

KosoPre enzyme filter





Enzyme filters



Standard specifications

Product No.	Filter thickness	Gravimetric method	Rated air velocity	Initial pressure drop	Final pressure drop	Standard size
	(mm)	Efficiency ^{*3} (%)	(m/sec)	(Pa)	(Pa)	W×H×T (mm)
Enzymic Pre Filters	10	75	2.5	48	200	610x610x10

*3 In accordance with JIS B9908:2011 Type 3

Initial pressure drop data



* This product is equipped with a filter media manufactured by Nikki-Universal Co., Ltd. * Please note that the lytic capability of this filter does not warrant that it is one hundred percent effective against all kinds of microorganisms.

OC Corporation



Head office 1-2-29, Nankōkita, Suminoe-ku, Osaka, 559-0034 Japan Tel: 81-6-6612-7700 Fax: 81-6-6612-7701 Tokyo Office Kayabacho Ekimae Bldg. 7F, 2-11-8, Nihonbashi-Kayabacho, Chuo-ku, Tokyo

103-0025 Japan Tel: 81-3-3662-8858 Fax: 81-3-3662-8860

http://www.aqcnet.com

Contact

Specifications for all products herein are subject to change without notice because of p

HEFC20-07 (fe)

AQC Corporation

Filters for reducing bacteria and viruses

Enzyme filters inactivate bacteria and viruses through the lytic effect of enzymes.



As the lytic effect of natural enzymes prevents secondary contamination from the filter, this product is best used for air conditioning in places such as hospitals, food factories, and pharmaceutical factories.

The photo on the left shows that the cell wall of bacteria which is trapped in the filter fibers is hydrolyzed by the effect of the lytic enzyme and is burst by the osmotic pressure inside the cell.

Features

- 1. Strong lytic capability sustains the efficacy of this filter for a long time.
- 2. Uses natural enzymes safe for both people and the environment
- 3. The pressure drop and efficiency of this filter are equal or comparable to the conventional filter.



Microorganisms and dust are trapped in the filter.

Microorganisms lysed in the enzyme filter

Microorganisms, bacteria (the photo on the left), and fungi (the photo on the right) grow in the conventional filter



How lytic enzyme works

Microorganisms cannot survive in the enzyme filter.



Comparison with conventional filte

Cell-wall lysed by the enzyme

A hole is made on the cell wall due to the hydrolysis of the part which constitutes the cell wall of the bacterium.



Burst by internal osmotic pressure

The cell wall is burst by the osmotic pressure generated inside the bacterium due to the hole on the cell wall.



Lysis of the cell The bacterium is lysed by the effect of the enzyme



Efficacy against viruses



Envelope (Protein membrane) RNA or DNA Capsid (Protein that covers genes)

The enzyme destroys a lipid membrane, which is known as an envelope, changes the structure and inactivates the virus.

A virus is a particulate matter which consists of DNA or RNA and a few protein molecules. It invades the cells of a bacterium, an animal or a plant and grows using the metabolic system of the host cells.

The enzyme filter is expected to be effective against single-stranded RNA viruses with an envelope. Although an antivirus test on the novel coronavirus (SARS-CoV-2) has yet to be conducted, this virus is also a "single-stranded RNA virus with an envelope" like influenza viruses.

Examples of RNA viruses with an envelope

Туре	RNA or DNA	Envelope	Size/nm
Novel coronavirus	RNA	Yes	100
Influenza viruses (H1N1, H3N2)	RNA	Yes	80-120
Severe acute respiratory syndrome (SARS) virus	RNA	Yes	80-220
Acquired immune deficiency syndrome (AIDS) virus	RNA	Yes	110

This filter was confirmed to be "fully effective (Mv≥3.0) *" in an antivirus test (influenza virus). * Mv value is an index value stipulated in the standard for antivirus test (JIS-L1922).

> [Antivirus effect stipulated in JIS] 3.0>Mv≥2.0: Effective Mv≥3.0: Fully Effective

Enzyme and bacterium Bacteria are trapped in the filter fibers with

which modified enzyme is chemically

bonded (firmly attached).

