

The development of nanoe™

nanoe™ development started with the aim of using water's natural tendency to dissolve odour-causing substances. Through repeated improvements on the nanoe™ device over the years, it now generates 10 times more hydroxyl radicals to ensure the air is purified at all times.

The difference between nanoe™ X and nanoe™

	•nanoe™X	•nanoe™
Main Components & Size (Conceptual Diagram)	<p>Water Particle Hydroxyl radicals (Highly reactive components) Approx. 5 - 20nm (Water ion)</p>	<p>Water Particle Hydroxyl radicals (Highly reactive components) Approx. 5 - 20nm (Water ion)</p>
Deodorises	Very Effective	Effective
Inhibits 5 Materials (Bacteria & viruses, mould, allergens, pollens, hazardous substances)	Very Effective	Effective
Moisturises	Very Effective	Effective
Dust Removal (PM2.5)	-	-

Results may vary based on usage, and seasonal and environment variables (temperature and humidity). nanoe™ X and nanoe™ inhibit activity or growth of viruses, but do not prevent infection. Deodorisation effect varies according to the environment (temperature and humidity), operation time, odour, and fabric types. It does not eliminate toxic substances in cigarette (carbon monoxide, etc.). Odours that are continuously generated (e.g. building material odours and pet odours) are not completely eliminated.

How •nanoe™X is generated



•nanoe™X

Deodorises frequently encountered odours

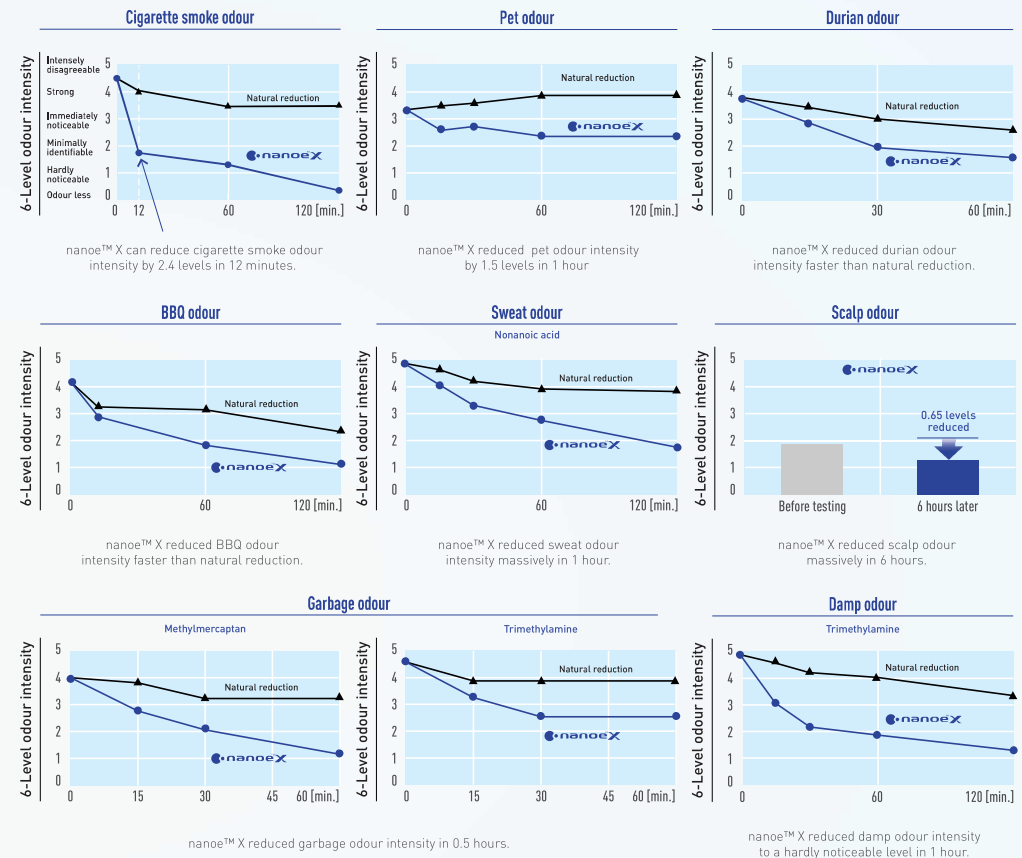
Odour causing substances such as cigarette smoke and garbage are removed to a hardly noticeable level.



Acts on odour causing substances & deodorises them

nanoe™ X particles, which are smaller than steam particles, penetrate into deepest parts of fibres allowing for highly effective deodorisation.

