

Air Purifier

Panasonic



Change the air your loved ones breathe





Introduction

Panasonic air purifiers are proven to be capable of reducing allergen content significantly



Some surveys indicate that the allergy rates are increasing throughout the world that around

30% of people are suffering from different extent of influences in their lives. Panasonic Air Purifier has been endorsed by the British Allergy Foundation approving their allergen removal capability that would improve their quality of life of this group of people.



Pollution situation

PM2.5

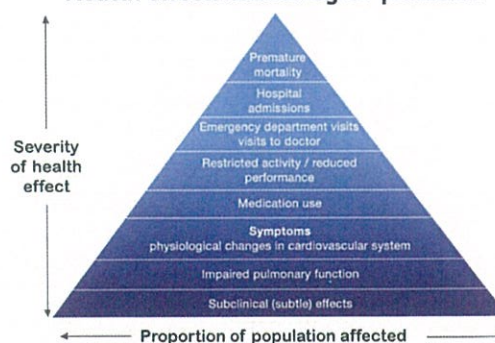
An annual average concentration of $10\mu\text{g}/\text{m}^3$ is the long-term guideline value for PM2.5 set by the World Health Organization (WHO). As for latest information, more than 80% of people living in urban areas that monitor air pollution are exposed to air quality levels that exceed the WHO limits.



Haze

In recent years, large scale smoky haze, usually measures hundreds of kilometres across, occurred frequently. It has spread to various countries in South East Asia causing a significant deterioration in air quality. Both Pollutants Standards Index (PSI) and Air Pollutants Index (API) are used to measure air quality. On both indices, a reading above 100 is classified as unhealthy while above 300 is hazardous.

Health effects caused by air pollution





Air

1.8kg/person-day
15 m³ (Diameter):
Sphere of about 3 m^{*1}

Water

1.2kg/person-day 1.2L^{*2}

Food

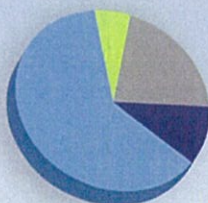
1.3kg/person-day^{*3}

AIR PURIFIER

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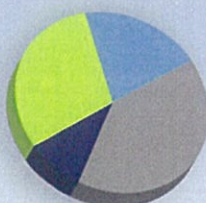
- ^{*1} "Air and human - from a physiological view point-" 1999 by UCHIYAMA lwao [The Institute of Public Health of Japan].
^{*2} "Heat stroke environmental health manual (2009)" from Department of Environment of Japan.
^{*3} "Basic data sheet of agriculture forestry and fisheries, Statistics regarding the food self-sufficiency rate" from Ministry of Agriculture, Forestry and Fisheries of Japan.

Division of time spent indoors



Developed Countries
(23% of Population)

Urban Outdoor
Urban Indoor



Developing Countries
(77% of Population)

Rural Outdoor
Rural Indoor

1. Indoor Vs Outdoor

People spend the majority of their time indoors.

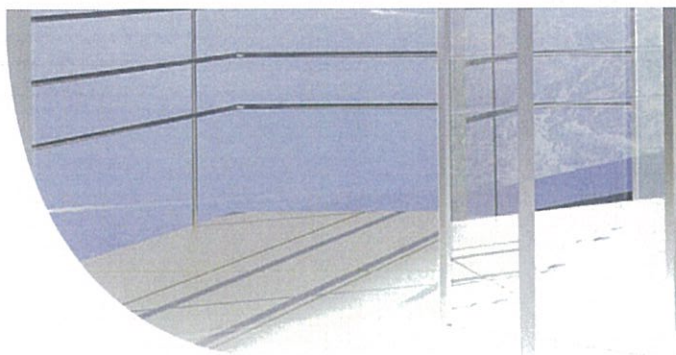
2. Developed Vs Developing

About 77% of world population lives in developing countries.

3. Urban Vs Rural

Nearly 50% of world population lives in urban area.

Introduction of Panasonic Unique nanoe™ Technology



What is nanoe™? nano-technology + electric = nanoe™

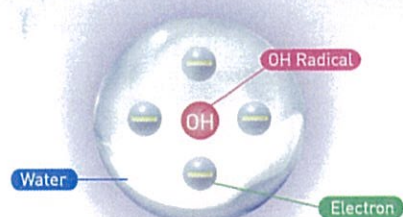
nanoe™ is water-wrapped capsule with plentiful OH radicals.

Its effectiveness of bacteria removal^{(*)1} depends on the number of OH radical^(#2), which is generated at the rate of 480 billion per second.

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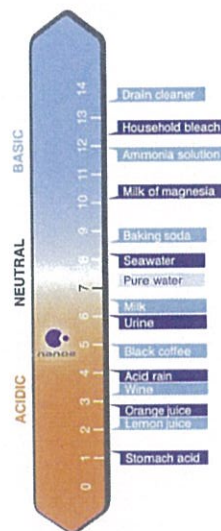
nanoe™ wrapped in water molecule



A nanoe™ is a fine (5 to 20 nm) and weakly acidic water particle with a reactive substance and an electric charge.

