

What is Ozone?

Ozone is a naturally occurring oxidizing and disinfecting agent which is composed of three oxygen atoms combine to form O₃. It is a bluish or colorless gas with a very characteristic odour. Ozone is highly reactive and its' unstable nature causes it to rapidly decompose to oxygen, leaving no residues.

Ozone is present in the atmosphere in small concentrations, which are increased considerably in urban areas or after storms. The energy released from lightning produces ozone naturally, resulting in the fresh smell after a thunder storm. Ozone can also be generated mechanically by exposure of oxygen to a high energy electrical discharge (corona discharge), which is the process on which St-Groups ozone product is based.

Property	Ozone	Vs Oxygen
Molecular Formula:	O ₃	O ₂
Molecular Mass:	48	32
Color:	light blue	Colourless
Smell:	clothes after being outside on clothesline photocopy machines smell after lightning storms	Odourless
Solubility in Water (@ 0-deg C):	0.64	odorless
Density (g/l) at 0C:	2.144	1.429
Electrochemical Potential, V:	2.07	1.23

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For more than a century, ozone has been used throughout Europe and the United States for purifying drinking water supplies, bottled water, decontaminating cooling towers, and in a variety of applications for food processing plants.

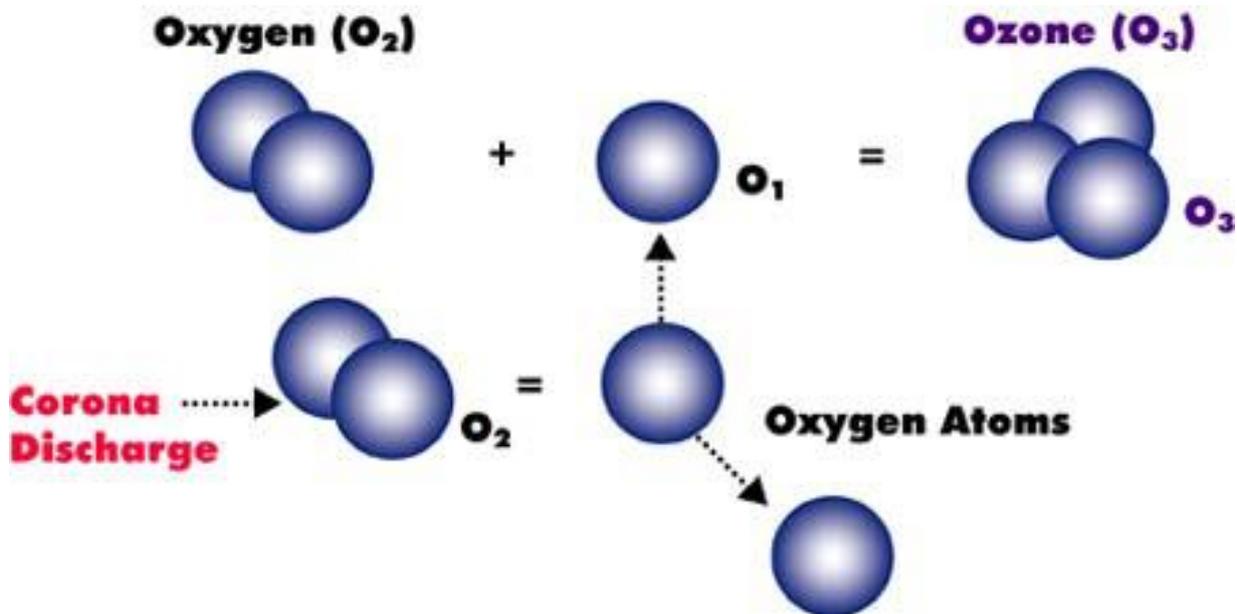
Due to the natural molecular instability of ozone, the third oxygen atom breaks away to leave pure oxygen (O₂) and a single, negatively charged, oxygen molecule. This single oxygen atom is a powerful oxidising agent that reacts with bacteria, fungi, spores and associated molecules that cause bad odours.

