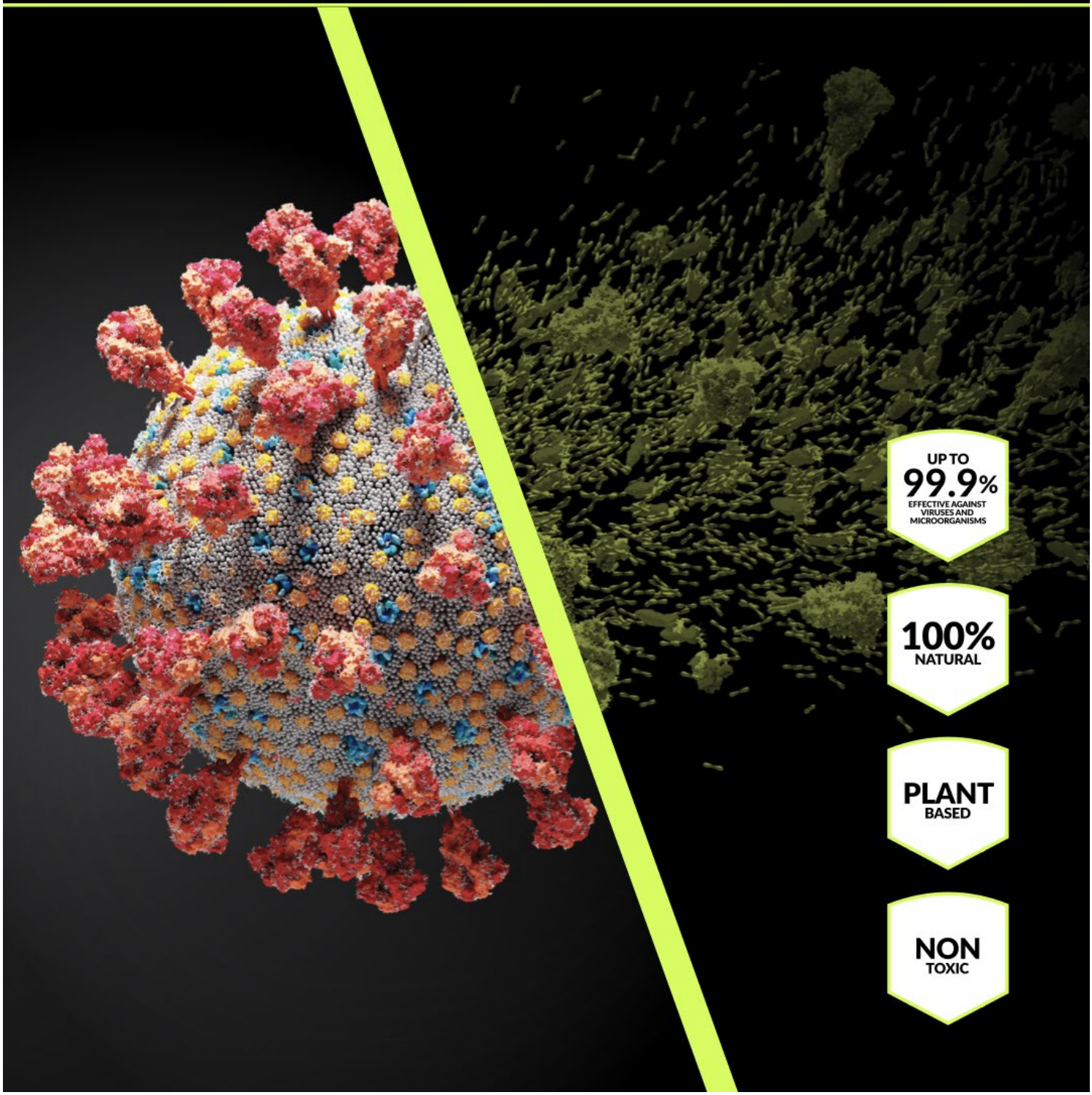
WORLDWIDE ENVISION CENTRE

SOLE DISTRIBUTOR OF C-POLAR™
VENTILATION SOLUTIONS IN HONG KONG

C-POLAR

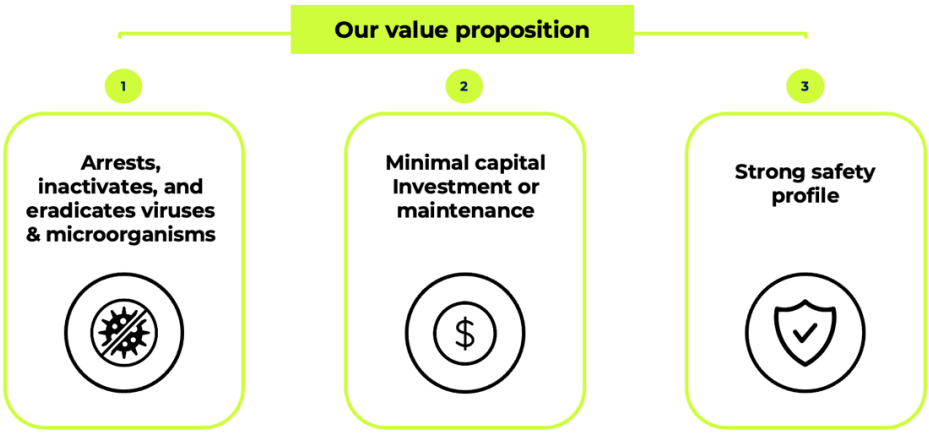
ARREST, INACTIVATE, ERADICATE VIRUSES & MICROORGANISMS



Introduction

Traditional nonwoven air filters are designed to trap and block small particulates and microorganisms. However, even if the filter can trap 99.9% of microorganisms, the filter does not eradicate them. Consequently, microbials can accumulate and some even grow at trapping sites over time, leading to biofouling. Biofouling of filters causes the dissemination of pathogens into the air outlet, reducing its effectiveness and shelf life. It also provides a risk of infection to the users and individuals replacing or handling the filters.

To address this critical need, we developed C-POLAR™, a revolutionary technology that provides protection against viruses and microorganisms. C-POLAR™ is a positively polar material that can be incorporated into the air filter manufacturing process, thereby augmenting the filter's effectiveness.



Arrests, Inactivates, and Eradicates Viruses

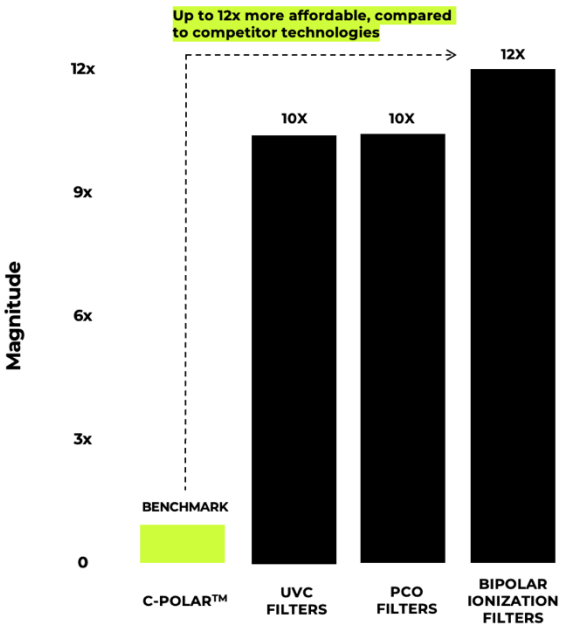
Multiple third-party studies and commercial installations demonstrate that filtration media coated with C-POLAR™ arrests, inactivates, and eradicates viruses and microorganisms with up to 99.9% efficiency. Our technology's efficacy and safety has been tested and verified by leading medical and regulatory institutions in the United States, Czech Republic, Hong Kong, Finland, and United Kingdom.

