



Dutrion[®] versus Chlorine and others

The traditional problem of water disinfection

The past century the most common disinfectant for water treatment has been chlorine; a low price disinfectant. Chlorine gas is very poisoned compound and one of the reaction products, chloramines, is in only a thin concentration causing severe reactions on pneumonic and slime producing organs.

After the discovery of organic reaction products when using chlorine a lot of countries revised the drinking water regulations. While disinfecting with chlorine the reaction products that form besides chloroform are HAA, THM, MX (DBPs) all considered mutagen and carcinogenic. Furthermore the disinfectant characteristics of chlorine depend strongly on the pH-value. When the pH-values exceed 7,5 the disinfectant characteristic of chlorine is almost negligible. Since these discoveries quests for alternatives for chlorine have been numerous. The most important alternative is chlorine dioxide (ClO₂) that by the Dutrion[®] chlorine dioxide concept has become available for small, medium and large water treatment plants. Just because the price per capita is affordable without all the disadvantages of chlorine or classical chlorine dioxide. Dutrion[®] is NSF.60 approved for usage in drinking water where other liquid formulations, "stabilized chlorine dioxide" (SCD), are often not allowed for drinking water applications and need a much higher dosing concentration to achieve the same results.

Chlorine dioxide will become as important to the world in the next 20 years in the same way that chlorine was important for the last 100 years.

Dutrion is a water disinfectant which can most effectively be applied in the final state of water treatment, i.e. after filtration. Unlike chlorine, which starts to oxidize all inorganic and organic matters in the water first before starting to kill the microorganisms, Dutrion is a highly selective oxidizer, designed to kill the microorganisms first instead of oxidizing organics in the water. This has numerous advantages vis-à-vis chlorine, such as the short contact time (typically 2-10 minutes, whereas chlorine needs at least 30 minutes). Due to its selectivity, the consumption of Dutrion is very low. Often, up to 60-80% of the initial concentration can be found at the tail end, which gives Dutrion its residual disinfection capacity throughout distribution systems (up to 72 hours, whereas chlorine only has more limitations (6-10 hours)). Last but not least, Dutrion does, contrary to chlorine, not hydrolyse into the water to react with organic matters to form disinfection by-products (DBP).

Dutrion[®] is the solution that unites the positive characteristics of Chlorine **without** the negative effects of Chlorine and in addition to that provides a substantial stronger disinfectant result with a broad pH-value range. Dutrion[®] concept enables availability in 2-powder form or just one tablet, without the need of expensive equipment to use or generate it.



Dutrion[®] Component A



Dutrion[®] Component B

Powerful Water Treatment

A few of the advantages of Dutrition® Chlorine Dioxide

- Safest water disinfectant with residual effect at tail end;
- No longer an explosion hazard;
- Easy to transport by rail, road, ship or plane;
- Very flexible in dosing rates and combined disinfection;
- No release of free chlorine, chlorite or chlorate;
- Only limited investment cost;
- Small, medium and large can use this affordable chlorine dioxide;
- The smell, taste and color of water improves;
- Less load on sewage and environment;
- No Chloramines (bounded chlorine) building;
- Reduction of residue in water.



The advantages when using Dutrition® as Water Disinfectant

- Effective against all water related micro organisms (bacteria, viruses, protozoan, fungi, yeast);
- High performance as disinfectant and biocide;
- No resistance building by micro organisms;
- Removal of prophylaxis on biofilms;
- Fully operational on pH-levels between 4 and 10;
- The corrosive effects of Dutrition® are negligible –
- The bactericidal performance is at pH-levels between 4 and 10 very steady
- Due to a continuous addition of chlorine dioxide for disinfection to the recycled water all pipes and places in the circuit can be reached and disinfected;
- No explosion hazard.