Low Acidity

nanoe™ possesses the chemical property around 5.5 in pH scale that is good for human skin.

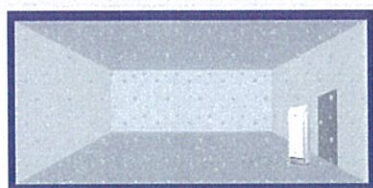


Characteristics of nanoe™

6 times longer lifespan than normal ion

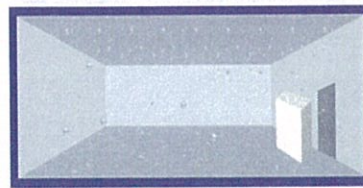
nanoe™ contains moisture around 1,000 times more than minus ion. Being wrapped in water molecules, it has a longer lifespan and is able to retain its effectiveness even after traveling for a long distance.

Comparison of distribution after 5 minutes



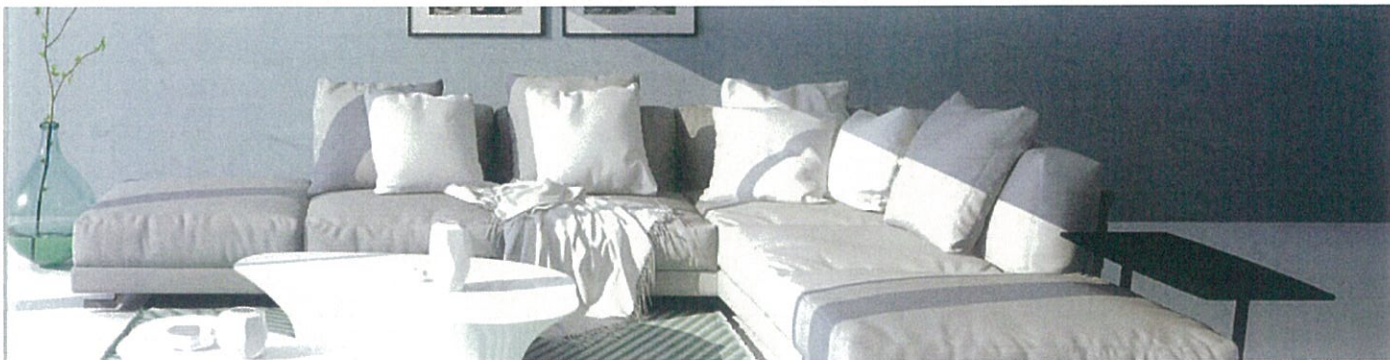
nanoe™

nanoe™ spread to every corner after 5 minutes

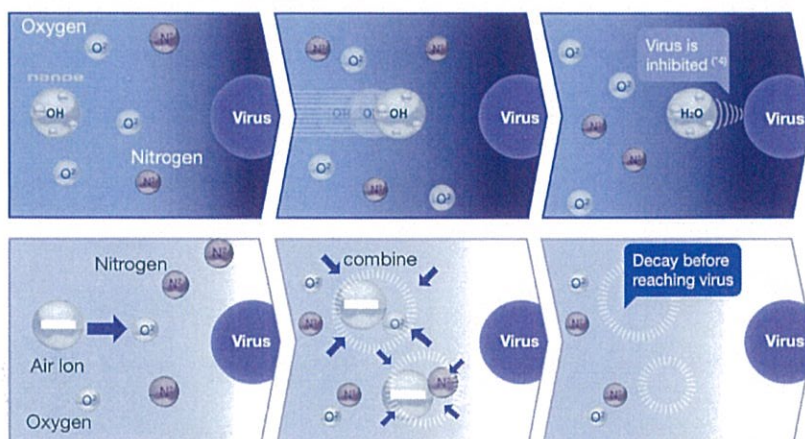


normal ion

Ions decay before spreading throughout the room



Advantage of long life



nanoe™ spread widely to every corner of the room for maximum effectiveness

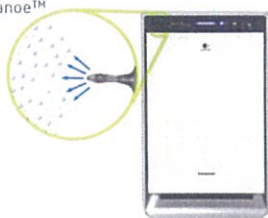
Normal Ion

Water-originated

nanoe™ comes from condensed moisture in the air that water replenishment for nanoe™ generation is not required.