3 steps on how to deodorise odour



[Representative evidence]

** : Units based on Panasonic standards

	Odours	Result**	Capacity	Time (Hr.)	Testing organisation	Report No.
Adhered	Cigarette smoke odour	Odour intensity reduced by 2.4 levels	Approx. 23m ³	0.2	Panasonic Product Analysis Center	4AA33-160615-N04
	Pet odour	Odour intensity reduced by 1.5 levels	Approx. 23m ³	1	Panasonic Product Analysis Center	4AA33-160315-A34
	Durian odour	Odour intensity reduced by 1.0 levels	Approx. 23m ³	0.5	Panasonic Product Analysis Center	1V332-180402-K01
	BBQ odour	Odour intensity reduced by 1.2 levels	Approx. 23m ³	2	Panasonic Product Analysis Center	4AA33-151221-N01
	Sweat odour (Nonanoic acid)	Odour intensity reduced by 1.1 levels	Approx. 23m ³	1	Panasonic Product Analysis Center	Y16HM016
	Sweat odour (Hexanoic acid)	Odour intensity reduced by 2.6 levels	Approx. 23m ³	1	Panasonic Product Analysis Center	4AA33-160315-A35
	Scalp odour (Pili/low cover)	Odour intensity reduced by 0.65 levels	Approx. 23m ³	6	[Supervision] Odour and Aroma Design Course, Department of Integrated Informatics, Faculty of Informatics, Daido University	
	Garbage odour (Methylmercaptan)	Odour intensity reduced by 1.2 levels	Approx. 23m ³	0.5	Panasonic Product Analysis Center	1V332-18220-K11
	Garbage odour (Trimethylamine)	Odour intensity reduced by 1.4 levels	Approx. 23m ³	0.5	Panasonic Product Analysis Center	1V332-180220-K12
	Damp odour (Triethylamine)	Odour intensity reduced by 1.7 levels	Approx. 23m ³	0.5	Panasonic Product Analysis Center	Y16RA002

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Inhibits activity of airborne, adhered bacteria and viruses

nanoe™ X inhibits the activity of airborne and adhered bacteria and viruses.

3 steps on how to inhibit bacteria & viruses

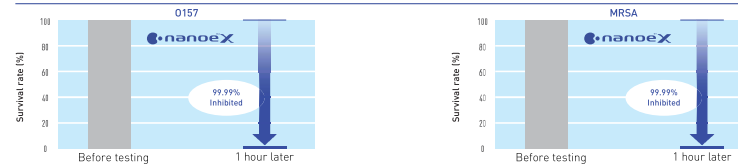


nanoe™ X reliably reaches virus.

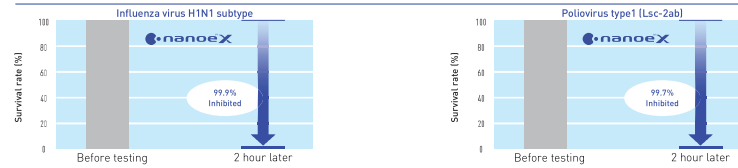
Hydroxyl radicals transform virus proteins.

Virus activity is inhibited.

Adhered bacteria



Adhered viruses



[Representative evidence]

** : Units based on Panasonic standards

	Bacteria & viruses	Result**	Capacity	Time (Hr.)	Testing organisation	Report No.
Airborne	Virus Bacteriophage ΦX174	99.7% inhibited	Approx. 25m ³	6	Kitasato Research Center for Environmental Science	24_0300_1
	Bacteria Staphylococcus aureus	99.9% inhibited	Approx. 25m ³	4	Kitasato Research Center for Environmental Science	2016_0279
Adhered	Virus Bacteriophage ΦX174	99.8% inhibited	Approx. 25m ³	8	Japan Food Research Laboratories	13001265005-01
	Bacteria Staphylococcus aureus	99.1% inhibited	Approx. 25m ³	8	Japan Food Research Laboratories	13044083003-01
Adhered virus	Influenza virus (H1N1 subtype)	99.9% inhibited	1m ³	2	Kitasato Research Center for Environmental Science	21_0084_1
	Feline calicivirus (Related form of norovirus)	99.9% inhibited	25L	2	Japan Food Research Laboratories	207031493-001
	Coxsackievirus (B6)	99.1% inhibited	45L	2	Kitasato Research Center for Environmental Science	22_0085
	Poliovirus type 1 (Lsc-2ab)	99.7% inhibited	45L	2	Kitasato Research Center for Environmental Science	22_0096
Adhered bacteria	Bacterium enterohemorrhagic escherichia coli (O157)	99.99% inhibited	45L	1	Japan Food Research Laboratories	208120880-001
	Methicillin-resistant staphylococcus aureus (MRSA)	99.99% inhibited	45L	1	Japan Food Research Laboratories	208120880-002
	Staphylococcus aureus	99.99% inhibited	1m ³	24	Kitasato Research Center for Environmental Science	20_0154_2
	Bacillus	99.6% inhibited	45L	0.5	Japan Food Research Laboratories	11000924001-01
	Micrococcus	99.9% inhibited	45L	2	Japan Food Research Laboratories	11000924001-02
	Serratia	99.9% inhibited	45L	2	Japan Food Research Laboratories	11000924001-03
	Kocuria	99.9% inhibited	45L	1	Japan Food Research Laboratories	11000922001-01

