |

## Pura G Plank 2F

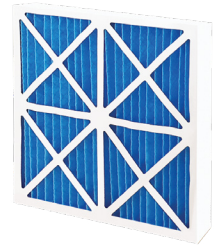


Application: F&B, Electronics, Semiconductor Manufacturing, Health & Hospital

### Specification

|                          |                            |
|--------------------------|----------------------------|
| EN779                    | G2, G3, G4                 |
| ISO 16890                | Coarse 40%, 50%, 65%       |
| Media Type               | Synthetic                  |
| Frame Material           | Aluminum, Galvanized steel |
| Thickness(mm)            | 21                         |
| Recomm. Final Resistance | 250                        |
| Temp.(°C)/Humidity(% RH) | 100/100                    |

## Pura D



Application: Commercial, F&B, Semiconductor, Health & Hospital

### Specification

|                          |                           |
|--------------------------|---------------------------|
| EN779                    | M5                        |
| ISO 16890                | Coarse 65%, 85%           |
| Media Type               | Non woven synthetic fiber |
| Frame Material           | Aluminum, Paper           |
| Thickness(mm)            | 46, 94                    |
| Recomm. Final Resistance | 250                       |
| Temp.(°C)/Humidity(% RH) | 80/100                    |

## Pura M



Application: F&B, Electronics, Semiconductor Manufacturing

### Specification

|                          |                           |
|--------------------------|---------------------------|
| EN779                    | G2, G3                    |
| ISO 16890                | Coarse 40%                |
| Media Type               | Aluminum, Stainless steel |
| Frame Material           | Aluminum, Stainless steel |
| Thickness(mm)            | 21, 25, 46, 90            |
| Recomm. Final Resistance | 250                       |
| Temp.(°C)/Humidity(% RH) | 250/100                   |

## Pura Demister



Application: F&B, Electronics, Semiconductor Manufacturing

### Specification

|                          |                           |
|--------------------------|---------------------------|
| EN779                    | G2, G3                    |
| ISO 16890                | Coarse 40%, 50%           |
| Media Type               | Aluminum, Stainless steel |
| Frame Material           | Aluminum, Stainless steel |
| Thickness(mm)            | 21, 25, 46, 90            |
| Recomm. Final Resistance | 250                       |
| Temp.(°C)/Humidity(% RH) | 250/100                   |



## Pura Pak S



Application: Automotive industry

### Specification

|                          |                                     |
|--------------------------|-------------------------------------|
| EN779                    | G4, M5, M6                          |
| ISO 16890                | Coarse 65%, ePM10 50%               |
| Media Type               | Synthetic                           |
| Frame Material           | Aluminum, Galvanized steel, Plastic |
| Thickness(mm)            | 300, 380, 530, 630                  |
| Recomm. Final Resistance | 450                                 |
| Temp.(°C)/Humidity(% RH) | 80/100                              |

## Puracel II



Application: F&B, Electronics, Semiconductor Manufacturing, Health & Hospital

### Specification

|                          |                                     |
|--------------------------|-------------------------------------|
| EN779                    | F7, F8, F9                          |
| ISO 16890                | ePM1 50%, 65%, 80%                  |
| Media Type               | Glass Fiber (Hotmelt separator)     |
| Frame Material           | Aluminum, Galvanized steel, Plastic |
| Thickness(mm)            | 70, 90                              |
| Recomm. Final Resistance | 500                                 |
| Temp.(°C)/Humidity(% RH) | 80/100                              |

## Pura Pak



Application: F&B, Electronics, Pharmaceutical, Semiconductor Manufacturing

### Specification

|                          |                                      |
|--------------------------|--------------------------------------|
| EN779                    | M5, M6, F7, F8, F9                   |
| ISO 16890                | ePM1 50%, 65%, 80%<br>ePM10 50%, 65% |
| Media Type               | Synthetic                            |
| Frame Material           | Aluminum, Galvanized steel, Plastic  |
| Thickness(mm)            | 300, 380, 530, 630                   |
| Recomm. Final Resistance | 450                                  |
| Temp.(°C)/Humidity(% RH) | 80/100                               |

## Puracel V



Application: F&B, Electronics, Pharmaceutical, Semiconductor Manufacturing

### Specification

|                          |                               |
|--------------------------|-------------------------------|
| EN779                    | F7, F8, F9                    |
| ISO 16890                | ePM1 50%, 65%, 80%            |
| Media Type               | Synthetic (Hotmelt separator) |
| Frame Material           | Plastic                       |
| Thickness(mm)            | 292                           |
| Recomm. Final Resistance | 500                           |
| Temp.(°C)/Humidity(% RH) | 80/100                        |

## Puracel I



Application: F&B, Electronics, Pharmaceutical, Semiconductor Manufacturing

### Specification

|                          |                                     |
|--------------------------|-------------------------------------|
| EN779                    | F7, F8, F9                          |
| ISO 16890                | ePM1 50%, 65%, 80%                  |
| Media Type               | Glass Fiber (Aluminum separator)    |
| Frame Material           | Aluminum, Galvanized steel, Plastic |
| Thickness(mm)            | 150, 292                            |
| Recomm. Final Resistance | 500                                 |
| Temp.(°C)/Humidity(% RH) | 100/100                             |