Conditions for generating nanoe™

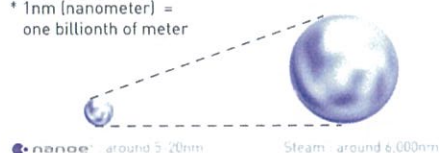
- Room Temperature : around 5-35°C (Dew Point Temp. : around 2°C or over)
- Room Humidity : around 30-85%



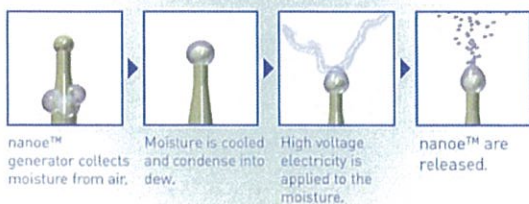
Microscopic scale - only one billionth of the volume size of a steam particle

nanoe™ is much smaller than steam that can deeply penetrate into cloth fabrics to restrain dirt.

* 1 nm (nanometer) = one billionth of meter

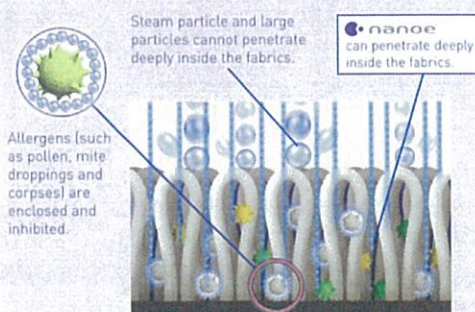


nanoe™ are released by applying high voltage electricity to moisture collected from the air. That's why you don't need to refill water for the generator.



Electric charge does not hit the electrode tip directly that will not cause any wear and tear at the electrode. Therefore, periodical replacement of nanoe device is not required.

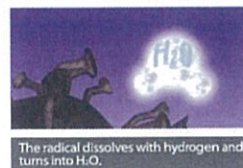
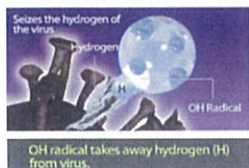
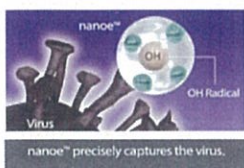
nanoe™ is tiny enough to penetrate into clothes for inhibiting mold and odors.





Anti-virus / bacteria

Inhibit **99.9%** viruses (H1N1)^{(*)1} and (H5N1)^{(*)2}
and **99.99%** bacteria (E. Coli O157, MRSA)^{(*)3}



* The effectiveness of the inhibition of nanoe towards substances such as virus was verified by test in 45L test box.

Various experiment tests have been conducted by 3rd party laboratories

(*)1 H1N1 (swine-origin Influenza A)

Test Methodology : Exposed to change water particles for 6 hours in 45L test box
Test result: 99.9% is inhibited after 6 hours

H1N1 (Influenza A)

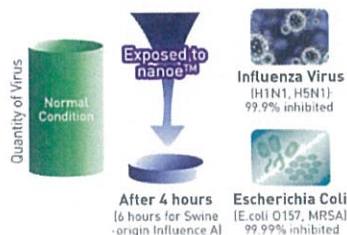
Test Methodology : Exposed to change water particles for 4 hours in 45L test box
Test result: 99.9% is inhibited after 4 hours

(*)2 H5N1 (Avian Influenza)

Test Methodology : Exposed to change water particles for 4 hours in 45L test box
Test result: 99.9% is inhibited after 4 hours

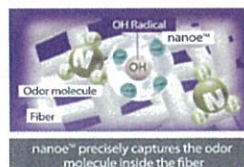
(*)3 Escherichia Coli (O157:H7)

Test Methodology : Exposed to change water particles for 1 hours in 350 x 350 x 400mm test box
Test result: 99.99% is inhibited after 1 hour

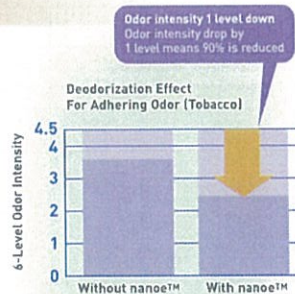


Deodorizing

Reduce **90%** odor (tobacco smell) after 2 hours



- Test Laboratory: Environment Control Center
- Test Methodology: Verify with 6-level odor intensity indication in 10 sq. m. test room
- Deodorization Method: nanoe™ emit
- Test subject: Adhering Tobacco Smell
- Test Result: 1.5 level of odor intensity is decreased after 180 min [1 level odor intensity down means 90% is reduced] Report no. H03491001000DA



The deodorization effect will vary subject to the surrounding environment (temperature / humidity), operation time, types of smell and tissue.

The smell adhered at curtain and sofa are deodorized.

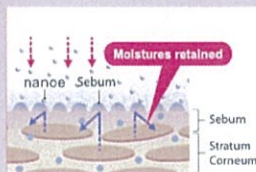


Skin Hydration

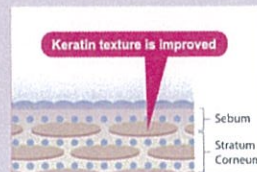
Help keep the moisture back to the skin.