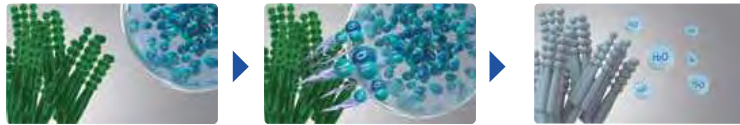
Results may vary based on usage, and seasonal and environment variables (temperature and humidity). nanoe™ X and nanoe™ inhibit activity or growth of viruses, but do not prevent infection.



Inhibits activity of airborne mould and adhered mould

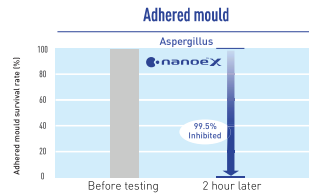
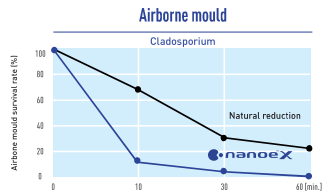
nanoe™ X is effective in removing various airborne mould within a room as well as inhibiting the growth of adhered mould.

3 steps on how to inhibit growth of mould



nanoe™ reliably reaches mould.

Hydroxyl radicals denature mould proteins. Mould activity is inhibited.



[Representative evidence]

** : Units based on Panasonic standards

	Mould	Result**	Capacity	Time (Hr.)	Testing organisation	Report No.
Airborne	Cladosporium	99% inhibited	Approx. 23m ³	1	Japan Food Research Laboratories	205061541-001
	Alternaria	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	18077411001-0201
	Aspergillus	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	17145307001-0801
	Cladosporium	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	17145307001-0901
	Eurotium	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	17145307001-1001
	Fusarium	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	17145307001-1101
	Mucor	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	17145307001-1201
	Penicillium	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	17145307001-1301
	Stachybotrys	Inhibited	Approx. 23m ³	8	Japan Food Research Laboratories	17145307001-1401
	Aspergillus	99.5% inhibited	45L	8	Japan Food Research Laboratories	11038081001-02
	Penicillium	99.5% inhibited	45L	4	Japan Food Research Laboratories	11028760001-01
	Fusarium	99.9% inhibited	45L	4	Japan Food Research Laboratories	11018692001-02
	Eurotium	99.9% inhibited	45L	8	Kitasato Research Center for Environmental Science	22_0455
Adhered	Mucor	99.9% inhibited	45L	8	Japan Food Research Laboratories	11038080001-01
	Stachybotrys	99.9% inhibited	45L	8	Kitasato Research Center for Environmental Science	22_0455
	Alternaria	99.9% inhibited	45L	16	Japan Food Research Laboratories	11038082001-01

Results may vary based on usage, and seasonal and environment variables (temperature and humidity). nanoe™ X and nanoe™ inhibit activity or growth of viruses, but do not prevent infection.



Inhibits pet-derived allergens and major allergens

In addition to allergens from sources such as dog / cat dander, mite faeces / carcasses, and airborne mould, other major allergens are also inhibited.

3 steps on how to inhibit allergens



nanoe™ reliably reaches allergens.

Hydroxyl radicals denature allergen protein. Allergen is inhibited.

[Representative evidence]

** : Units based on Panasonic standards

	Allergens	Result**	Capacity	Time (Hr.)	Testing organisation	Report No.
Mites	Dermatophagoides pteronyssinus	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-160615-F01
	Dermatophagoides farinae	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-170301-F15
Mould	Alternaria (Sooty moulds)	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-160615-F02
	Aspergillus (Aspergillus genus)	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	
	Candida	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	
	Malassezia	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	
Insect	Cockroach	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-160615-F03
	Moth	Inhibited	Approx. 23m ³	24		
Animal	Dog (dander)	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-160620-F01
	Cat (dander)	Inhibited	Approx. 23m ³	24		

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Inhibits pollens globally all year around

nanoe™ X is effective in inhibiting a variety of pollens globally all year around. The inhibition effect has been confirmed for the 13 varieties shown below, including those found in Europe and North America.

3 steps on how to inhibit pollen



nanoe™ X reliably reaches pollen.

Hydroxyl radicals denature pollen proteins.

Pollen is inhibited.

