



OZONE NATURAL WATER TREATMENT

Ozone gas is formed as a natural process when oxygen is exposed to electric high voltage. Its an unstable gas that reacts quickly and then turns back into oxygen, leaving no harmful residues.

Chemical substitute

What makes ozone so effective is its high oxidation potential (2.07V), i.e. its potential to react with other substances. The oxidation potential of ozone can be measured by the redox potential and by comparison, ozone is about five times more oxidizing than oxygen and about twice as oxidizing as chlorine. Thus its an environmentally friendly and very potential substitute to chlorine and other chemicals used for water cleaning.

Verified efficient

Ozone has a well-documented kill rate of microorganisms such as fungus, bacteria and viruses. Apart from killing microorganisms ozone can be used to control taste, odor and color. It can also be used for e.g. flocculation of organic material which simplifies mechanical filtration.

Ozone production

Ozone is produced on site and in close connection to the water treatment

process. Consequently there is no need for costly storage or transportation.

Ozone concentration is measured in grams O_3/Nm^3O_2 (grams ozone per cubic meter oxygen) or percent by weight. Traditionally the applied concentrations ranges from 6 to 12 percent by weight in oxygen gas. The Primozone® Ozone Generators produce ozone with concentrations from approx. 14 to more than 20 wt% which is equivalent of 150-300g O_3/Nm^3O_2 .

Industrial production techniques

In the atmosphere ozone is generated when UV-light splits oxygen molecules into single oxygen atoms. When ozone is generated industrially it is produced either with cold plasma, corona discharge or UV-light. At Primozone the cold plasma method, also called dielectric barrier discharge method, is used.

The Oxygen - Ozone - Oxygen cycle

STEP 5

The ozone molecule (O_3) has turned into an oxygen molecule (O_2). The cycle is completed

STEP 1

Oxygen molecule (O_2)

STEP 2

The applied energy splits the oxygen molecule (O_2) into atomic oxygen (O_1)

STEP 4

The single atomic oxygen (O_1) disconnects from the ozone molecule (O_3) and performs oxidation

STEP 3

The single atomic oxygen (O_1) connects to an oxygen molecule (O_2) and ozone (O_3) is formed