With "nanoe™"

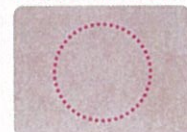
after 15 minutes
"nanoe" attached on the sebum and form membranes on the skin to prevent moistures lost.



after 28 days
Skin is hydrated that improves the keratin texture and keeps the skin fresh and moistured.



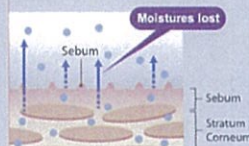
Condition Of Keratin Using nanoe after 28 days



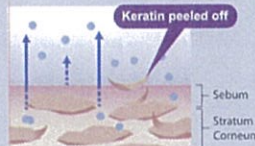
No keratin peeling on the skin

Without "nanoe™"

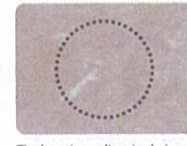
after 15 minutes
Moistures escape from the skin and let it become dry and dull.



after 28 days
Cracks occur and keratin pieces peel off from the skin.



Non-using nanoe



The keratin peeling is obvious

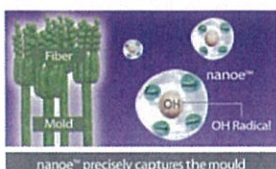
Test Laboratory : FCG Research Institute, Inc. / Report no. 19104

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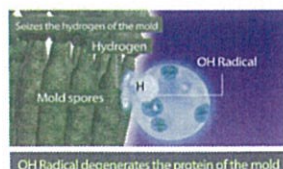
8

Other merits of nanoe™

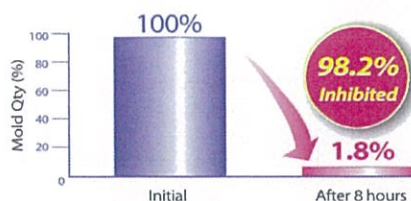
Inhibits mold



nanoe™ precisely captures the mould



OH Radical degenerates the protein of the mold



- Test Laboratory: Panasonic Electric Works Analysis Centre Co. Ltd.
- Test Methodology: Direct expose in 45L test box
- Inhibiting Method: nanoe emit
- Test Subject: Cladosporium (mold)
- Test result: 99% is inhibited after 8 hours (Report no. E02-080303IN-02)

Merits of nanoe™



Substances to be inhibited with Panasonic air purifier

	nanoe™		Filter - Composite Air Filter - Super Nano-technology Deodorizing Filter				
Pollutants	Virus	Airborne Bacteria	Virus	Airborne Bacteria	Mold	Dust	Cigarette Ash
Allergens	Adhering Bacteria	Mold (8 kinds)	Mold	Dust	Cigarette Ash	Diesel Fumes	Haze
Odor	Dermatophagoides Farinae's Droppings	Pyroglyphidae's Droppings	Pyroglyphidae's Corpses	Dermatophagoides Farinae's Corpses	Wheat Flour	Allergens from Dogs	Allergens from Cats
Odor	Pet Odor	Body Odor	Ammonia Odor	Garbage Stench	Food Smell	Cigarette Smell	

The effects of nanoe™ had been proven through experiment tests conducted by various organizations or laboratories.

	Category	Test Laboratory	Test Item	Result	Report No.
1.	Virus	Japan Food Research Laboratories	Influenza Virus H1N1	Inhibited by 99.9% after 4 hours	208040534-001
2.	Bacteria	Japan Food Research Laboratories	Enterohemorrhagic Escherichia Coli (O157)	Inhibited by 99.99% after 1 hour	208120880-001
3.		Panasonic Electric Works Analysis Center Co.Ltd.	Escherichia Coli	Inhibited by 99.9% after 1 hour	E02-080303IN-01
4.		Japan Food Research Laboratories	Staphylococcus Aureus (MRSA)	Inhibited by 99.99% after 1 hour	208120880-002
5.		Kitasato Research Center of Environment Sciences	Staphylococcus Aureus	Inhibited by 99.9% after 4 hours	21_0142
6.	Odor	Panasonic Electric Works Analysis Center Co.Ltd.	Tobacco Smell	Deodorized after 30 minutes	E02-090313MH-01
7.		Panasonic Electric Works Analysis Center Co.Ltd.	Methyl mercaptan (Raw Garbage)	Deodorized after 15 minutes	E02-080219MH-01
8.	Allergen	Panasonic Electric Works Analysis Center Co.Ltd.	Pollen	Inhibited by 99% after 2 hours	E02-080303IN-03
9.		Panasonic Electric Works Analysis Center Co.Ltd.	Cladosporium (mold)	Inhibited by 99.7% after 24 hour	E02-080303IN-02
10.		Panasonic Electric Works Analysis Center Co.Ltd.	Tick	Inhibited by 98% after 2 hours	E02-080204IN-02
11.	Beauty Effect	FCG Research Institute, Inc.	Hydration	Improved after 28 days	19104

ECONAVI

Eco Operation Mode Runs Only When Necessary



Pollution level varies according to your daily activities.