Testing and Verification	
HARVARD MEDICAL SCHOOL / MASSACHUSETTS GENERAL HOSPITAL	Testing from Massachusetts General Hospital, Harvard Medical School, found that C-POLAR™ material eradicated **92%** of Staphylococcus Aureus after 10-minute incubation period.
Czech Academy of Sciences	Testing from The Czech Academy of Sciences found that C-POLAR™ material eradicated >**99.6%** of SARS-CoV-2 within 30 minutes (98% within 5 minutes).
UNIVERSITY OF MINNESOTA	Testing from The University of Minnesota found that C-POLAR™ air filters had significantly improved collection efficiency and substantially reduced viable bovine coronavirus concentration by **99.3%**, compared to control.
香港都會大學 HONG KONG METROPOLITAN UNIVERSITY	Testing from Hong Kong Metropolitan University found that C-POLAR™ material eradicated >**99.9%** of Staphylococcus Aureus, Escherichia Coli, and Pseudomonas Aeruginosa.
Tampere University	Testing from Finland's Tampere University found that C-POLAR™ material arrested >**99.9%** of human coronavirus and Coxsackievirus B6 within 5 minutes.
NHS	The United Kingdom's NHS verified and manufactures **C-POLAR™ FFP3 respirators** using C-POLAR™ material to protect frontline NHS workers.