## Hepatec Macro

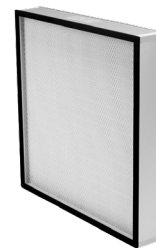


Application: F&B, Electronics, Pharmaceutical, Semiconductor Manufacturing

### Specification

|                          |   |
|--------------------------|---|
| EN1822                   | H13, H14, U15                               |
| Media Type               | Glass Fiber (Hotmelt separator)             |
| Frame Material           | Aluminum, Galvanized steel, Stainless steel |
| Thickness(mm)            | 150   |
| Gasket                   | PU foam                                     |
| Recomm. Final Resistance | 750   |
| Temp.(°C)/Humidity(% RH) | 80/100                                      |

## Hepatec II



Application: F&B, Electronics, Pharmaceutical, Health & Hospital

### Specification

|                          |                                 |
|--------------------------|---------------------------------|
| EN1822                   | H13, H14, U15, U16, U17         |
| Media Type               | Glass Fiber (Hotmelt separator) |
| Frame Material           | Aluminum                        |
| Thickness(mm)            | 70, 90, 110                     |
| Gasket                   | PU foam                         |
| Recomm. Final Resistance | 750                             |
| Temp.(°C)/Humidity(% RH) | 80/100                          |

## Hepatec Gel



Application: F&B, Electronics, Pharmaceutical, Health & Hospital

### Specification

|                          |                                 |
|--------------------------|---------------------------------|
| EN1822                   | H13, H14, U15, U16, U17         |
| Media Type               | Glass Fiber (Hotmelt separator) |
| Frame Material           | Aluminum                        |
| Thickness(mm)            | 93                              |
| Gasket                   | Gel Seal                        |
| Recomm. Final Resistance | 750                             |
| Temp.(°C)/Humidity(% RH) | 80/100                          |

## Hepatec I



Application: Semiconductor production

### Specification

|                          |                                  |
|--------------------------|----------------------------------|
| EN1822                   | H13, H14                         |
| Media Type               | Glass Fiber (Aluminum separator) |
| Frame Material           | Aluminum                         |
| Thickness(mm)            | 150, 292                         |
| Gasket                   | PU foam                          |
| Recomm. Final Resistance | 750                              |
| Temp.(°C)/Humidity(% RH) | 100/100                          |

## Hepatec V

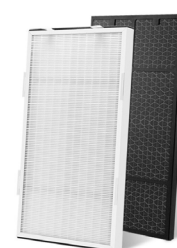


Ứng dụng: Thực phẩm, Sản xuất chất bán dẫn

### Specification

|                          |                                 |
|--------------------------|---------------------------------|
| EN1822                   | H13, H14, U15                   |
| Media Type               | Glass Fiber (Hotmelt separator) |
| Frame Material           | Aluminum, Galvanized steel      |
| Thickness(mm)            | 292                             |
| Gasket                   | PU foam                         |
| Recomm. Final Resistance | 750                             |
| Temp.(°C)/Humidity(% RH) | 80/100                          |

## Hepatec P



Application: Air Purifier

### Specification

|                          |                        |
|--------------------------|------------------------|
| EN1822                   | H13, H14               |
| Media Type               | Glass Fiber, Synthetic |
| Frame Material           | Paper, Plastic         |
| Thickness(mm)            | 30                     |
| Gasket                   | Sponge foam            |
| Recomm. Final Resistance | 250                    |
| Temp.(°C)/Humidity(% RH) | 80/80                  |

## Oven Mat



Applications: Automotive

### Specification

|                          |                   |
|--------------------------|-------------------|
| EN779                    | G4                |
| ISO 16890                | Coarse 65%        |
| Media Type               | 1x20              |
| Frame Material           | Glass Fiber       |
| Thickness(mm)            | 5, 10, 18, 20, 22 |
| Recomm. Final Resistance | 250               |
| Temp.(°C)/Humidity(% RH) | 100/100           |

## Puracel I HT 250



Application: Automotive industry, F&B, Pharmaceutical

### Specification

|                          |   |
|--------------------------|---|
| EN779                    | M6, F7, F8, F9                              |
| ISO 16890                | ePM1 50%, 65%, 80%   ePM10 65%              |
| Media Type               | Glass Fiber (Aluminum separator)            |
| Frame Material           | Aluminum, Galvanized steel, Stainless steel |
| Thickness(mm)            | 150, 292                                    |
| Recomm. Final Resistance | 500   |
| Temp.(°C)/Humidity(% RH) | 250/100                                     |

## Hepatec I HT 250



Application: Automotive, F&B, Electronics, Pharmaceutical, Semiconductor

### Specification

|                          |   |
|--------------------------|---|
| EN1822                   | H13, H14                                    |
| Media Type               | Glass Fiber (Aluminum separator)            |
| Frame Material           | Aluminum, Galvanized steel, Stainless steel |
| Thickness(mm)            | 150, 292                                    |
| Gasket                   | Heat-resistant Gasket                       |
| Recomm. Final Resistance | 750   |
| Temp.(°C)/Humidity(% RH) | 250/100                                     |

## Puracel I XT 350



Application: Electronics, Semiconductor Manufacturing

### Specification

|                          |   |
|--------------------------|---|
| EN779                    | M6, F7, F8, F9                              |
| ISO 16890                | ePM1 50%, 65%, 80%<br>ePM10 65%             |
| Media Type               | Sợi thủy tinh (Aluminum separator)          |
| Frame Material           | Aluminum, Galvanized steel, Stainless steel |
| Thickness(mm)            | 150, 292                                    |
| Recomm. Final Resistance | 500   |
| Temp.(°C)/Humidity(% RH) | 350/100                                     |