You need to change the speed manually or automatically by sensors in order to clean the polluted environment effectively.

ECONAVI is an intelligent technology that can monitor your daily activities and memorize the timeline of the pollution level. It then controls the operation of the product before pollution spreads throughout the house.

Mechanism of ECONAVI

Checking for Pollutants
by odor sensor & house
dust sensor

Search — Patrol operation

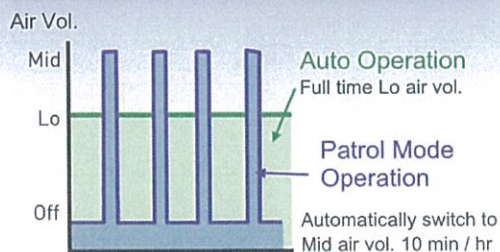
Detecting pollutants at the
interval of 10 minutes per hour
under Medium speed operation.

Learning Pollution Pattern
Studying the pollution
timeline and intensity

Learn — Learning operation

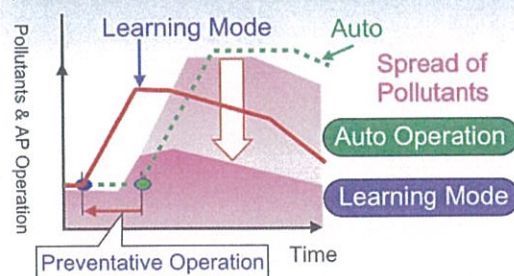
Memorizing pollution pattern in
the house and automatically
develop operation pattern, that
can minimize the pollution before
it spreads throughout the house.

Patrol Mode Operation



Learning Mode Operation

Preventative Operation is deployed 5 minutes before
pollutants Spread; Efficient dust collection

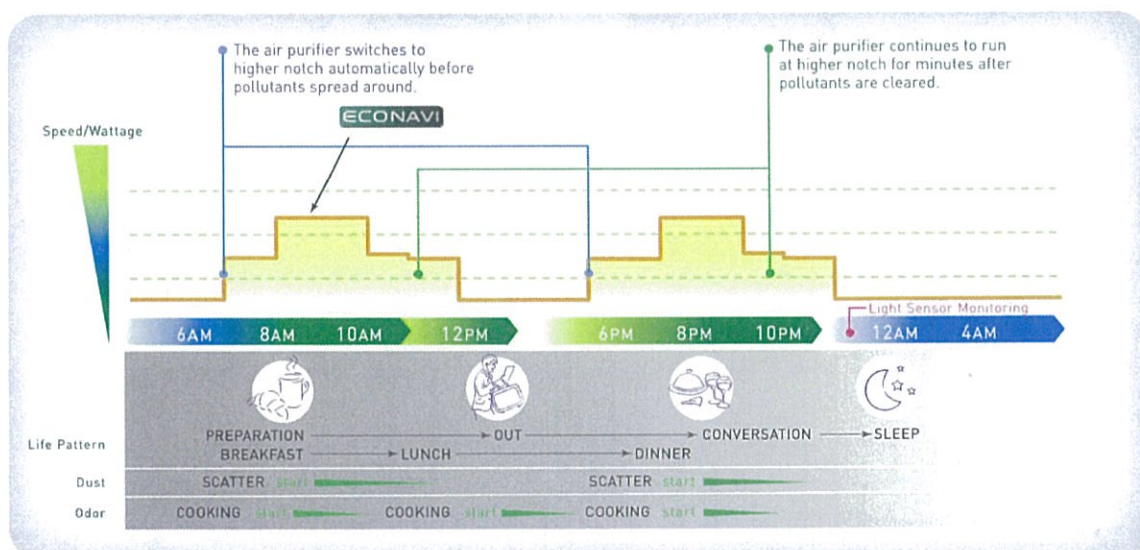


ECONAVI

Energy Saving by Panasonic

Different from constant Auto Mode, Econavi learns your daily life patterns and automatically switch on only when needed, therefore minimizing unnecessary operation.

Econavi also operates automatically before pollutants spread inside the room, therefore reducing the need for stronger air volume after they disperse.



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Haze mode

Fan speed is adjusted to remove the pollutants efficiently when corresponding particles are detected.

Haze Mode Indicator

Filter Replace Child Lock Timer Haze Econavi Air Volume Power Off/On

Switch for Haze Mode

Upward

Haze indicator is "Light On"

Haze mode is switched on, the air purifier will run at maximum speed and the louver will move to corresponding angle until the indicator light off. Afterward, the purifier will change to previous speed automatically.

Haze indicator is "Light Off"

Haze mode is switched on, the air purifier will run at maximum speed and the louver will move to corresponding angle for 1 minute. Then the purifier will change to previous speed automatically.



