PrimeSphere™

PURE AIR SOLUTIONS

Restoring clean, safe and healthy spaces through professional ozone purification.

We improve air quality and eliminate odours, bacteria and pathogens naturally while remaining committed to long-term wellbeing and eco-friendly disinfection practices.

We do not mask odours – we eliminate them at molecular level, restoring the natural purity of the space.

Your guide to Ozone and its cleaning power.

Before we proceed, I would like to introduce myself. My name is Lukasz Olenderek, owner of PrimeSphere, and I had the great pleasure of preparing this guide for you.

This guide is informed by insights gathered from a survey we conducted. The findings showed that awareness of ozone and its cleaning capabilities remains relatively low – even among professionals working in industries where ozone is commonly used.

For this reason, we have brought together key information and data to create a comprehensive guide to ozone and the treatment process – how it works, its applications and benefits, and its environmentally responsible impact.

We hope this guide will help raise awareness of ozone and demonstrate its full potential.

What is ozone?

Ozone (O_3) is a highly reactive gas composed of three oxygen atoms, existing both naturally in the upper atmosphere and as a pollutant at ground level. It acts as a protective shield against solar UV radiation in the stratosphere but is a harmful respiratory irritant and key component of smog at the Earth's surface.

What is ozone cleaning?

Ozone cleaning is a professional, eco-friendly method using ozone (O_3) gas or aqueous ozone to sanitise, deodorise, and break down contaminants at a molecular level without chemicals. It effectively eliminates pathogens; mould, bacteria, and viruses, and removes strong odours (smoke, pets) by oxidising them, making it ideal for air purification, water treatment, and fabric sanitisation.

How is ozone produced?

Our machines generate ozone through a process called corona discharge. This involves passing electrical energy through a chamber containing oxygen, which splits the oxygen molecules (O_2) into individual atoms. These atoms then combine with other oxygen molecules to form ozone (O_3).

In everyday life, you can sometimes smell ozone after a thunderstorm. Clean, fresh, sterile, slightly metallic scent forms in the atmosphere when lightning passes through oxygen. It is more noticeable when storms are intense, with lots of lightning and strong downdrafts bringing air from higher altitudes where ozone is more concentrated.

Is ozone cleaning safe?

Ozone cleaning is highly effective at sanitising, destroying odours, and eliminating harmful pollutants, but it is not safe for humans, pets, or plants during treatment. As powerful as it is, it can cause lung irritation, chest pain, coughing, and worsen asthma if safety procedures are not adhered to, hence treatment area must be vacated and aired out thoroughly after treatment.

In summary, ozone cleaning is effective for disinfection in empty, controlled environments, and safe when health and safety practices are followed.

Is ozone cleaning effective?

Ozone cleaning offers a faster, eco-friendly alternative to traditional methods, using ozone gas or aqueous ozone to neutralise stubborn odours without chemicals. It is safer for environments, leaving no toxic residue, whereas traditional cleaning often relies on harsh chemicals, fragrances, and requires more water.

Yes, it is very effective, hence ozone is widely used across industries as it provides powerful sanitisation and disinfection. In health care for instance, it is common to use ozone to decontaminate hospital rooms and clinical environments, and control of pathogens including bacteria, viruses and mould. In food industry, it is used to sanitise food processing equipment and to control odour and bacteria in cold storage. These are just two examples, but there are more where ozone is applied for its effectiveness.

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Key Differences Between Ozone and Traditional Cleaning

- **Effectiveness & Speed:** Ozone works up to 3,000 times faster than chlorine, acting as a powerful sanitiser against pathogens: viruses, bacteria, and mould. It breaks down molecular bonds to destroy odours rather than masking them.
- **Chemical-Free & Safety:** Ozone is a natural oxidant that decomposes back into oxygen, requiring no harsh chemical sprays or detergents. This makes it ideal for allergy sufferers and reduces chemical residues on surfaces, unlike traditional cleaning.
- **Application & Residue:** While traditional cleaning involves scrubbing with detergents and cleaners, ozone (especially gaseous) can penetrate hard-to-reach areas, including air ducts, fabrics, and upholstery, leaving no chemical odour behind.
- **Environmentally Friendly:** Ozone cleaning uses fewer resources (like water) and reduces chemical waste in rivers and sewage.

It is important to remember that ozone cleaning does not replace traditional cleaning as ozone treatment does not remove physical dirt.

How effective is Ozone as disinfectant?

When using Ozone to eliminate pathogens, there are two components that must be determined: (1) concentration and (2) exposure time. Many resources have developed efficient protocols for a variety of pathogens, but each has its intricacies.

We recommend referencing to the latest literature in the field. As a guide, here are some examples:

Pathogen	Ozone Concentration (ppm)	Time (Minutes)
Fungi	< 0.3	< 2
Bacteria	0.3 – 2.3	< 20
Virus	0.2 – 4.0	< 30
Mould	3.0 – 5.0	60

It is important to mention that length of the treatment is determined by generator output and area treated.