Superior durability

The bacteriolytic performance of the enzyme filter was not affected in each of the following test conditions:

Test item	Test content
Chlorine gas	10 ppm for 5 days at room temperature
Acetic acid gas	500 ppm for 5 days at 30 °C
Hydrogen peroxide gas	500 ppm for 5 days at room temperature
Ethylene oxide gas	20 % ethylene oxide gas for four hours at room temperature x 6 times
Formaldehyde gas	500 – 3,500 ppm for 15 hours at room temperature x 24 times
Heat (Temperature)	10 years at room temperature 4 years at 70°C 24 hours at 100°C 1 hour at 120°C
	Radiation dose on the upper side of filter paper 21.0 kGy, radiation dose on the lower side of filter paper 21.1 kGy
Gamma irradiation	Radiation dose on the upper side of filter paper 41.5 kGy, radiation dose on the lower side of filter paper 41.6 kGy
	Radiation dose on the upper side of filter paper 61.5 kGy, radiation dose on the lower side of filter paper 62.4 kGy





Specifications of Enzymic HEPA (HEPA)

Madal	Filter thickness	Rated air volume ^{*1}	Standard size	Product weight	Collection efficiency	Pressure drop (Pa)	
Model	T (mm)	T (mm) (m³/min) W×H (mm) (kg)			(% at 0.3 µm)	Initial	Final
		2.3	305×305	1.0			
	≥	4.8	305×610	1.5			294
	50	10.0	610×610	2.5	≥99.97	147	
	50	12.7	760×610	3.2			
		15.4	915×610	4.0			
ECPT 0007		20.7	1220×610	4.5			
FGD1-9997		2.3	305×305	1.1		98	
	65	4.8	305×610	1.8			
		10.0	610×610	3.0			
		12.7	760×610	3.8			
		15.4	915×610	4.9			
		20.7	1220×610	5.5			
		3.8	305×305	2.3			
	150	8.0	305×610	3.3		245	400
ECSD 0007		17.0	610×610	5.5	> 00.07		
rusr-9997		7.0	305×305	4.0	299.97	240	490
	290	14.7	305×610	5.8]		
		31.0	610×610	9.5			

Product weights are inclusive of the aluminum outer frame

*1)The rated air volume was calculated based on an air velocity of 0.5 m/s with a filter thickness of 50 mm/65 mm, 0.84 m/s with a filter thickness of 150 mm, and 1.54 m/s with a filter thickness of 290 mm (The air velocity was calculated as face velocity excluding the filter frame).

Initial pressure drop data FGBT-9997/FGSP-9997



* This product is equipped with a filter manufactured by Nikki-Universal Co., Ltd. * Please note that the lytic capability of this filter does not warrant that it is one hundred percent effective against all kinds of bacteria

Components and materials

Item	Components and materials			
Frame	Aluminum and plywood			
Filter media	Glass fiber (enzyme is chemically bonded)			
Separator	Bead (Resin) and aluminum			
Sealant	Special adhesive			
Gasket	Synthetic rubber			

Service conditions

ltem	Performance
Room temperature	60°C
Maximum service temperature	80°C
Maximum service humidity	95%RH

*1) The rated air volume was calculated based on an air velocity of 0.5 m/s with a filter thickness of 50 mm/65 mm.

(The air velocity was calculated as face velocity excluding the filter frame).

HEPA filter Koso Semi-HEPA enzyme filter

Specifications for Enzymic Semi-HEPA

Mardal	Filter thickness		Standard size	Product weight	Collection efficiency	Pressure drop (Pa)		
Model	T (mm)	(m³/min)	W×H (mm)	(kg)	(% at 0.3 µm)	Initial	Final	
		2.3	305×305	1.0			- 175	
		4.8	305×610	1.5	-	88		
	50	10.0	610×610	2.5				
	50	12.7	760×610	3.2				
		15.4	915×610	4.0				
ESPT OF		20.7	1220×610	4.5	> 0E			
L201-92	65	2.3	305×305	1.1	295	74		
		4.8	305×610	1.8	-			
		10.0	610×610	3.0				
		12.7	760×610	3.8				
		15.4	915×610	4.9				
		20.7	1220×610	5.5				
		3.8	305×305	2.3				
	150	8.0	305×610	3.3		122	245	
		17.0	610×610	5.5	> OE			
F338-93	290	7.0	305×305	4.0	292	125	240	
		14.7	305×610	5.8]			
		31.0	610×610	9.5				

Product weights are inclusive of the aluminum outer frame.

Initial pressure drop data

FSBT-95/FSSP-95



* This product is equipped with a filter manufactured by Nikki-Universal Co., Ltd. * Please note that the lytic capability of this filter does not warrant that it is one hundred percent effective against all kinds of bacteria.