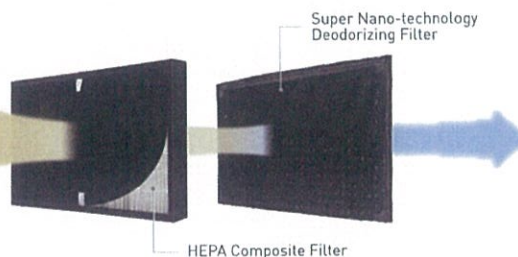
Captures Pollutants Effectively with High Performance Filters

only applicable to F-VK655, F-VXK70, F-PXL45, F-PXM55

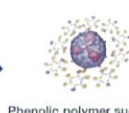


HEPA composite filter

Removes 0.3 μ m particles up to 99.97%



3 kind of technology in one filter



Unprocessed filter

There are reaction to the allergens (such as pollen, mite droppings and corpse) for the filter, which changed to yellow.

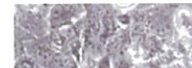
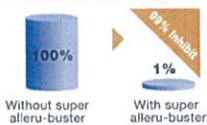


Super alleru buster processed filter

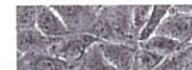
There is not any reaction to allergens (such as pollen, mite droppings and corpse) for the filter, which remained transparent.

Test Laboratory: Osaka Municipal Technical Research Institute of Japan / Test Methodology: Measure reduction level of tick allergen by Enzyme-linked Immuno Sorbent Assay / Inhibiting Method: Contact with Super alleru-buster / Test Subject: Allergens captured by filter (tick, pollen) / Test Result: 99% or more is inhibited (Report no. 2127)

Allergen Survival Rate^{*1}



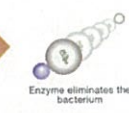
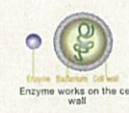
Without Green Tea Catechin
Damaged cells by virus infection.



With Green Tea Catechin
Normal cells without virus infection.

Test Laboratory: Kitasato Research Centre of Environmental Sciences / Test Methodology: Inhibit rate of virus by Plaque method / Inhibiting Method: contact with Catechin / Test Subject: Virus captured by filter / Test Result: 99% or more is inhibited (Report no. 15-0115)

Virus Survival Rate^{*2}

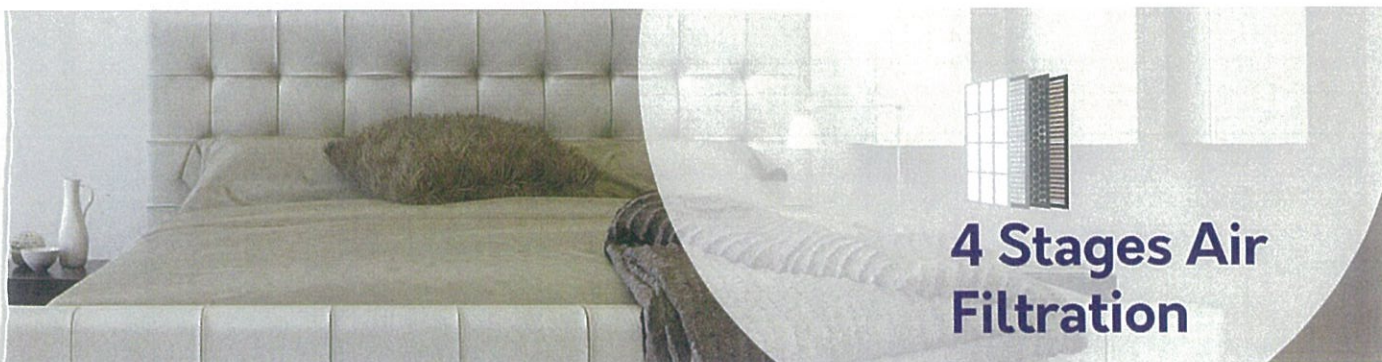


Before applying enzyme
Photomicrograph of bacterium



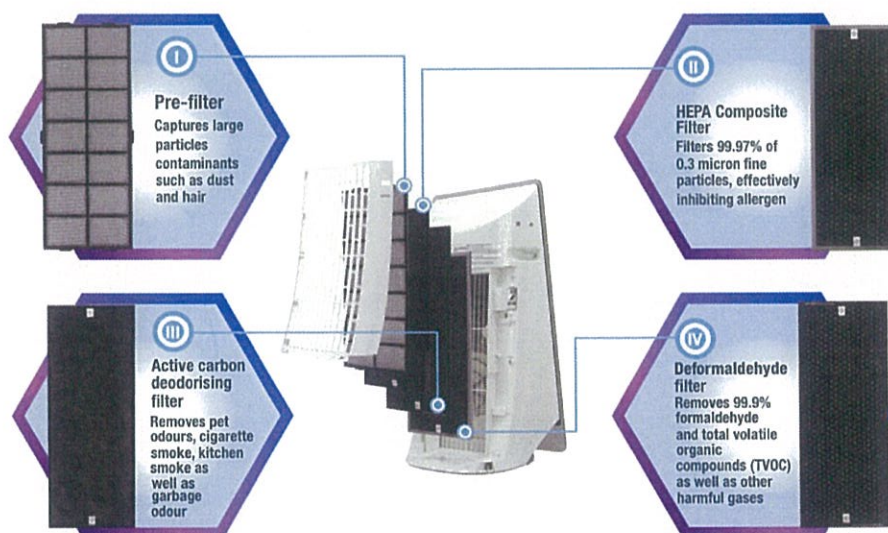
After applying enzyme
Enzyme hydrolyzes the cell wall and destroys the bacterium