## Hepatec I XT 350



Application: Automotive industry, Pharmaceutical

### Specification

|                          |   |
|--------------------------|---|
| EN1822                   | H13, H14                                    |
| Media Type               | Glass Fiber (Aluminum separator)            |
| Frame Material           | Aluminum, Galvanized steel, Stainless steel |
| Thickness(mm)            | 150, 292                                    |
| Gasket                   | Heat-resistant Gasket                       |
| Recomm. Final Resistance | 750   |
| Temp.(°C)/Humidity(% RH) | 350/100                                     |

## Puracel II HT

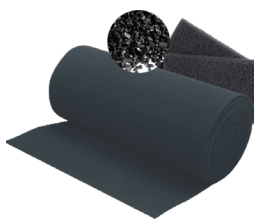


Application: Automotive industry, Pharmaceutical

### Specification

|                          |   |
|--------------------------|---|
| EN779                    | M6, F7, F8, F9                              |
| ISO 16890                | ePM1 50%, 65%, 80%                          |
| Media Type               | Glass Fiber (Hotmelt separator)             |
| Frame Material           | Aluminum, Galvanized steel, Stainless steel |
| Thickness(mm)            | 70, 120                                     |
| Recomm. Final Resistance | 500   |
| Temp.(°C)/Humidity(% RH) | 250/100                                     |

## Activated Carbon Media

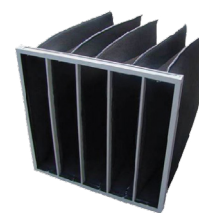


Application: Odor and gas removal for many industries

### Specification

|                          |                           |
|--------------------------|---------------------------|
| EN779                    | G2, G3, G4                |
| ISO 16890                | Coarse 40%, 50%, 65%, 85% |
| Roll Size(m)             | 2x20                      |
| Media Type               | Activated carbon          |
| Thickness(mm)            | 3, 5, 10                  |
| Recomm. Final Resistance | 250-450                   |
| Temp.(°C)/Humidity(% RH) | 80/80                     |

## Activated Carbon Bag Filter



Application: Odor and gas removal for many industries

### Specification

|                          |                           |
|--------------------------|---------------------------|
| EN779                    | F7, F8, F9                |
| ISO 16890                | ePM1 40%, 65%, 80%        |
| Media Type               | Activated carbon          |
| Frame Material           | Aluminum, Stainless steel |
| Thickness(mm)            | 21                        |
| Recomm. Final Resistance | 450                       |
| Temp.(°C)/Humidity(% RH) | 80/80                     |

## Granular Carbon V Bank



Application: Odor and gas removal for many industries

### Specification

|                          |  |
|--------------------------|--|
| Efficiency               | 90%  |
| ISO 16890                | ePM1 40%, 65%, 80%                                     |
| Media Type               | Granular Activated Carbon,<br>Granular Chemical Filter |
| Frame Material           | Plastic, Stainless steel                               |
| Thickness(mm)            | 292  |
| Recomm. Final Resistance | 450  |
| Temp.(°C)/Humidity(% RH) | 80/80  |

## Activated Carbon V Bank

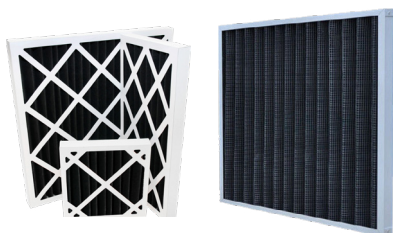


Application: Odor and gas removal for many industries

### Specification

|                          |                    |
|--------------------------|--------------------|
| EN779                    | F7, F8, F9         |
| ISO 16890                | ePM1 40%, 65%, 80% |
| Media Type               | Activated carbon   |
| Frame Material           | Plastic            |
| Thickness(mm)            | 292                |
| Recomm. Final Resistance | 450                |
| Temp.(°C)/Humidity(% RH) | 80/80              |

## Activated Carbon Pleated Air Filter

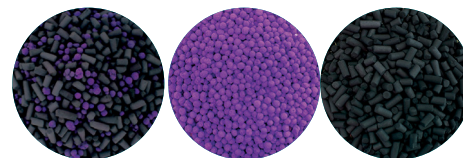


Application: Odor and gas removal for many industries

### Specification

|                          |                                     |
|--------------------------|-------------------------------------|
| EN779                    | G2, G3, G4                          |
| ISO 16890                | Coarse 40%, 50%, 65%, 85%           |
| Media Type               | Activated carbon                    |
| Frame Material           | Aluminum, Stainless steel,<br>Paper |
| Thickness(mm)            | 21, 25, 46, 90                      |
| Recomm. Final Resistance | 250-450                             |
| Temp.(°C)/Humidity(% RH) | 80/80                               |

## Coal Granular Activated Carbon



Application: Odor and gas removal for many industries

### Specification

| Model                     | A   | B  | C   |
|---------------------------|---|--|---|
| Targeted Gas              | Hydrocarbons<br>Chlorine Nitric<br>Dioxide<br>Organic gas | Sulphur<br>OxideNitric<br>Oxide<br>Formaldehyde<br>Organic Gas | Sulphur<br>Dioxide<br>Hydrogen<br>sulfide |
| Efficiency                | 99.5%   | 99.5%  | 99.5%                                     |
| Max Operating Temperature | 10-95%<br>20-51°C   | 10-95%<br>20-51°C  | 10-95%<br>20-51°C                         |

