BROAD ELECTROSTATIC AIR PURIFIER

Air Purification Keeps You Healthy
Air Disinfection Keeps You Safe
BROAD Electrostatic Air Purifier Saves Our Family From Pollution

- Fewer illnesses such as cough, cold and influenza.
- Far less likely to catch chronic diseases such as rhinitis, laryngitis and pneumonia, and can lessen the effects of asthma.
- The risk of cancer, diabetes and other major diseases can be reduced dramatically.

Super Purification

Electrostatic air purification technology is at the top of the pyramid of air purification technologies, and its super filtration efficiency is incomparable to any other physical filtration methods (paper filter):

- Static electricity helps absorb infinitely tiny particles (10,000 times smaller than PM2.5).
- 6000V high-voltage static electricity kills microbes such as virus and bacteria, and clears away pollen.

However, two worldwide global challenges must first be faced:

1) The capacity of static electricity changes with air humidity level. Excessive ozone will be released at high humidity, while purification efficiency will be reduced at low humidity. BROAD’s unique patented technology of constant current and voltage has successfully solved this problem.

2) The electrostatic tungsten filament and the electrode grid will short out when meeting fiber or mosquitoes in the air, crackling sound will be heard, and the tungsten filament will even get burnt. BROAD’s patented technology of an independent resistor circuit for every single tungsten filament has solved this problem.
Air Disinfection

During the novel coronavirus pneumonia crisis in China in 2020, we found ozone disinfection to be the most effective measure with the least side effect and lowest cost to prevent the virus from spreading.

Dozens of anti-epidemic hospitals, such as the Leishenshan Hospital, Huoshenshan Hospital, and several mobile cabin hospitals have used BROAD electrostatic air purifiers. During the anti-epidemic period, we have also applied ozone at different concentration levels to the wards, work areas and living areas for 24-hour uninterrupted operation.

The specific ozone concentrations are as follows (ppm): for hotels, dormitories and schools: 0.1~0.15, for public transport, hospitals, meeting rooms and restaurants: 0.3~0.7, for public office areas: 0.15~0.3, for infectious disease wards and isolation rooms: 1~2, for hospital disinfection rooms and disinfection cabins: 20~40.

About Ozone

Ozone molecules consist of 3 oxygen atoms (O\(_3\)). The ozone in the natural environment mainly comes from the photochemical reaction between the sun and plant volatiles and lightning, while artificial ozone is mainly obtained by high-voltage static electricity or ultraviolet rays. This product generates ozone by high-voltage static electricity.

Full coverage - During disinfection, the electrostatic air purifier and ozone generator produce ozone, which can quickly penetrate into every corner and gap of the dwelling, overcoming the problem that ultraviolet sterilization can only go straight up and down, leaving a dead zone of disinfection, and the problem of eye injury.

High efficiency - A large number of scientific experiments have proved that the efficiency of ozone sterilization and antivirus is more than 200 times higher than that of chlorine.

Ultra-cleanliness - Ozone is produced and eliminated by itself: It is continuously produced by high-voltage static electricity and air ionization. It oxidizes microorganisms and organic matter in the air into carbon dioxide and water, and the excess is decomposed into oxygen without any residue. In contrast, chemical sanitizers such as 84 disinfectant (key component NaClO) are toxic to the human body and have secondary pollution of residues.

Low cost - Using only electricity and no consumables, the cost is much lower than chemical disinfection.

Trustworthy - BROAD Clean Air has been committed to ozone disinfection research and market application since it invented the world's first electrostatic air purifier in 2005. It is a globally recognized industry leader.
BROAD Electrostatic Air Purifier is the only product in the world with four integrated functions - Electrostatic Dust Cleaning, Disinfection, Formaldehyde Eradication and Oxygen Deficiency Monitoring (BROAD patented).

- **Electrostatic Dust Cleaning:** The tungsten filament of the electrostatic cleaner continuously releases about 6000V high-voltage static electricity, and charges all particles with positive charge, which will then be absorbed by a negatively charged electrode grid. Electrostatic cleaner can absorb infinitely small particles (10,000 times smaller than PM2.5).

- **Ozone disinfection:** Equipped with ozone generator, the purifier can be used for air disinfection in infectious disease wards and places where a lot of people are gathered, effectively killing bacteria and viruses. Even in seasons without infectious diseases, keeping a certain concentration of ozone indoors is conducive to preventing harm of microorganisms such as influenza virus and mites, as well as pollen.