[Representative evidence]

** : Units based on Panasonic standards

Pollen Allergens	Result**	Capacity	Time (Hr.)	Testing organisation	Report No.
Cedar	97% inhibited	Approx. 23m ³	8	Panasonic Product Analysis Center	4AA33-151001-F01
Cypress	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-151028-F01
Orchard grass	Inhibited	Approx. 23m ³	24		
Ragweed	Inhibited	Approx. 23m ³	24		
Alnus japonica	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-160601-F01
Japanese white birch	Inhibited	Approx. 23m ³	24		
Artemisia	Inhibited	Approx. 23m ³	24		
Olive	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-160601-F02
Juniper	Inhibited	Approx. 23m ³	24		
Casuarina	Inhibited	Approx. 23m ³	24		
Miscanthus	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	4AA33-160701-F01
Timothy grass	Inhibited	Approx. 23m ³	24		
Humulus japonicus	Inhibited	Approx. 23m ³	24	Panasonic Product Analysis Center	1V332-180301-F01

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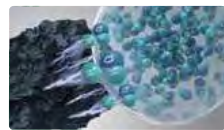
Inhibition of hazardous substances known to be found in PM2.5

Breakdown effect of aromatic carboxylic acid (benzoic acid) and paraffin (hexadecane), harmful substances, have been verified.

3 steps on how to inhibit hazardous substances



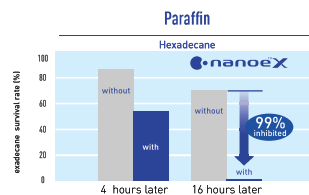
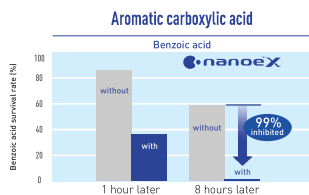
nanoe™ reliably reaches hazardous substance.



Hydroxyl radicals denature hazardous substances proteins.



Hazardous substance is inhibited.



[Representative evidence]

** : Units based on Panasonic standards

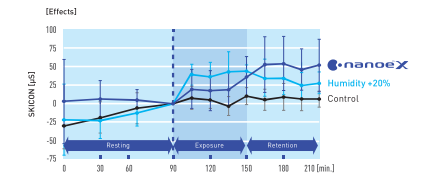
	Hazardous substances	Result**	Capacity	Time (Hr.)	Testing organisation	Report No.
Pollutants	Paraffin(Hexadecane)	99% inhibited	Approx. 23m ³	16	Panasonic Product Analysis Center	Y17NF089
	Aromatic carboxylic acid (Benzoic acid)	99% inhibited	Approx. 23m ³	8	Panasonic Product Analysis Center	Y17NF096
Carcinogen	Benzo [a] anthracene (BaA)	78% inhibited	36L	8	Panasonic Product Analysis Center	Y13NF141
	Benzo [b] fluoranthene (BbF)	79% inhibited	36L	8	Panasonic Product Analysis Center	Y13NF142
	Benzo [a] pyrene (BaP)	97% inhibited	36L	8	Panasonic Product Analysis Center	Y13NF143
	Indeno [1,2,3-cd] pyrene (IcP)	97% inhibited	36L	8	Panasonic Product Analysis Center	Y13NF144
	Dibenzo [a,h] anthracene (Dha)	81% inhibited	36L	8	Panasonic Product Analysis Center	Y13NF145

Results may vary based on usage, and seasonal and environment variables (temperature and humidity). nanoe™ X and nanoe™ inhibit activity or growth of viruses, but do not prevent infection.



Moisturised skin, straighter & sleeker hair

nanoe™ X combines with natural sebum to coat the skin, leading to smooth, well-hydrated skin. Furthermore, the abundant moisture found in nanoe™ X hydrates the hair, contributing to straighter, sleeker hair.



nanoe™ X achieved an improvement in skin moisture content equivalent to a 20 percentage point increase in environmental humidity.

[Representative evidence]

** : Units based on Panasonic standards

Skin and hair	Result**	Capacity	Time (Hr.)	Testing organisation	Report No.
Skin	Effective	Approx. 34m ³	1	Panasonic Product Analysis Center	USG-KT-14K-012-TM
	Effective	Standard household	28 days	FCG Research Institute, Inc.	19104
Hair	Effective	Approx. 46m ³	8 Hr. x 15 days	Panasonic Product Analysis Center	USD-KS-15S-009-TM

Results may vary based on usage, and seasonal and environment variables (temperature and humidity). nanoe™ X and nanoe™ inhibit activity or growth of viruses, but do not prevent infection.

Test reports of nanoe™ X

The effects of nanoe™ X have been proven through experiment tests conducted by institute and laboratory. It has also been verified by the relevant authority.



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