## Chemical Cassette Filter



Application: Odor and gas removal for many industries

### Specification

|                          |   |
|--------------------------|---|
| Efficiency               | >90%  |
| Media Type               | Granular Activated Carbon, Granular Chemical Filter |
| Frame Material           | ABS   |
| Dimensions (WxHxD) mm    | 300x300x292, 145 x 300 x 440                        |
| Temp.(°C)/Humidity(% RH) | 80/80   |

## Chemical Cartridge Filter



Application: Odor and gas removal for many industries

### Specification

|                          |   |
|--------------------------|---|
| Efficiency               | >90%  |
| Media Type               | Granular Activated Carbon, Granular Chemical Filter |
| Frame Material           | ABS   |
| Dimensions (WxHxD) mm    | 145x600, 145x450                                    |
| Temp.(°C)/Humidity(% RH) | 80/80   |

## Polyester Cartridge Filter



Application: Dust filtration in powder spraying, sandblasting, paint, wood, cement

### Specification

|                          |                |
|--------------------------|----------------|
| Efficiency               | >90%           |
| Media Type               | Polyester      |
| Frame Material           | Galvanized     |
| Overall Diameter (Φ) mm  | 324, 352       |
| Length (mm)              | 660, 750, 1000 |
| Temp.(°C)/Humidity(% RH) | 135/100        |
| Cleaning ability         | Yes            |

## Nano Cellulose Cartridge Filter



Application: Dust filtration in powder spraying, sandblasting, paint, wood, cement

### Specification

|                          |                |
|--------------------------|----------------|
| ASHRAE 52.2-2007         | Up to MERV 15  |
| Media Type               | Nano cellulose |
| Frame Material           | Galvanized     |
| Overall Diameter (Φ) mm  | 324, 352       |
| Length (mm)              | 660, 750, 1000 |
| Temp.(°C)/Humidity(% RH) | 135/100        |
| Fire resistance          | Yes            |

## High Temperature Resistance Cartridge



Application: Dust filtration in powder spraying, sandblasting, paint, wood, cement

### Specification

|                          |                |
|--------------------------|----------------|
| ASHRAE 52.2-2007         | Up to MERV 15  |
| Media Type               | PPS, NOMEX     |
| Frame Material           | Galvanized     |
| Overall Diameter (Φ) mm  | 142, 156, 178  |
| Length (mm)              | 660, 750, 1000 |
| Temp.(°C)/Humidity(% RH) | 190, 232 /100  |
| Fire resistance          | Yes            |

## Oval Cartridge Filter



Application: Dust filtration in pharmaceutical, F&B, Powder spraying

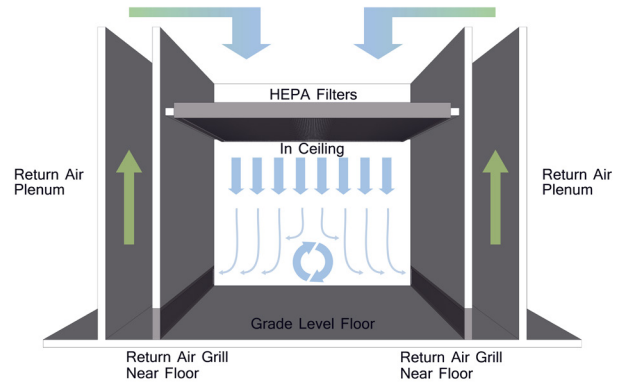
### Specification

|                          |               |
|--------------------------|---------------|
| ASHRAE 52.2-2007         | Up to MERV 15 |
| Media Type               | Ultra Web     |
| Frame Material           | Galvanized    |
| Overall Diameter (Φ) mm  | 324, 352, 365 |
| Length (mm)              | 660, 750      |
| Temp.(°C)/Humidity(% RH) | 135/100       |
| Fire resistance          | Yes           |



# CLEAN ROOM STANDARDS

Cleanrooms are becoming an indispensable space for many different industries and manufacturing industries. Cleanroom standards are created to improve product quality, build a clean production environment, and ensure safety standards. Cleanroom standards were first regulated in 1963, in the US. It is a standard built from regulations on dust content per unit volume of air, temperature, humidity, and pressure. Since then, this standard has been gradually improved, perfected and become a standard applicable to the whole world.



## WHAT IS CLEANROOM?      HOW DOES IT WORK?      WHO NEED CLEANROOM?

A cleanroom is a sterile environment in which contaminants such as dust, airborne germs, and aerosol particles are filtered away to offer the cleanest possible environment. The majority of cleanrooms are used to manufacture electronics, pharmaceuticals, and medical equipment. Depending on the amount of particles allowed per cubic meter, a cleanroom can be divided into different categories of contaminants. Temperature, air flow, and humidity are all controlled in cleanrooms.

Cleanrooms are designed to filter pollutants, particulates, and toxins from the ambient air. The air from outside is initially pumped through a filter system. After that, the filters (HEPA or ULPA) clean and sanitize the outside air to their standards. The filtered air is then forced into the cleanroom. Additionally, contaminated air within the cleanroom is forced outside the room by registers, or it is recirculated back into the filters, and the process restarts.