Minimal Capital Investment or Maintenance Costs

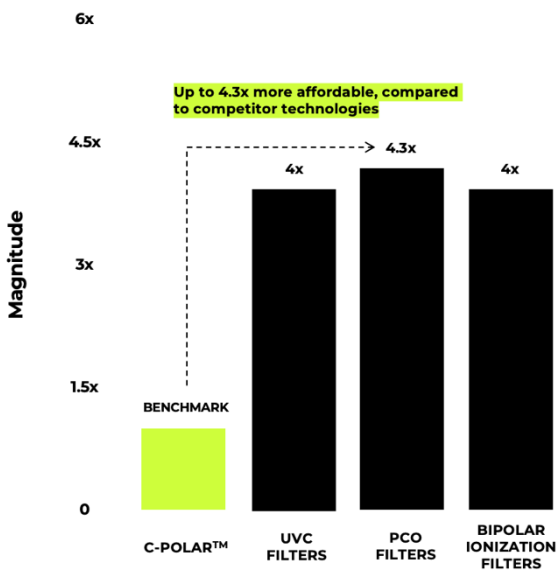
In addition to providing enhanced protection, C-POLAR™ equipped filters require minimal capital investment or maintenance costs, compared to leading competitor technologies. A third-party industrial review found that C-POLAR™ had a substantially lower initial capital investment and yearly running cost, compared to filters using UVC, PCO, and bipolar ionization. This results in potential cost savings, and a reduced electricity bill, which may generate carbon credits and fulfill ESG goals.

Initial capital investment cost



Note: Additional equipment for UVC, PCO, and BI filters are replaced every two years, meaning capital investment costs recur every two years

Estimated yearly running cost



Safety

C-POLAR™ filters have a strong safety profile. The C-POLAR™ base ingredient is approved by the WHO and the FDA as a safe food additive, and the material has been tested by several third-party labs and shown to be non-toxic, unlike filters using UVC, titanium dioxide, and copper and nanosilver, which may cause adverse health effects for humans.

C-POLAR

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Viruses & Microorganisms

C-POLAR™ filters are the ultimate replacement of existing air filtration applications, fulfilling all 4 essential functions in preventing transmission of pathogens

		Competitors		
	C-POLAR filters	**HEPA filters**	**Filters with UVC**	**Filters using bipolar ionization**
Capture viruses and bacteria	☑ Studies demonstrate that C-POLAR filters effectively captures viruses and bacteria.	☑ HEPA filters are effective in capturing viruses and bacteria through sieving, interception, inertial impaction, and diffusion.	✗ UVC filters, when used in isolation, do not capture particles.	✗ Ions from bipolar ionization can make particles drop out of the air. However, studies show that these particles can be resuspended by human activity.
Inactivates viruses and bacteria	☑ Studies demonstrate that C-POLAR effectively inactivates viruses and bacteria.	✗ HEPA filters, in isolation, do not inactivate viruses and bacteria.	☑ UVC filters can inactivate viruses and bacteria.	✗ A study by Boeing found that bipolar ionizers showed minimal reductions in viral inactivation and no reductions in bacteria such as *Staphylococcus Aureus*, *E. Coli*, and *Enterococcus Faecalis*.
Low energy consumption	☑ C-POLAR filters can reduce energy consumption due to its relatively minimal effect on pressure drop.	✗ Due to the thickness of the filter media, HEPA filters experience relatively high pressure drops, which results in higher energy consumption.	✗ UVC filters have higher energy consumption from added light fixtures, especially when the light runs constantly.	☑ Bipolar ionization filters do not significantly increase energy usage in filtration systems.
Strong safety profile	☑ C-POLAR is created with a WHO-approved food additive. Studies demonstrate that C-POLAR is non-cytotoxic.	☑ HEPA filters are typically safe. In some cases, safety may be compromised since bacteria is not eliminated. Bacteria can grow at the trapping sites over time and lead to biofouling through overloading of trap sites.	✗ Direct exposure to UVC can cause eye and skin damage, as well as damage to plants.	✗ Bipolar ionization systems may emit ozone – some at high levels – which is very damaging on human lungs.