Antecedents

Ozone is well established as a safe alternative for disinfecting water, aerial environments, and solid surfaces. Unlike many other disinfectants ozone is produced on site, so it avoids the safety and insurance risks related to transportation and storage of chemical treatments.

Ozone Generation

Ozone gas is formed when oxygen molecules (O₂) are exposed to either ultraviolet radiation or an electrical discharge, becoming oxygen radicals (O) that will bond with oxygen molecules (O₂) to create ozone (O₃).

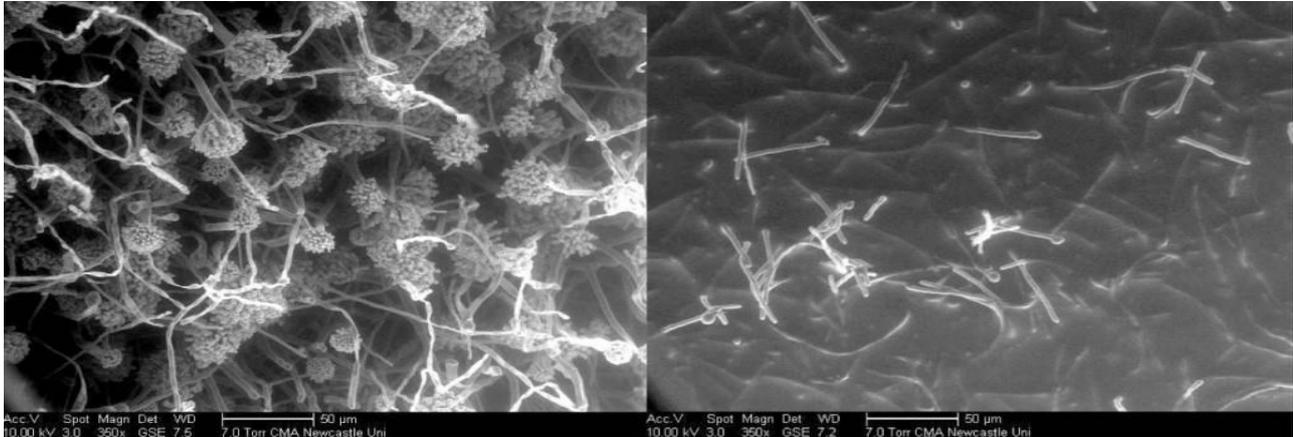


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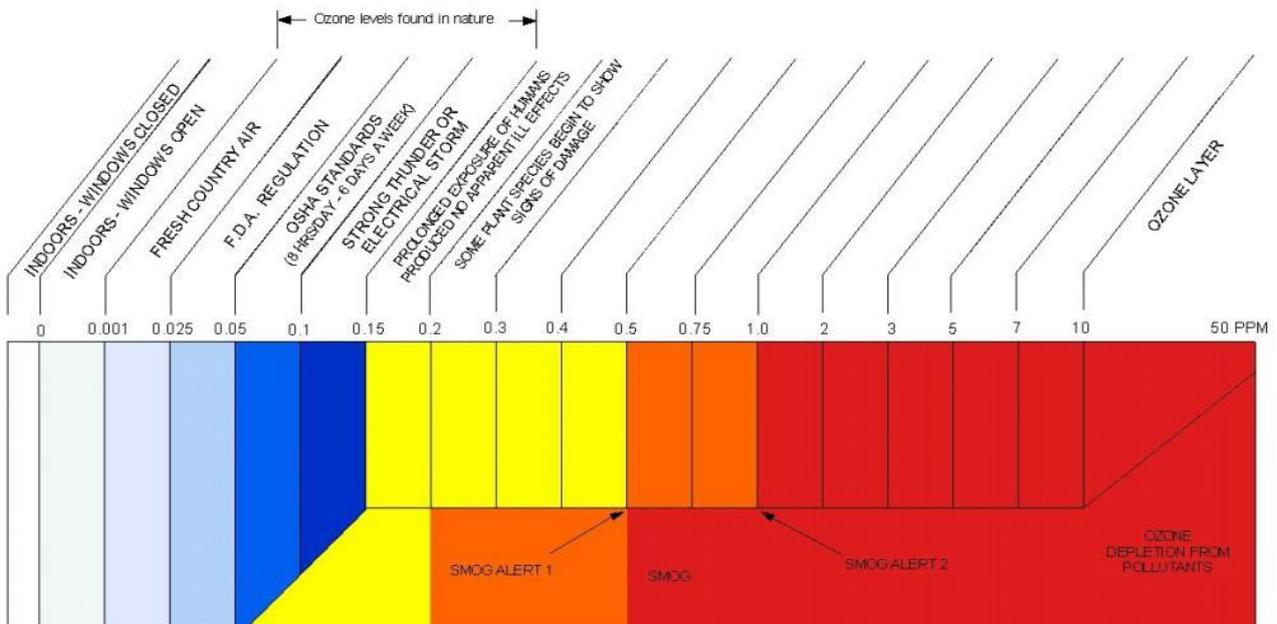
Mechanism of Ozone:

Ozone will oxidize any susceptible substance such as bacteria, fungi, viruses, and any organic matter within its' reach. During oxidation, the weak bond will split leaving oxygen as a by-product of the reaction.



Safety:

St-Groups systems work with trace levels of ozone, which fall well within European Health & Safety guidelines. Contact St-Groups for further details.



Ozone Concentration

As shown in the diagram above, ozone occurs in nature at levels of up to 350 ppb (parts per billion). St-Groups ozone systems work typically at levels of less than 200ppm and are well within health and safety limits.

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Ozone For Environments (Hotel,Resort,ecc.)



General Informations

Ozone is a highly unstable natural gas, composed of trivalent oxygen (O₃) with a great oxidizing power. In nature it is formed thanks to electric shocks during storms or thanks to the action of ultraviolet solar rays. It is known that an ozone layer protects our planet from the violent UV-B rays, harmful to our health, while its oxidant and disinfectant properties are less known.

Properties of ozone

The possibility of exploiting ozone for cleaning and sanitizing objects and environments derives from its high oxidizing power. The ozone is in fact able to degrade and eliminate any polluting or harmful elements such as viruses, mites, insects, spores, molds, harmful chemicals and even smoke and odors, all in a totally natural way.

Being an unstable gas, a few minutes after use, ozone turns into oxygen, without leaving any kind of traces or chemical residues, without leaving unpleasant smells or stains on the fabrics.

How does it work

As soon as ozone comes in contact with an organic matter, an oxidation reaction is triggered. Basically all living micro-organisms are killed, such as mites, bacteria, viruses, molds and fungi while the molecules of the odors are oxidized, they are transformed into other harmless molecules, thus eliminating any form of bad smell.

As ozone is a gas heavier than air, it can penetrate into the fibers of the fabrics (mattresses, sofas, armchairs, carpets, carpets, car interiors). In this way it reaches and eliminates any microorganism and malodorous

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substance. Also present in the most difficult to reach points, impossible to thoroughly sanitize with a classic wash, however meticulous and accurate.

Advantages and benefits

Numerous studies state that disinfection and sanitization using ozone is more than 2000 times more effective than any type of traditional sanitation.

The ozone sanitization system is a completely ecological cleaning method, leaving no chemical residue behind it, and has been defined as a "GRAS" safe agent by the F.D.A, the US Food and Drug Administration.

In Italy, the Ministry of Health, with protocol No. 24482 of 31/07/1996, recognized the ozone sanitization system as a natural garrison for the sterilization of environments contaminated by bacteria, viruses, spores, etc. and infested with mites and insects.

In summary, the ozone sanitization treatment:

- Eliminates in an ecological and natural way bacteria, viruses, mites, molds, fungi, spores and any type of parasite.
- Eliminates unpleasant odors.
- It leaves no residual chemical traces, but turns into pure oxygen after use, so it is also environmentally friendly.
- Cleans and sanitizes thoroughly, even the least accessible cracks, every surface with which it comes into contact.
- You can use it to sanitize mattresses, sofas, armchairs, carpets, cars, rooms, etc.

St-Groups takes care of selling or supplying ozone equipment, products and equipment, guaranteed and certified by European institutions that certify its effectiveness in the field of use.

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