A company might require a cleanroom for a variety of reasons. A cleanroom is likely to be required if you're producing something that is easily affected by contaminants or particles in the air. Here are a few common industries that regularly use cleanrooms: Manufacturing Companies, Research Facilities, Pharmaceutical Companies, Medical Laboratories, Electronic Part Production, Aerospace Industry, Nanotechnology production, Optics and Lens Manufacturing, Military Applications

# CLEAN ROOM STANDARD EQUALITY

| ISO 14611-1 CLEAN ROOM STANDARD |                                  |         |         |            |           |         |
|---------------------------------|----------------------------------|---------|---------|------------|-----------|---------|
| CLASS                           | Maximum Particles/m <sup>3</sup> |         |         |            |           |         |
|                                 | >0.1 um                          | >0.2 um | >0.3 um | >0.5 um    | >1 um     | >5 um   |
| ISO 1                           | 10                               | 2       |         |            |           |         |
| ISO 2                           | 100                              | 24      | 10      | 4          |           |         |
| ISO 3                           | 1,000                            | 237     | 102     | 35         | 8         |         |
| ISO 4                           | 10,000                           | 2,370   | 1,020   | 352        | 83        |         |
| ISO 5                           | 100,000                          | 23,700  | 10,200  | 3,520      | 832       | 29      |
| ISO 6                           | 1,000,000                        | 237,000 | 102,000 | 35,200     | 8,320     | 293     |
| ISO 7                           |                                  |         |         | 352,000    | 83,200    | 2,930   |
| ISO 8                           |                                  |         |         | 3,520,000  | 832,000   | 29,300  |
| ISO 9                           |                                  |         |         | 35,200,000 | 8,320,000 | 293,000 |

## DESIGN REQUIREMENTS FOR CLEAN ROOM CLASSIFICATION

| CRITERIA               | Class 10<br>ISO 4              | Class 100<br>ISO 5            | Class 1000<br>ISO 6                  | Class 10,000<br>ISO 7                | Class 100,000<br>ISO 8        |
|------------------------|--------------------------------|-------------------------------|--------------------------------------|--------------------------------------|-------------------------------|
| Air changes per HR/Min | 500-600/8 to 10                | 300-480/5 to 8                | 180/3                                | 60/1                                 | 20/0.33                       |
| Filter coverage %      | 90-100                         | 60-70                         | 20-30                                | 7-15                                 | 4-5                           |
| CFM per square foot    | 85-90                          | 36-65                         | 18-32                                | 9-16                                 | 4-8                           |
| Filter Efficiency      | 99.9997%<br>ULPAs              | 99.997%<br>HEPAs              | 99.997%<br>HEPAs                     | 99.997%<br>HEPAs                     | 99.97%<br>HEPAs               |
| Ceiling Type           | Aluminum T-bar grid            | Aluminum T-bar grid           | Aluminum T-bar grid                  | Conventional T-bar grid              | Conventional T-bar grid       |
| Light Fixture Type     | Tear drop or Flow thru         | Tear drop or Flow thru        | Tear drop or 2"-4" cleanroom fixture | Tear drop or 2"-4" cleanroom fixture | 2"x4" standard fixture        |
| Wall System            | FRP, Vinyl rock or Mylar       | FRP, Vinyl rock or Mylar      | Vinyl rock or Mylar                  | Vinyl rock or Mylar                  | Vinyl rock or Mylar           |
| Wall System            | Modular or standard built      | Modular or standard built     | Modular or standard built            | Modular or drywall                   | Modular or drywall            |
| Flooring System        | Welded sheet vinyl or Epoxy    | Welded sheet vinyl or Epoxy   | Welded sheet vinyl or Epoxy          | Sheet vinyl or VCT                   | Sheet vinyl or VCT            |
| Floring Base           | 2" to 6" cover                 | Cove or aluminum base channel | Cove or aluminum base channel        | Cove or aluminum base channel        | Cove or aluminum base channel |
| Air Returns            | Raised floor or center returns | Low wall on long axis         | Low wall at perimeter                | Low wall                             | Low wall or ceiling           |

| FED-209E        | EU GMP STANDARDS |                                   |                                |                                      |                                      |
|-----------------|------------------|-----------------------------------|--------------------------------|--------------------------------------|--------------------------------------|
| CLEANROOM CLASS | GRADE            | At Rest<br>>0.5 um/M <sup>3</sup> | At Rest<br>>5um/M <sup>3</sup> | Operational<br>>0.5um/M <sup>3</sup> | Operational<br>>0.5um/M <sup>3</sup> |
|                 |                  |                                   |                                |                                      |                                      |
|                 |                  |                                   |                                |                                      |                                      |
| Class 1         |                  |                                   |                                |                                      |                                      |
| Class 10        |                  |                                   |                                |                                      |                                      |
| Class 100       |                  |                                   |                                |                                      |                                      |
| Class 1,000     | A                | 3,520                             | 20                             | 3,520                                | 20                                   |
| Class 10,000    | B                | 3,520                             | 29                             | 352,000                              | 2,900                                |
| Class 100,000   | C                | 352,000                           | 2,900                          | 3,520,000                            | 29,000                               |
| Room Air        | D                | 3,520,000                         | 29,000                         | not defined                          | not defined                          |

## The Laminar Airflow (LAF)



### **Description**

- Equipment to prevent cross-contamination and provide sterilization cleaning to the product.
- Product working principle: High-velocity HEPA filtered clean air jets with speeds of 25 m/s to do the cleaning by scrubbing the external surface of materials entering or exiting the controlled environment. Contaminated air then pulled into the unit's base, filtered, and recirculated.
- The sterile process can be performed by UV lights installed in the unit during the material cleaning process.
- Suitable for raw material and finish good transferring in cleanroom or controlled environment.