Test Laboratory: Japan Food Research Laboratory / Testing Methodology: Testing of anti-mold function of the filter, using the Harrow method (Report no. 207060074-002)



4 Stages Air Filtration

only applicable to F-VK655H



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- 1 Testing facility: Wuhan University School of Medicine
- 2 For more information regarding testing, please visit: http://www.peshk.panasonic.hk/upload_files/nanoe_evidence.pdf
- 3 Testing method: By using the particle detector, measure particles smaller than 0.3 micron to see the difference in terms of concentration before and after filtration through HEPA multi-function filter.
- 4 Testing organisation: Guangzhou Testing Center of Industrial Microbiology

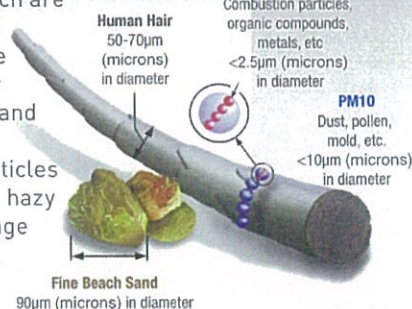


PM2.5 indicator only applicable to F-VK655H & F-PXL45A

The sensor is able to detect particles that are equivalent or smaller than 2.5 microns, and reflecting pollutant levels.

What is PM2.5

PM2.5 (particulate matter) refer to fine particles in the air, which are equivalent or smaller than 2.5 microns. These particles are the major source of air pollutant and contains harmful toxic substances. PM2.5 particles are commonly found in hazy weather, causing damage to human respiratory system, as well as trigger other diseases such as asthma.



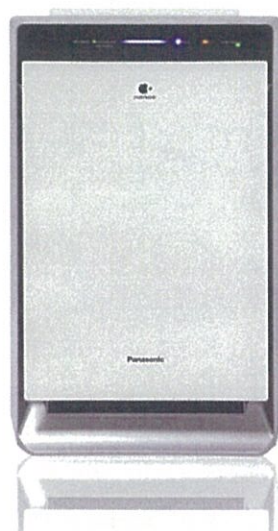
PM2.5 Pollution Indicator



The sensor will detect indoor levels of dust and odour on a regular basis, thus effectively monitoring indoor air quality.



F-VXK70A



FEATURES

Air Purifying	High	Medium	Low
Air Volume [m ³ /min]	6.7	2.7	1.1
Power Consumption [W]	66	11	6
Noise [dB(A)]	54	33	18
Air Purifying & Humidifying			
Humidifying Capacity [ml/h]	700	400	250
Air Volume [m ³ /min]	6.3	3.1	1.9
Power Consumption [W]	58	15	10
Noise [dB(A)]	53	36	25

COVERAGE AREA [m² (ft²)]

52 (560)

DIMENSION (HxWxD)

636mm x 398mm x 265mm

WEIGHT

10.2 kg

COLOUR

White

- DC Motor
- 3D Circulation Airflow
- Twin Airflow Louver
- Auto Mode
- Sleep Mode (8 hours)
- Spot Air Mode
- Sensor: Dirt/Odor/Humidity
- Human Activity Sensor
- Light Sensor
- Clean Sign
- Humidity Indicator
- Humidity Setting
- Child Lock
- Seamless Drive
- Tank Stand
- Caster Lock
- Tank Capacity: 3.5 Liter

AIR PURIFIER

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nanoe™

INTELLIGENT ECO SENSORS
ECONAVI

MEGA CATCHER

NEW
HEPA
Filter

Panasonic



F-PXJ30A



FEATURES

Air Purifying

Air Volume [m³/min]

Power Consumption [W]

Noise [dB(A)]

High	Medium	Low
Specification at 220V 50Hz		
2.8	1.8	0.8
30	22	15
44	35	21

COVERAGE AREA [m² [ft²]]

20 [215]

DIMENSION (HxWxD)

540mm x 311mm x 210mm

WEIGHT

4.3 kg

COLOUR

White

- DC Motor
- 3D Circulation Airflow
- House Dust Catcher
- Auto Mode
- Turbo Mode
- Sleep Mode (8 hours)
- Sensor: Odor/Dirt
- Clean Sign

AIR PURIFIER

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nanoe™





Air Purifier Tips



1

Composite air filter / HEPA composite filter
(Twice a month or so)

Clean the black side (front side) with a vacuum cleaner.