- **Formaldehyde Eradication:** The active carbon sheet absorbs various volatile and toxic chemical gases (VOC) such as formaldehyde, benzene, nicotine, etc. In addition, ozone itself is a strong oxidant, which can transform organic matter (VOC) into carbon, and itself into water and oxygen.

- **Oxygen Deficiency Monitoring:** The CO₂ sensor monitors indoor CO₂ concentration level to alarm customers if there is indoor oxygen deficiency.
BROAD Electrostatic Air Purifier is plug-and-play. It has low power consumption (see product parameters for details), and is suitable for year-round operation. The purifier can be shut down when the occupants are away.

In order to maintain the best purification effect, once the electrostatic cleaner is full of dust (about 1.5mm thick), it must be taken out for cleaning (usually once a month). Cleaning is very simple. Using ultrasonic cleaner or detergent, each cleaning only needs a few minutes (the cleaner must be dried after washing).

Active carbon is a consumable material (to be replaced every 1~2 month). It’s not expensive and can be supplied indefinitely.

You can also entrust BROAD service team with the cleaning and maintenance work.

When we wash out a big basin of water as black as ink, a complex emotion rises in our heart: how dirty the air is, but how lucky our family is!

Filtration Efficiency Test

1. Use a piece of hard paper or plastic to block most of the air outlet of the purifier, so that the air outlet does not stir in unfiltered air (note that it will inevitably allow a bit to enter).

2. Align the dust detection port of the detection device with the air outlet, and obtain the post-purification data (you can use the BROAD Air Monitor or other dust detection devices).

3. Put the detection device to the air inlet of the purifier to test and obtain the pre-purification data. Purification efficiency: (pre-purification data-post-purification data)/pre-purification data.

4. Normal filtration rate for RM2.5 should be ≥95% (considering the mixed dirty air, actual filtration rate has reached 99%), otherwise the cleaner needs to be cleaned).
Take out the electrostatic cleaner

Use ultrasonic cleaner (can be provided by BROAD)

Or use detergent (commercially available)
2. Applicable area depends on the degree of environmental pollution, etc.
3. Since there is nearly no filtration resistance for electrostatic de-dusting, the power consumption is as low as 0.06W. It is economical to work continuously all-day unless there is no one in the room.
4. The filtration energy efficiency ($\eta/[m^2/c\cdot h]$) for BROAD Air Purifier is 9. China National standard as per GB/T 18801-2015: 2–5 is qualified, ≥5 is highly efficient.
5. Warranty: 2 years from the date of purchase.

### Parameters & Prices

**Explanation of “overpriced”:**
1. Electrostatic technology is a cutting-edge technology with high cost.
2. The cost of ozone generator and ozone concentration adjustment device is high.
3. CO$_2$ sensor (for O$_2$ deficiency monitoring) is a cutting-edge optical device, and it could cost RMB 4,000~RMB 6,000 on the market for a single one. However BROAD’s Electrostatic Air Purifier with O$_2$ monitoring function is actually very inexpensive.

<table>
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<tr>
<th>Model</th>
<th>TD400</th>
<th>TD1000</th>
<th>TD2000</th>
<th>TD4000</th>
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<td>28~62</td>
<td>61~126</td>
<td>80~360</td>
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</table>

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Rethinking Ozone

For a long time, scientists from various countries have listed ozone as an air pollutant, the so-called “photochemical pollution”. Now, let’s take a few minutes to pick this up. This is a bit of a challenge to the global scientific community, but fulfills the ancient Greek astronomer Claudius Ptolemy’s famous saying: Science is simple.

There are two main sources of ozone in the atmosphere: One is the exhaust gas from thermal power plants and vehicles, which photochemically reacts with ultraviolet rays from the sun. This part is indeed a pollutant and is called “photochemical pollution”. But this part of ozone only accounts for about 5% of the ozone in the atmosphere (based on average globally). The second is the photochemical reaction of plant volatiles with the sun’s ultraviolet rays, which accounts for more than 80% of ozone in the atmosphere. This is something that has been happening for billions of years since the existence of the earth. Human beings have been multiplying in such an environment. Therefore, of course, human beings adapt to it and need it. Otherwise, the microbes on the earth will multiply indefinitely, devouring plants and animals. This also explains why countries all over the world always have flu outbreaks in the winter and rainy season when there is little sunshine (weak ozone), which causes about 500,000 deaths each year worldwide. It also explains why the novel coronavirus pneumonia spread in the southern part of China, which is cloudy with rain (weak ozone) in 2020, and rarely spread in the dry and sunny north (strong ozone).

Now let’s imitate nature and eliminate the virus with ozone.