Application: Chemical industry, Pharmaceutical, Nutrition, Biotechnology

### Specification

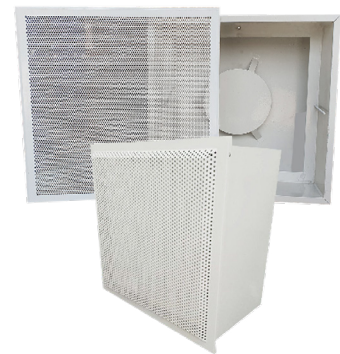
|                          |   |
|--------------------------|---|
| Product ID               | Ebraco - LAF  |
| Main body                | SUS304; Powder Coating Electro-Galvanized Steel (PCGI)  |
| Wall material            | Vinyl softwall, acrylic, SUS 304                        |
| Air velocity (m/s)       | 0.36-0.54   |
| Diffuser                 | Perforated SUS 304; Membrane                            |
| Configuration (Position) | Hanging; Standing                                       |
| Controller               | Micro-controller with Individual Fan adjust; Mechanical |
| Cleanroom class          | Class 100, 1k, 10k, 100k (Class A,B,C,D)                |
| Optional                 | PAO port, Pressure gauge, UV light, front cover         |

## HEPABOX



### **Description**

- Create cleanroom environment in controlled processing area.
- Hepa Box(s) are one of the most important components in cleanroom technology as defined by the ISO 14644-I standard.
- This product comes in variety of heights to accommodate different HEPA filter thicknesses with the air-inlet collars on the side or top."



Applications: Automotive, F&B, Semi-conductor & Electronics, Chemical Industry, Pharmaceutical, Nutraceutical, Biotechnology, Hospital & Healthcare

### Specification

|            |  |
|------------|--|
| Product ID | Ebraco - Hepabox                                       |
| Main body  | SUS304; Powder Coating Electro-Galvanized Steel (PCGI) |
| Collar     | Top (Ø 250 / Ø 300)                                    |
| Diffuser   | 5 Way diffuser; Flat                                   |
| PAO Port   | Ebraco Standard (Contact us for more information)      |

## Fan Filter Unit (FFU)



### **Description**

- Create cleanroom environment in controlled processing area
- Fan filter Unit (FFU) is a motorized air filtering unit that applicable to be used for cleanroom environment with or without laminar air flow. This unit is highly adaptable, flexible, and may easily installed and position at ceiling keep or ceiling mounted system.
- FFU(s) are widely used in Electronics and semi-conductor production.
- The controller comes with individual unit control and group control by routers and centralize monitoring system.”



Application: Semi-conductor & Electronics

### Specification

|                    |  |
|--------------------|--|
| Product ID         | Ebraco - FFU   |
| Main body          | SUS304; SUS403; Aluminum; Powder Coating Electro-Galvanized Steel (PCGI) |
| Power Supply       | 220V 1 Phase 50/60Hz   |
| Air velocity (m/s) | 0.36-0.54  |
| Speed Controller   | Continuous, 3 Step, Router group control                                 |
| Noise Level (dB)   | <55 dB at 0.45 m/s (without diffuser)                                    |
| Optional           | Pressure port, collar, room side change                                  |

## Clean Bench



### **Description**

- Create cleanroom environment in controlled processing area
- Clean Bench or widely known as Laminar flow cabinet is type of equipment that provides product protection by giving the condition of the bench only flow and exposed with HEPA-filtered air.
- The clean bench comes with vertical flow type and horizontal flow type.
- Suitable for micro-organism culture process, product quality check, biotech and electronic research which require well-controlled clean environment.”



Applications: Automotive, Semi-conductor & Electronics, Chemical Industry, Pharmaceutical, Nutraceutical, Biotechnology, Hospital & Healthcare

### Specification

|                      |  |
|----------------------|--|
| Product ID           | Ebraco - Clean Bench                                   |
| Main Body            | SUS304; Powder Coating Electro-Galvanized Steel (PCGI) |
| Internal Height (mm) | 610/915/1220   |
| Power supply         | 220 V 1 Phase 50/60 Hz                                 |
| Air velocity (m/s)   | 0.36-0.54  |
| Speed controller     | Manual controller, PLC control                         |
| Noise level (dB)     | <55 dB   |
| Air flow type        | Vertical, Horizontal                                   |
| Optional             | PAO port, Pressure gauge, UV light, front cover        |

## OT Laminar



### **Description**

- Create cleanroom environment for medical operation process.
- This equipment was specifically designed and created to assist Operation (Surgery) process in the hospital by following the European Hospital Ministry's standard which strict quality control of clean air supply with low noise level are the 2 main targets to be achieved.
- Class of cleanliness are built to ISO 5 and ISO 7 standards to suit different medical operation requirements.