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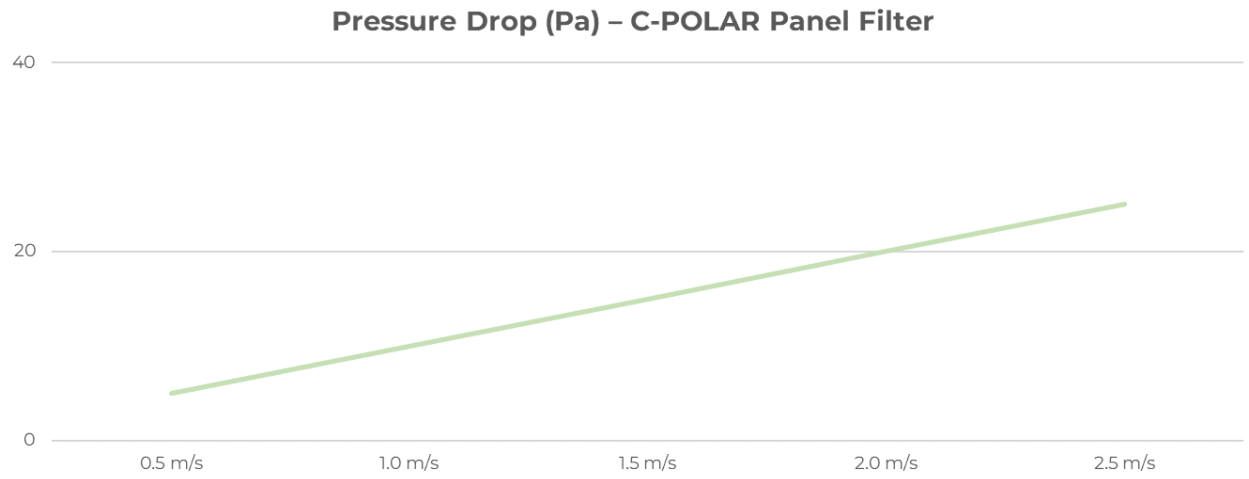
C-POLAR™ filters are compliant with the UL 900 standard and the RoHS Directive. They are manufactured to the highest quality in facilities that are compliant with the UL 900, ISO 9001, ISO 14001, and Global Recycled Standards.

Testimonials	
HARVARD MEDICAL SCHOOL MASSACHUSETTS GENERAL HOSPITAL	"The utilization of C-POLAR™ technology has the potential to serve as an essential interrupter to breaking the chain of infectious spread across contaminated surfaces and fabrics. **The implementation of C-POLAR™ can reduce infection in many applications (community, hospital, business, school, transportation, and other settings) while improving overall health**." Dr. Michael K. Mansour Massachusetts General Hospital, Harvard Medical School
AFL-CIO AMERICA'S UNIONS	"C-POLAR™ is the **preferred filter for the AFL-CIO headquarters** in Washington, DC, setting the standard for indoor air quality and employee safety." Statement by The American Federation of Labor and Congress of Industrial Organizations
NHS	"Our team confirms that **the antiviral layer used in the production of the FFP3 mask is supplied by C-POLAR™**. [This] layer has been proven to kill COVID-19 on contact and is non-allergenic." Anthony Robson, Managing Director of QE Facilities Subsidiary of NHS Gateshead Health
JLL	"JLL's current building management portfolio in Hong Kong exceeds 400 buildings. **We will recommend the installation of C-POLAR™ air filters within them all**. We shall introduce C-POLAR™ to JLL divisions in other regions, such as the Asia Pacific and the United States." C.H. Chung Head of Property Management & Executive Director
恒隆地產 HANG LUNG PROPERTIES	"C-POLAR™ filters are being **installed to prevent transmission of airborne viruses including COVID-19**. The filters have been installed at the designated medical hubs that houses prominent clinics and healthcare centers." Press Release
香港浸信會醫院 Hong Kong Baptist Hospital	"HKBH strives to provide holistic care in which one's physical, emotional, and well-being aspects are being taken care of. By installing C-POLAR™ air filters in our facilities, **we will enhance our ability to serve and protect our patients, doctors, and staff**." Dr. Alex Yu Chief Executive

Fan Coil Filter Specifications

Introduction	
Name	C-POLAR Fan Coil Filter
Filter frame	Aluminum Frame
Media	PET, PP Nonwoven
Dimensions	Custom Sizing
Thickness	5mm
Sealant	Resin
Performance specifications	
Max Airflow	3400 ft³
Max Temperature	65 °C
Relative Humidity	45%

