

99.9% sterilization of virus

⊖ Ion Generator ORELA



About ORELA

This negative ion generator eliminates viruses in the indoor air within 40 to 180 minutes achieving 99.9% sterilization effect. It is proven by Japan Food Analysis Center to remove 99.9% of airborne bacteria of influenza A virus in 2010.









The key technology of generator extends the life time of negative ions to 60~90 seconds in the room by hopping electrons and allowing water molecule clusters to retain electron. By extending the life, the built-in fan can spread the negative ion to every corner of the room maximizing the sterilization effect. Only ORELA can spread more than 8m indoors.



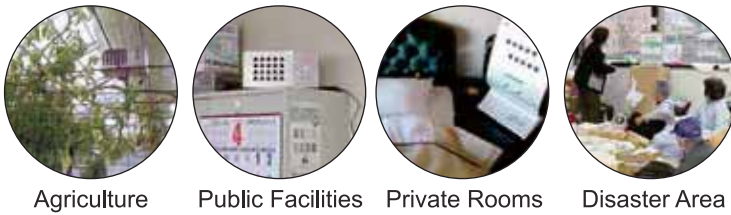
Only ORELA can spread more than 8m indoors.



Characteristics

-  **Mass Generation**
20 million pcs/cm³, which is the amount of negative ions that others do not have
-  **Sterilization Ability**
Eliminates 99% or more of the virus in 40 to 180 minutes with almost no positive ions
-  **Diffusion Ability**
Diffusion ability to spread negative ions far away with a built-in fan (8 m or more)
-  **Habitat Time**
Compared to the conventional 3 to 6 sec, the habitat time of negative ion is 60 to 90 sec.
-  **Filter Replacement**
Unlike a conventional type filter type, there is no need to replace the filter
-  **Durability**
The most essential parts maintain excellent durability with a special needle.
-  **Electromagnetic Waves**
Creates a comfortable space with the ability to neutralize electromagnetic waves
-  **Keeping Freshness**
Suppresses the oxidation of fresh products and keeps them fresh for a long time.

Application



Agriculture Public Facilities Private Rooms Disaster Area

Primary effect



Floating ⊖ and ⊕ ions wrap virus or allergens such as fungi, pollen, mites, etc. and reduce bacterial action.

⊖ ions wrap around mold and decompose proteins in the cell membrane on the surface of mold.

⊖ ions break down the components of unpleasant odorous substances stained in clothing, curtain, bed, etc.



Test Result

Amount of \ominus ions

Number of \ominus ions are measured for the room space at W6m × L12m × H3m with temperature 26 °C and the humidity 67%.

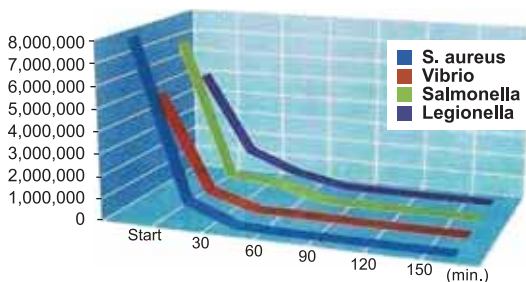
Distance	No.of Ions	Distance	No.of Ions
0.15m	2,450,000	4.00m	81,000
0.50m	1,006,000	5.00m	85,000
1.00m	225,000	6.00m	85,000
2.00m	44,000	7.00m	85,000
3.00m	80,000	8.00m	85,000

From the test results, \ominus ions are diffused indoors by the fan built into the generator.

Bactericidal effect

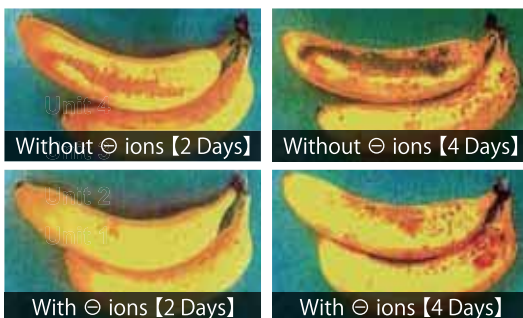
10^7 / m1 of each bacterial solution was prepared and applied it to a 10 cm square embroidery board. After attaching \ominus ion generator, the decrease of bacteria was confirmed over time such as 30, 60, 90, 120, 150 and 180 minutes.

	S. aureus	Vibrio	Salmonella	Legionella
Start	8,000,000	5,000,000	7,000,000	5,000,000
30min	960,000	750,000	820,000	1,400,000
60min	85,000	82,000	650,000	530,000
90min	6,400	56,000	49,000	58,000
120min	4,300	7,300	17,000	8,400
150min	2,700	5,300	7,300	5,800
180min	1,000	2,100	4,300	2,300



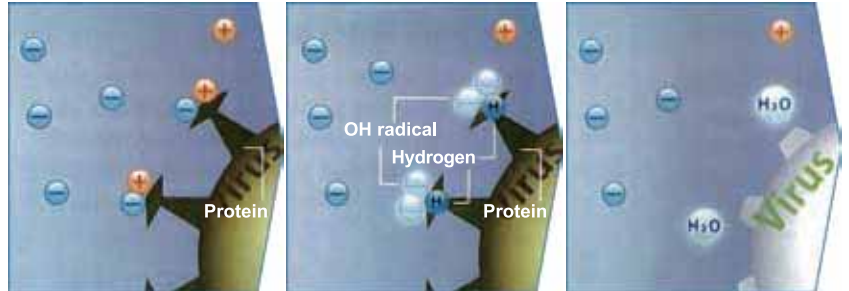
Freshness

In the \ominus ion group, a tendency to suppress the progression of brown was confirmed.



Mechanism

Neutralization

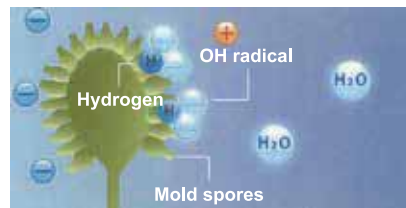


Floating \ominus ions reach virus accurately and adhere to the \oplus ions and the virus in the air.

These are transformed into OH radicals and denature proteins by extracting H from proteins on the surface.

The OH radical and the H of virus protein combine to form H₂O, which returns to the air and nullifies the virus.

Suppression



\ominus and \oplus ions in the air extract H from mold bacteria, denature proteins, and suppress the action of mold.

Deodorization



By directly reaching the cause of odor, the OH radicals decompose the cause of odor (NH₃) deodorizing them.

Specifications

Model	GSD-208	GSD-209N		GSD-220A
Power supply	AC100~240V (50/60Hz)	AC100~240V (50/60Hz)	DC5V (USB)	AC100~240V (50/60Hz)
Rated power consumption	7W	5W		15W
Weight (kg)	4.7	1.0		5.5
Dimension (W×H×D)	310×450×210	230×60×130		360×190×185
Discharge method	Silent discharge			
Generated ion concentration	2 million pcs./CC or More	2 million pcs./CC or More		2 million pcs./CC or More
Generated ozone concentration	Within 0.1PPm WHO standard value			
Operation mode	2 levels of Strength + sleep mode	Strong driving + sleep mode		Blower fan on/off
Application area	80m ²	30~50m ²		250m ²