Applications: Hospital

### Specification

|                     |  |
|---------------------|--|
| Product ID          | Ebraco - OT-Laminar  |
| Main body           | SUS304; Powder Coating Electro-Galvanized Steel (PCGI)       |
| Power supply        | 220V 1 Phase 50/60 Hz0                                       |
| Air velocity (m/s)  | 0.36-0.54  |
| Air Diffuser        | Perforated SUS 304; Membrane                                 |
| Supply Air filter   | 99.995% at 0.3 Microns (H14); 99.9995% at 0.12 Microns (U15) |
| Accessories         | PAO port   |
| Optional            | BIBO exhaust system  |
| Conformity standard | ISO EN 14644-3 area<br>NFS-90351 (area risk 3&4)             |

## Bag-In-Bag-Out (BIBO)



### **Description**

- Create cleanroom environment in controlled processing area
- A BFU (Blower Fan Filter) is a fan-powered clean supply device. The BFU is mounted on the clean room ceiling and consists of three primary components: a fan, an air filter, and an air vent. It is commonly employed in sectors such as biotechnology and electronics where fresh air is required.



Applications: Chemical Industry, Pharmaceutical, Nutraceutical, Biotechnology, Waste Water

### Specification

|                          |  |
|--------------------------|--|
| Product ID               | Ebraco - BIBO  |
| Main body                | SUS304; SUS316; Powder Coating Electro-Galvanized Steel (PCGI)                   |
| Bypass test              | DIN 19464, DIN 25414   |
| Pressure resistance test | 100mBar, 500mBar (max)   |
| Accessories              | Leak test port, pressure gauge, leak test scanner, replacement bag, sealing tool |
| Optional                 | Mobile unit  |
| Configuration (Position) | Hanging  |



## Dispensing Booth (RLAF)



### **Description**

- Personal protective equipment for pharmaceutical dispensing and weighing process.
- The dispensing booth (RLAF) works as a negative pressure environment towards the cleanroom in order to prevent the pharmaceutical raw material to contaminate the external cleanroom environment. The unit's self-circulating air flow pattern with return air at the bottom of the equipment to ensure the air suction draws the raw material into the return air chamber in order to protect the operator from over-exposed to the pharmaceutical ingredients.
- Built to Class ISO 5 effective work space at rest condition.



Applications: Chemical Industry, Pharmaceutical, Nutraceutical, Biotechnology

### Specification

|                          |  |
|--------------------------|--|
| Product ID               | Ebraco - Dispensing Booth (RLAF)                               |
| Main body                | SUS304; SUS316; Powder Coating Electro-Galvanized Steel (PCGI) |
| Lighting                 | LED; Sodium Light  |
| Air velocity (m/s)       | 0.36-0.54  |
| Diffuser                 | Perforated SUS 304; Membrane                                   |
| Configuration (Position) | Standing; Hanging  |
| Side-wall                | SUS304; Vinyl Curtain  |
| Controller               | PLC + HMI display; Mechanical                                  |

## Filter Box



### **Description**

- Air treatment solution for consumer that require exclusive additional air filtration mainly for commercial, industrial, residential environments
- We offer a wide selection of solutions for various applications, ranging from holding frames to fully scannable filter safety housings.
- Applicable for both fresh air and exhaust air treatment, with various option of filtration stages available.



Applications: Multiple Industries

### Specification

|                      |  |
|----------------------|--|
| Product ID           | Ebraco - Filter Box  |
| Main Body            | SUS304; SUS403; Aluminum; Powder Coating Electro-Galvanized Steel (PCGI) |
| Filter Option        | G4; Carbon Filter; Hepatec V; Bag Filter; Salt Filter                    |
| Dimension (W x H) mm | Depends on the request   |
| Pressure Gauge       | 1  |
| Optional             | Alarm/Blower/Ducting & Flange  |
| Noise Level (dB)     | <55 dB at 0.45 m/s (without diffuser)                                    |
| Optional             | Pressure port, collar, room side change                                  |

## Air Shower



### Description

- Facility (Equipment) to prevent cross-contamination and provide sterilization/cleaning to the product or human entering cleanroom environment.
- The blower(s) in the equipment forces air through HEPA filters then ejected into the chamber at high speeds via nozzles to the product/ human entering cleanroom. The air shower is a self-circulating air flow system that does not exchange air with the surrounding environment.
- Suitable for cleaning human body and huge size material in cleanroom environment or controlled environment



Applications: Chemical Industry, Pharmaceutical, Nutraceutical, Biotechnology, Automotive, F&B, Semi-conductor & Electronics, Painting Booth

### Specification

| Product ID             | Ebraco - Airshower  |
|------------------------|---|
| Main Body              | SUS304; Powder Coating Electro-Galvanized Steel (PCGI)                    |
| Door                   | Swing door, sliding door, high-speed door                                 |
| Air velocity (m/s)     | 20-25   |
| Pre-filter/Hepa-Filter | 90-92% (G4); 99.995% at 0.3 Microns (H14); 99.9995% at 0.12 Microns (U15) |
| Sides of Blow          | Single side; 2 sides; 3 sides   |
| Controller             | Smart energy-saving PLC   |
| Flooring               | SUS304  |

## Air Shower Pass Box



### Description

- Equipment to prevent cross-contamination and provide sterilization/ cleaning to the product.
- Product working principle: High-velocity HEPA filtered clean air jets with speeds of 25 m/s to do the cleaning by scrubbing the external surface of materials entering or exiting the controlled environment. Contaminated air then pulled into the unit's base, filtered, and recirculated.
- The sterile process can be performed by UV lights installed in the unit during the material cleaning process.
- Suitable for raw material and finish good transferring in cleanroom or controlled environment.