Pressure Drop (Pa)					
Dimensions	**0.5 m/s (648 CFM)**	**1.0 m/s (1296 CFM)**	**1.5 m/s (1944 CFM)**	**2.0 m/s (2592 CFM)**	**2.5 m/s (3280 CFM)**
1200mm X 300mm X 5mm					



RoHS compliant
ISO 9001:2015
ISO 14001:2015

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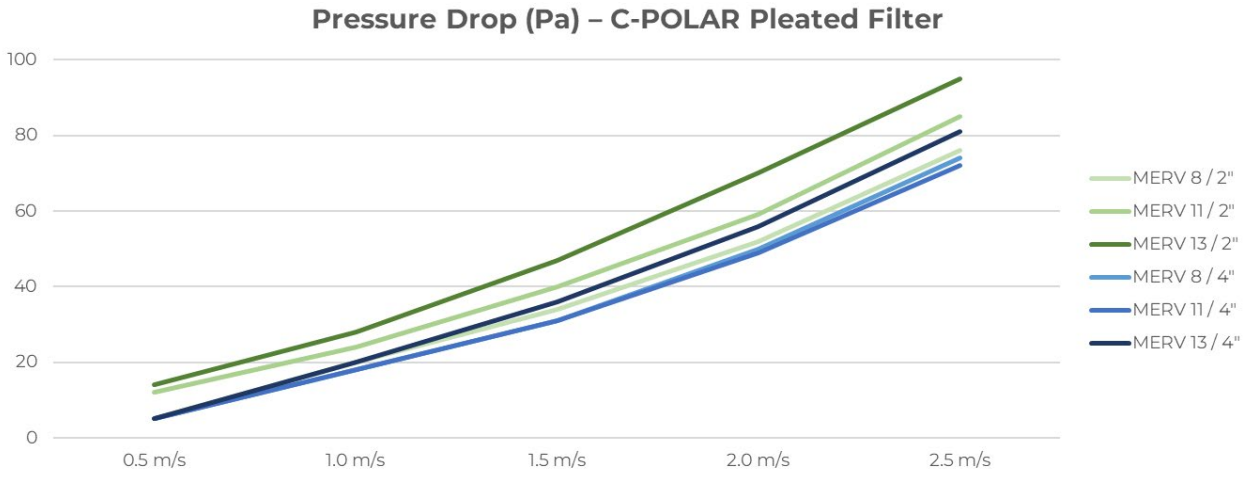
Pleated Filter Specifications

Introduction	
Name	C-POLAR Pleated Filter
Filter frame	Cardboard Frame
Media	PET, PP Nonwoven
Separator	1 ppi
Dimensions	Custom Sizing
Thickness	0.5", 1", 2", 4"
Sealant	Resin
Performance specifications	
Max Airflow	3400 ft³
Max Temperature	65 °C
Relative Humidity	45%
Filtration Efficiency	MERV 8, 11, 13

Pressure Drop (Pa)							
MERV Rating	**Number of Pleats**	**Dimensions**	**0.5 m/s (648 CFM)**	**1.0 m/s (1296 CFM)**	**1.5 m/s (1944 CFM)**	**2.0 m/s (2592 CFM)**	**2.5 m/s (3280 CFM)**
MERV 8	28	24" x 24" x 2"	5	20	34	52	76
MERV 8	28	24" x 24" x 4"	5	18	31	50	74
MERV 11	28	24" x 24" x 2"	12	24	40	59	85
MERV 11	28	24" x 24" x 4"	5	18	31	49	72
MERV 13	28	24" x 24" x 2"	14	28	47	70	95
MERV 13	28	24" x 24" x 4"	5	20	36	56	81