- Delicate. Do not apply too much pressure.
- The back (white) side is free of maintenance.
- Never wash the filter with water.

2

Humidifying filter

Wash the humidifying filter
twice a month with water.

3

Main unit and front panel
(Once a month or so)

Wipe off any dust and dirt using
a damp cloth.

- Do not wipe it with a hard cloth or too much force. Otherwise, the surface may be damaged.
- Wipe the power plug with a dry cloth.



4

Be sure to disconnect the power
plug before cleaning the unit

- Do not use the detergents shown above.
- When using chemically treated cloth, be sure to follow the instructions carefully.



How to place air purifier



Do not put the product in the following places:

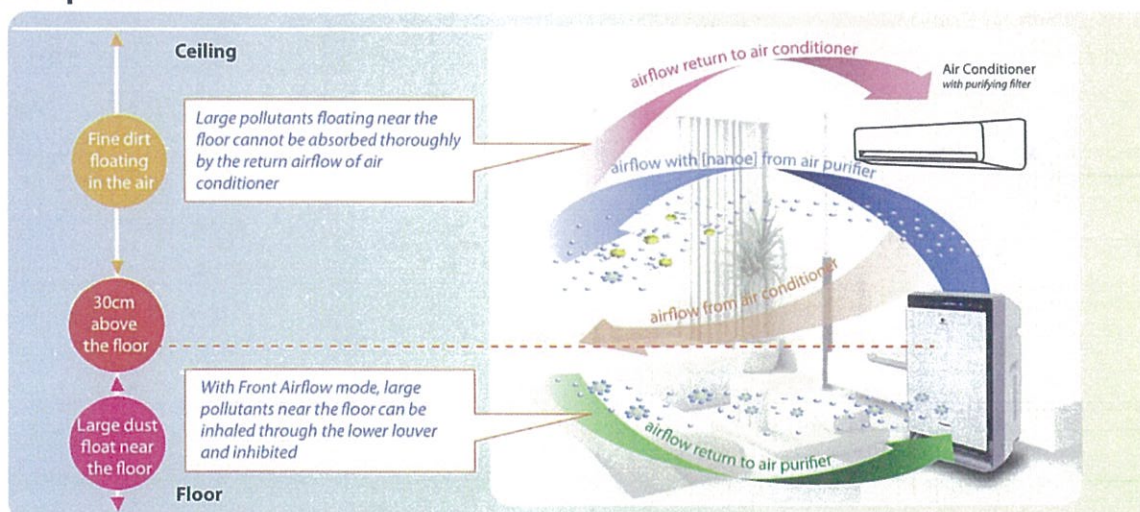
- Where the product will be exposed to direct sunlight or direct blowing of air conditioner. (Otherwise, deformation, degeneration, discolor and malfunction may be caused.)
- Where window or other objects may obstruct the humidity sensor. (Otherwise, the humidity sensor may not work normally)
- Near a TV set or radio
(Otherwise, visual disturbances or noises may be caused)
Keep it 1 m or above away from such devices.
If the power plug is inserted into the same outlet as that of these devices, visual disturbances or noises may be caused. In this case, insert the power plug into another outlet.



It would be effective if placed here!

- Place it low on the floor as a countermeasure against pollen.
Since pollen or dust is likely to float in the air near the floor, we recommend you put the product on the flat floor in the room.
- To circulate the air efficiently around the room.
To prevent the air inlet or the air outlet from being blocked, install the equipment with its left, right and the top about 30 cm or more away from walls or furniture, curtains etc. To ensure efficient use of the product, keep its back at least 1 cm away from the wall.

Air purifier & Air conditioner





Disclaimer

1. Please note that products incorporating nanoe™ technology are not to be used for medical treatment.
2. nanoe™ is not intended to prevent infectious disease.
The technology has been found to be effective in suppressing a number and variety of harmful airborne and adhering substances, including viruses (e.g. H1N1), bacteria (e.g. E.coli), mold fungi and allergens.
For further information and details on test items and conditions please visit Panasonic HP as follows:
<http://panasonic.net/technology/nanoe/experiment.html>
However, nanoe™ does not create an aseptic environment, nor does it guarantee prevention of infection.
3. The information provided herewith is true and accurate as of time of publication. The manufacture, sale and specifications of products may be subject to change.
4. Data supplied regarding the effectiveness of nanoe™ have been obtained through experiments under special conditions using devices which generate electrostatic atomized water, and have not been tested through commercial products with the devices incorporated in them.
5. The actual effects may vary depending upon the specific condition of the room, etc.

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