Applications: Chemical Industry, Pharmaceutical, Nutraceutical, Biotechnology, Semi-conductor & Electronics

### Specification

| Product ID             | Ebraco - Airshower Passbox  |
|------------------------|---|
| Main Body              | SUS304; Powder Coating Electro-Galvanized Steel (PCGI)                    |
| Air velocity (m/s)     | 20-25   |
| Pre-filter/Hepa-Filter | 90-92% (G4); 99.995% at 0.3 Microns (H14); 99.9995% at 0.12 Microns (U15) |
| Sides of Blow          | Vertical / Horizontal (Single side)                                       |
| Sides of Blow          | Single side/2 sides/3 sides   |
| Controller             | Smart energy-saving PLC   |

## Static Pass Box



### **(i) Description**

- Equipment to prevent cross-contamination during material transferring between different class cleanroom.
- This product allows materials to be transferred in and out of cleanrooms. It help reduces operator traffic getting in and out controlled facilities, lowering the danger of process and final product cross-contamination.
- Sterile process can be performed by UV lights installed in the unit during material transferring process.
- Suitable for basic cleanroom material transfer application in food & beverage, pharmaceutilca and eletronic production.



### Specification

|                  |  |
|------------------|--|
| Product ID       | Ebraco - Passbox                                       |
| Main Body        | SUS304; Powder Coating Electro-Galvanized Steel (PCGI) |
| Interlock        | Electromagnetic; Mechanical Lock                       |
| Indicating Light | Yes  |
| Optional         | UV light, alarm, Intercall phone, stand                |

## Dynamic Pass Box



### **(i) Description**

- Equipment to prevent cross-contamination and provide sterilization to the products from hazardous particle to the other cleanroom facilities
- During material transfers, the laminar air removes any traces of impurities on the surface of the packaging and production material. The sterile process also performed by UV light to remove any possible micro-organism on the maerial surface.
- Cleaning and sterilization duration can be adjusted by controller
- Suitable for pharmaceutical Class ISO 5 and ISO 6 material transferring process to meet critical cleanliness requirements.



Applications: Chemical Industry, Pharmaceutical, Nutraceutical, Biotechnology, Semiconductor & Electronics

### Specification

|                        |   |
|------------------------|---|
| Product ID             | Ebraco - Dynamic Passbox  |
| Main body              | SUS304; Powder Coating Electro-Galvanized Steel (PCGI)                    |
| Interlock              | Electromagnetic; Mechanical Lock  |
| Indicating Light       | Yes   |
| Pre-filter/Hepa-Filter | 90-92% (G4); 99.995% at 0.3 Microns (H14); 99.9995% at 0.12 Microns (U15) |
| Air velocity (m/s)     | 0.39-0.54   |
| Lighting               | LED   |
| Optional               | UV light, alarm, Intercall phone, stand                                   |
| Noise level (dB)       | <55   |

## Mist Shower



### Description

- Equipment to prevent cross-contamination of hazardous pharmaceutical ingredient particles to the other cleanroom facilities
- Mist Shower ejects a finely atomized mist to the user's garment and prevent them from migrating outside the containment area. This also provides essential protection to the operator's respiratory system, protecting the operator from inhalation hazards. The mist shower works by gently wetting the surface of the operator's protective gown with a fine water mist causing the powder to stick to the surface instead of becoming airborne. The powder then is blown by high speed HEPA filtered air at 25 m/s in order to get rid off from human's garment.
- The unit comes with drainage tray and piping for frequent cleaning purpose.
- Suitable for operator's garment cleaning while exiting the production facilities in pharmaceutical production."



Application: Pharmaceutical

### Specification

|                    |                                    |
|--------------------|------------------------------------|
| Product ID         | Ebraco - Mist Shower               |
| Main body          | SUS304; SUS316                     |
| Power supply       | 380V 3 Phase 50/60 Hz              |
| Air velocity (m/s) | 0.3-0.5                            |
| Mist particle Size | 10-50 micron                       |
| Controller         | Smart energy saving PLC            |
| Drainage Platform  | SUS 304 grille                     |
| Return/Exhaust Air | 3 stage BIBO                       |
| Optional           | PAO port, Pressure gauge, UV light |

## AIR PURIFIER EHP 800



### Description

- Air purifier that highly recommended to be used in medical facilities, office, and home.
- The air purifier able to filter the airborne particles, remove the odor, cigarette smoke, micro-organism and virus up to 99.97%.
- This air purifier is equipped with medical grade HEPA filters, ionizer and UV light to eliminate the harmful particles.
- This unit comes with particle sensor and automatically adjust the filtration air flow to optimize the quality of the indoor air.



Applications: Patient recovery room, Infant room

### Specification

|   |                  |
|---|------------------|
| Product ID                                | Ebraco - EHP 800 |
| Coverage Area(m²)/ Clean Air Volume (CMH) | 20 - 60 / 800    |
| Noise dB (A)                              | 50               |
| Product Size (LxWxH) mm                   | 590x410x995      |
| Power Supply V/Hz                         | 230/50           |
| Achievable Cleaness                       | Class 10k        |
| Efficiency                                | 99.97%           |
| Conformity Standard                       | ISO 13485        |

## OUR RESULT

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