FGSP/FSSP

Components and materials

ltem	Components and materials
Frame	Aluminum and plywood
Filter media	Glass fiber (enzyme is chemically bonded)
Separator	Bead (Resin) and aluminum
Sealant	Special adhesive
Gasket	Synthetic rubber

Service conditions

ltem	Performance
Room temperature	60°C
Maximum service temperature	80°C
Maximum service humidity	95%RH
Maximum service temperature Maximum service humidity	80°C 95%RH

*1) The rated air volume was calculated based on an air velocity of 0.5 m/s with a filter thickness of 50 mm/65 mm.

(The air velocity was calculated as face velocity excluding the filter frame).







Standard specifications (Products can also be customized)

Product No.	Filter thickness	Particle collection	on efficiency (%) ^{*1}	Efficiency by colorimetric	Rated air velocity	Rated air flow rate	Initial pressure drop	Final pressure drop	Standard size
	(mm)	0.4 µm	0.7 µm	Efficiency*2 (%)	(m/sec)	(m³/min)	(Pa)	(Pa)	W×H×T (mm)
	30				1.5	31	35	200	610×610×30
KFBT-65	50	≥40	≥50	65	2.25	46	49		610×610×50
	65				2.75	56	66		610×610×65
	30				1.5	31	81	200	610×610×30
KFBT-90	50	≥70	≥80	90	2.25	46	96		610×610×50
	65				2.75	56	120		610×610×65

*1 In accordance with JIS B 9908:2011 Type 2

*2 In accordance with JIS B 9908:2001 Type 2

Initial pressure drop data



0.5 10 1.5 2.0 2.5

Filter thickness of 50 mm



* This product is equipped with a filter manufactured by Nikki-Universal Co., Ltd.

* Please note that the bacteriolytic capability of this filter does not warrant that it is one hundred percent effective against all kinds of bacteria.

Components and materials

Item	Components and materials
Frame	Paper frame and aluminum (plywood, galvanized steel sheet, and stainless steel)
Filter media	Glass fiber (enzyme is chemically bonded)
Separator	Beads (resin)
Sealant	Special adhesive
Gasket	Neoprene rubber

Service conditions

Performance			
Constant use: 60°C			
Short time/irregular use: 80°C			
95%RH			

Note 1: Filter thickness does not include gasket.

Medium-to-high performance filter

Kosoful SP enzyme filter

Standard specifications (Products can also be customized)

Product No.	Filter thickness (mm)	Particle collectio	n efficiency (%) ^{*1} 0.7 μm	Efficiency by colorimetric method Efficiency ¹² (%)	Rated air velocity (m/sec)	Rated air flow rate (m³/min)	Initial pressure drop (Pa)	Final pressure drop (Pa)	Standard size W×H×T (mm)
	150	≥40	≥50	65	2.75	56	81	300	610×610×150
KFSP-65	290				2.75	56	86		610×610×290
	Long life 290				2.75	56	105		610×610×290
	150				2.75	56	115		610×610×150
KFSP-90	290	≥70	≥80	90	2.75	56	110		610×610×290
	Long life 290				2.75	56	127		610×610×290

*1 In accordance with JIS B 9908:2011 Type 2

*2 In accordance with JIS B 9908:2001 Type 2

Filter thickness of 150 mm 3.5 0.5 1.0 1.5 2.0 2.5 3.0 0 0.5 1.0 1.5 Air velocity (m/sec)

Initial pressure drop data

* This product is equipped with a filter manufactured by Nikki-Universal Co., Ltd.

* Please note that the bacteriolytic capability of this filter does not warrant that it is one hundred percent effective against all kinds of bacteria.

Components and materials

ltem	Components and materials		
Frame	Aluminum (plywood, galvanized steel sheet, and stainless steel)		
Filter media	Glass fiber (enzyme is chemically bonded)		
Separator	Aluminum		
Sealant	Special adhesive		
Gasket	Neoprene rubber		

Service conditions

ltem	Performance			
Maximum convice temporature	Constant use: 60°C			
Maximum service temperature	Short time/irregular use: 80°C			
Maximum service humidity	95%RH			

Note 1: Filter thickness does not include gasket.





Filter thickness of 290 mm, Long life type KESP 0.5 1.0 1.5 2.0 2.5 3.0 3.5 Air velocity (m/sec)