Can ozone be used for cleaning air conditioning systems?

Yes, ozone cleaning can be used to disinfect and deodorise stationary air conditioning units. It is highly effective at eliminating bacteria, mould, fungi, and removing musty odours from the evaporator coils and internal components, more effectively than traditional chemical methods. However, this process must be handled with extreme care because ozone is a powerful oxidant.

Can ozone be used for vehicle air conditioning?

Same as with stationary air conditioning system, ozone can be used to sanitise and disinfect vehicle air conditioning systems by circulating ozone gas through the ventilation system, breaking down odour-causing molecules, mould, bacteria, and allergens in the air vents, evaporator, and cabin. Also, it will remove food, smoke and damp odours.
For best results, it is recommended to use ozone treatment periodically for disinfection rather than as a daily air cleaner. It is a good practice to do it every 6 months.

As mentioned, ozone cleaning does not replace traditional cleaning when it comes to physical dirt. It sanitises, disinfects and deodorises but it will not remove the root cause of the problem – this is often misinterpreted. For example, water ingress and damp smell. Ozone treatment will remove the odour issue but not water ingress problem.
Another example, odour appearing when using vehicle air conditioning. Ozone will remove it along with other unpleasant smells and disinfect the system but prior to treatment cabin filter should be replaced and air inlet canals investigated for dirt residue as this is often overlooked.

Benefits of ozone cleaning

In essence, ozone cleaning is highly effective, it eliminates pathogens and odours, it is chemical-free and environmentally friendly, leaving no residue behind – just purified air.

Do I need to clean area before the treatment?

Yes, treatment area should be vacuumed, bins emptied and rubbish disposed of. Thanks to that treatment will be more effective.

What conditions are required for ozone treatment to be effective?

There are several conditions that are required for ozone treatment to work and be effective. It is room temperature and humidity. Optimal values are temperature between 15°C – 25°C and humidity between 50% - 80%. No need to worry about any of it as we will carry out all necessary checks to ensure conditions are optimal prior to treatment start.

How long should the treatment last for?

To determine treatment required time, we need to establish few important details: treatment area volume, ozone concentration required and its mass accordingly and generator output in mg/h or g/h.

Our lowest output generator produces 60 g/h = 60,000 mg/h which is much stronger than most consumer ozone generators. It is powerful enough to treat cars, coaches, hotel rooms, medium and large houses as well as commercial units and areas after fire and flood damage up to 160m2.

Treatment time would be as set below:

Room volume	1 ppm	5 ppm	10 ppm
30 m3	< 2 min	< 10 min	< 20 min
50 m3	> 3 min	16 min	32 min
100 m3	> 6 min	32 min	64 min
300 m3	> 19 min	96 min	192 min

To provide an example of other treatment types and times, accordingly, please see the below table based on the same generator output (60g/h).

Space	Typical runtime
Car	20 min
Small room	20 min
Medium room	30 min
Large room	40 min
House	3 hours

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Can ozone be used as one-off treatment?

Yes, it can. However, the answer to this question depends on the circumstances. For example, for best results, it is recommended to use ozone treatment periodically for disinfection every 6 months. It will eliminate mould, bacteria, and allergens as well as damp, food, pet and smoke odours.

In situation when you experience issue with heavy odour or damp smell, treatment may be required more than once. It is important to mention that in both cases, it would be recommended to investigate the root cause of the issue. Ozone will disinfect and eliminate any odour, but it will not fix the issue of the damp itself.

Another example would be ozone treatment required in an area affected by flood or fire. Treatment required in these circumstances is far more complex, requires certain conditions to be met for treatment effectiveness and in many cases, it must be repeated several times to restore pre-incident environment.

Can I enter treatment area during the process?

No, you must not under no circumstances. Ozone is a harmful respiratory irritant and can cause lung irritation, chest pain, coughing, and worsen asthma if safety procedures are not adhered to. “STOP HIGH CONCENTRATION OZONE TREATMENT IN PROGRESS DO NOT ENTER” sign will be clearly displayed, and you will not be allowed to enter the treatment area until the process is completed and area thoroughly aired after treatment. In addition, ozone concentration levels will be checked to ensure safe re-entry.

How long do I have to wait before I am allowed re-entry?

Length of time required to ventilate and air the treatment area is on average time and a half of the treatment process itself. We can support and speed the process of ventilation by using our high-output floor fans reducing post-treatment wait time by half, subject to satisfactory ozone concentration level reading.

We hope you find this guide helpful, but should you have any other questions, please feel free to get in touch with us and we will be happy to assist you and answer any questions you may have. You can find additional information about our competence and safety statement in “Ozone & Safety” section of our website.

You can contact us via phone, email or website enquiry form. Alternatively, please scan the QR code below and you will be taken directly to our website.

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