Panasonic

nanoe™X

Concentration Simulation Results

Simulation Conditions

Type of indoor unit

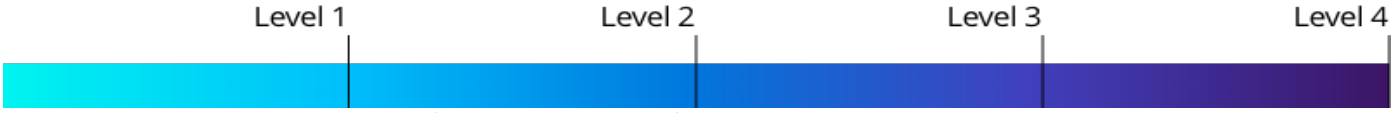
ClimaPure® XZ

Model type	Residential
Room shape	Rectangle
Room size	20m²
Short side length	3m
Room height	2.4m
Position of indoor unit	Center of the short side
Type of nanoe™ generator	Mark3

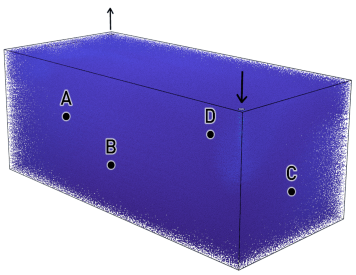
nanoe™ distribution and concentration level over time

There are 5 key benefits provided by nanoe™ which commence when concentration reaches Level 1.
The concentration level affects the speed at which the benefits occur. Concentration level 2 is 10 times the concentration of level 1, and concentration level 3 is 20 times the concentration of level 1.

*The results shown are for simulation purpose only and concentration may vary due to actual room conditions

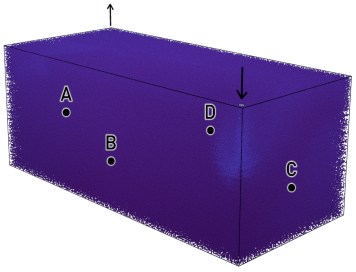


2 minutes later (nanoe™ concentration : approximately 30%)



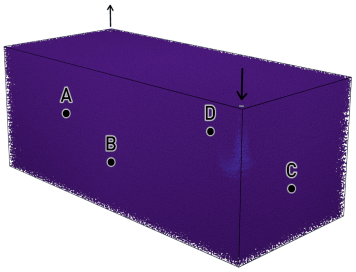
nanoe™ concentration level

5 minutes later (nanoe™ concentration : approximately 60%)



nanoe™ concentration level

12 minutes later (nanoe™ concentration is almost stabilized.)



nanoe™ concentration level

Room conditions

- Room size : 3.0m x 6.67m x 2.4m (20m²)
- Type of indoor unit : ClimaPure® XZ
- Position of indoor unit or air outlet : As indicated in the image
- Ventilation
  Position of air inlet/outlet : As indicated in the image
  Amount of ventilation : 0.5 times / hour (amount of ventilation means number of times when air volume equivalent to the cubic capacity of the room is ventilated per hour)

Other conditions

- Air volume : 5.5m³/min (330m³/hour) by 12,000BTU/h 3.5kW
- Air flow direction : To 45 degrees downward from the horizontal axis
- Amount of generated nanoe™ : 48 trillion / second
- Half-life of hydroxyl radical : Approximately 10 minutes
- Simulation method : Fluid/concentration diffusional analysis by finite volume method

Remarks

- The concentration level of nanoe™ is stabilized after a certain period of time time. This result shows the variability of nanoe™ diffusion at the 3 time points until when nanoe™ concentration is stabilized.
- The diffusion of nanoe™ is not effected by the operation mode (heating, cooling, nanoe™, etc.) of the air conditioner.
- Simulation was conducted as an independent space by dividing one home into individual room.
- nanoe™ particles are extremely tiny in nano-meter size. They cannot be seen so the concentration image is solely for illustrative purposes.