RoHS compliant · ISO 9001:2015 · ISO 14001:2015 · Global Recycled Standard

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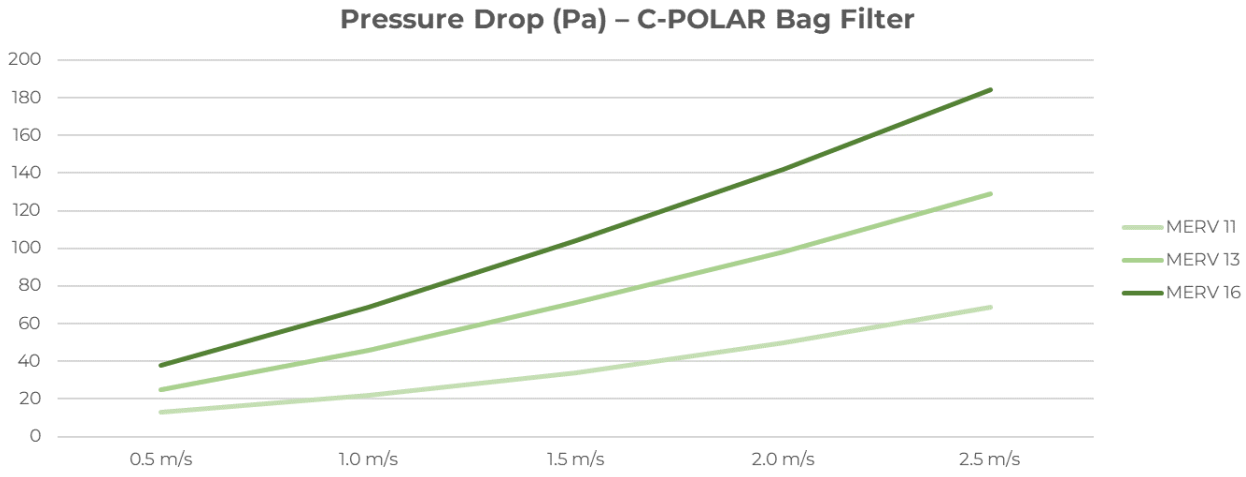
Bag Filter Specifications

Introduction	
Name	C-POLAR Bag Filter
Filter frame	Aluminum Frame
Media	PET, PP Nonwoven
Separator	1 ppi
Dimensions	Custom Sizing
Thickness	Custom Sizing
Sealant	Resin
Performance specifications	
Max Airflow	3400 ft³
Max Temperature	65 °C
Relative Humidity	45%
Filtration Efficiency	MERV 11, 13, 16

Pressure Drop (Pa)							
MERV Rating	**Number of Pockets**	**Dimensions**	**0.5 m/s (648 CFM)**	**1.0 m/s (1296 CFM)**	**1.5 m/s (1944 CFM)**	**2.0 m/s (2592 CFM)**	**2.5 m/s (3280 CFM)**
MERV 11	6	595mm X 595mm X 500mm	13	22	34	50	69
MERV 13	6	595mm X 595mm X 500mm	25	46	71	98	129
MERV 16	6	595mm X 595mm X 500mm	38	69	104	142	184



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References:

1. Changing the Methods Used for Inactivation of Microorganisms and Viruses
https://www.americanpharmaceuticalreview.com/Featured-Articles/581669-Changing-the-Methods-Used-for-Inactivation-of-Microorganisms-and-Viruses/

2. WHO Food Additives List
http://apps.who.int/iris/bitstream/handle/10665/37285/WHO_TRS_733.pdf;jsessionid=01C705F3AC1629C999F71B0AC242E16E?sequence=1

3. Far-UVC light (222nm) efficiently and safely inactivates airborne human coronaviruses
https://www.nature.com/articles/s41598-020-67211-2

4. Use of Bipolar Ionization for Disinfection within Airplanes
https://www.boeing.com/confident-travel/downloads/Boeing-Use-of-Bipolar-Ionization-for-Disinfection-within-Airplanes.pdf

5. 浸會醫院應用抗菌及抗病毒空氣過濾器技術　加強對病人及員工的保護
https://www.hkbh.org.hk/press_centre/%E6%B5%B8%E6%9C%83%E9%86%AB%E9%99%A2%E6%87%89%E7%94%A8%E6%8A%97%E8%8F%8C%E5%8F%8A%E6%8A%97%E7%97%85%E6%AF%92%E7%A9%BA%E6%B0%A3%E9%81%8E%E6%BF%BE%E5%99%A8%E6%8A%80%E8%A1%93%E3%80%80%E5%8A%A0%E5%BC%B7/

6. 恒隆地產於香港指定醫務中心樓層應用本地研發技術 促進顧客、租戶和員工福祉安裝 C-POLAR™ 空氣過濾器阻截 2019 冠狀病毒等空氣傳播病毒
https://www.hanglung.com/zh-hk/media-center/press-releases/2022/20220330

7. 信報 Startup Beat 港企過濾物料 5 分鐘殺毒 (C-POLAR Biotech 柯俊賢)
http://startupbeat.hkej.com/?p=114644