Concentration level of nanoe™ X is the key for effectiveness

5 Effects of nanoe™ X

Deodorises | Inhibits 3 types of pollutants | Moisturizes

Odours | Allergens | Pollen | Hazardous substances | Skin and hair

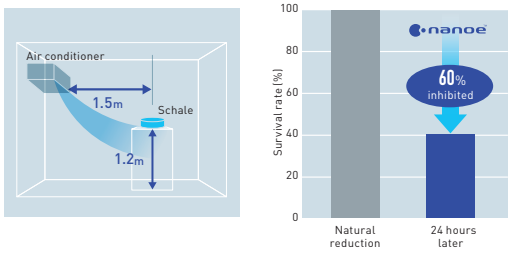
Known as nature's detergent, hydroxyl radicals (also known as OH radicals) are natural reactive molecules looking to react with other elements such as hydrogen. This reaction enables hydroxyl radicals to inhibit the growth of pollutants. Panasonic's nanoe™ X technology brings these effects to purify surfaces and indoor environments.

The concentration level of nanoe™ X is the key to effectiveness. The higher the concentration, the more hydroxyl radicals are in the space, and the quicker the effect can be realized.

This will enable you to enjoy a pleasant and comfortable living space.

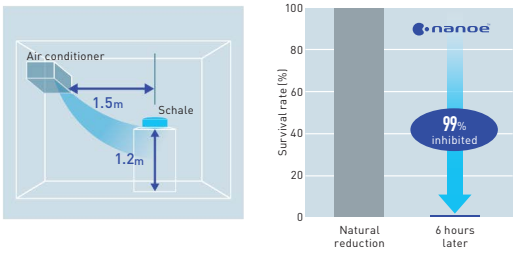
LEVEL1 Effects expected at concentration Level1

Allergens



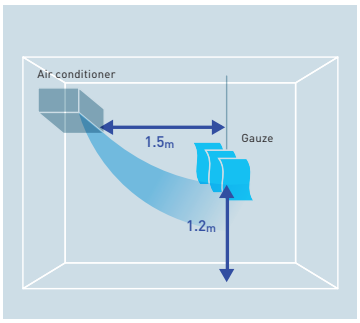
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered mite allergens
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test result: Inhibited over 60% in 24 hours
(5) Report No.: BAA33-130304-F04

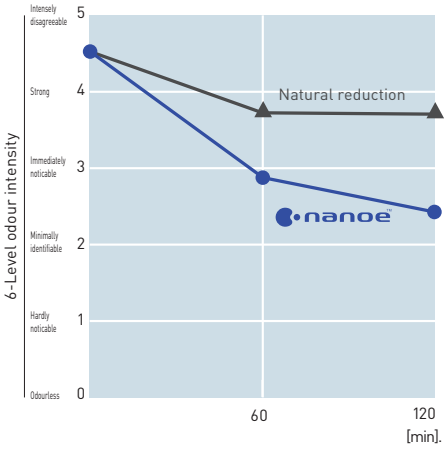
PM 2.5



(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered paraffin (hexadecane)
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test result: Inhibited over 99% in 24 hours
(5) Report No.: Y13NF136

Cigarette Odour



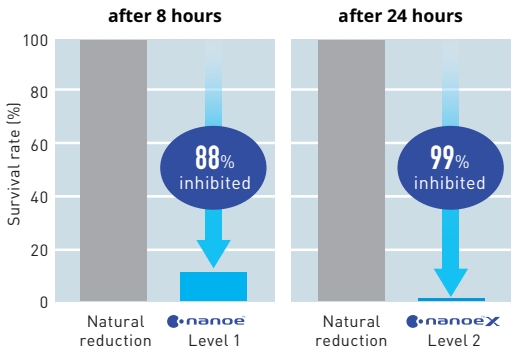


(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered cigarette smoke odour
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test result: Odour intensity reduced 1.2 levels in 2 hours
(5) Report No.: BAA33-130125-D01

LEVEL2 Effects expected at concentration Level2

Level 2 is 10 times more concentrated than Level 1, and compared to Level 1 takes less time to realise the effects.

Pollen



After 8 hours
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered cedar pollen allergens
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test result: Inhibited over 88% in 8 hours
(5) Report No.: BAA33-130402-F0

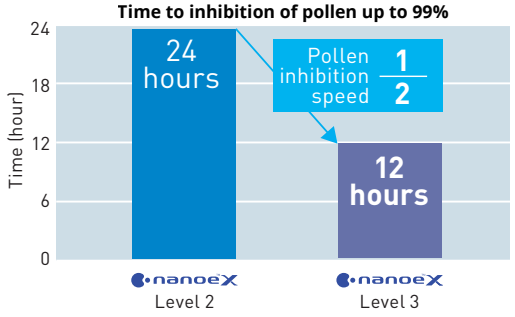
After 24 hours
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered cedar pollen allergens
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test Result: Inhibition of 99% or more in 24 hours
(5) Report No.: 4AA33-151001-F01

LEVEL3 Effects expected at concentration Level3

Level 3 is 20 times more concentrated than Level 1, and compared to Level 2 takes less time to realise the effects.

Pollen

Time to inhibition of pollen up to 99%

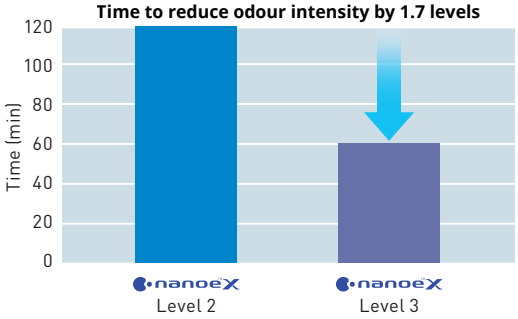


Level 2:
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered cedar pollen allergens
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test Result: Inhibition of 99% or more in 24 hours
(5) Report No.: 4AA33-151001-F01

Level 3:
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered cedar pollen allergens
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test Result: Inhibition of 99% or more in 12 hours confirmed
(5) Report No.: L19YA009

Age-related body odour

Time to reduce odour intensity by 1.7 levels



Level 2:
(1) Testing organization: Panasonic Product Analysis Center
(2) Target odour: Surface-adhered age-related body odour
(3) Test volume: approximately 23 m³-sized test chamber
(4) Test result: Odour intensity reduced by 1.3 levels in 2 hours
(5) Report No.: Y18HM047-1

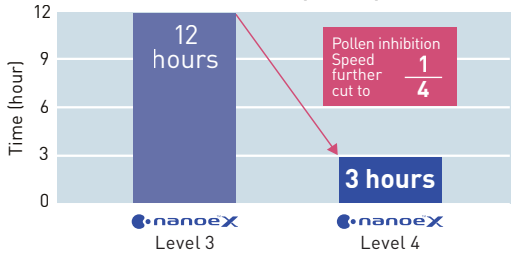
Level 3:
(1) Testing organization: Panasonic Product Analysis Center
(2) Target odour: Surface-adhered age-related body odour
(3) Test volume: approximately 23 m³-sized test chamber
(4) Test result: Odour intensity reduced by 1.7 levels in one hour
(5) Report No.: Y18HM059

LEVEL4 Effects expected at concentration Level4

Level 4 is 100 times more concentrated than Level 1, and compared to Level 3 takes less time to realise the effects

Pollen

Time to inhibition of pollen up to 99%

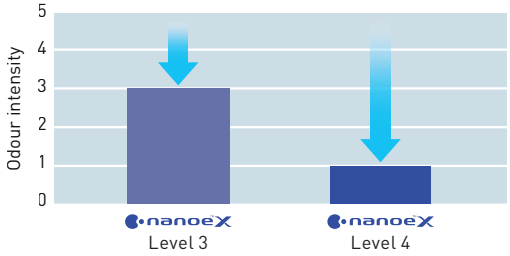


Level 3:
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered cedar pollen allergens
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test Result: Inhibition of 99% or more in 12 hours confirmed
(5) Report No.: L19YA009

Level 4:
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered cedar pollen allergens
(3) Test volume: Approx. 24 m³ laboratory (3.64 x 2.73 x 2.4m)
(4) Test Result: Inhibition of 99% or more in 3 hours
(5) Report No.: H21YA017-1

Sweat odour

Deodorisation test



Level 3:
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered sweat odour (hexanoic acid)
(3) Test volume: approx. 23 m³
(4) Test result: Odour intensity was reduced to 1.0 in 2 hours
(5) Report No.: R21HM004-0

Level 4:
(1) Testing organization: Panasonic Product Analysis Center
(2) Test subject: Adhered sweat odour (hexanoic acid)
(3) Test volume: approx. 23 m³
(4) Test result: Odour intensity was reduced to 3.1 in 2 hours
(5) Report No.: L19YK032-11