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Low-chlorate disinfection – effective and safe



Increased levels of chlorate in different foodstuffs and drinks, a chemical that can be harmful to health, are forcing industry to rethink. Standard disinfection processes produce chlorate concentrations far above the desired minimum limits.

ProMinent has developed an effective solution to overcome this difficult challenge: **DULCO®Lyse**. The unique diaphragm electrolysis process guarantees a chlorate content, significantly below the required limit values, by the use of its **DULCO®Lyt 400** disinfectant.

DULCO®Lyse is already used by many major companies in the soft drinks industry, in dairies and by baby food producers, and stands out on account of its impressive performance.

Objective: Minimise chlorate content

Soft drinks, dairy products, baby food and fruit and vegetables often reveal excessive concentrations of chlorate.

Chlorates are salts of chloric acid, which can be harmful to the health of humans: higher absorption of chlorate can lead to the membranes of red blood cells being destroyed.

The World Health Organisation (WHO), the European Food Safety Authority (EFSA) and also the US Environmental Protection Agency (EPA) have been drawing attention to the harmful effects of higher quantities of chlorate on health and publish recommended limits in their reports. According to Directive (EC) No. 396/2005, a maximum content of 10 ppb of chlorate/kg is recommended for plant-based foods, 25 ppb of chlorate/kg for vegetables and 20 ppb of chlorate/kg for carrots. The chlorate issue is also intensively discussed in the drinks and dairy industry, as publications from the Warentest Foundation in 2016 illustrate.

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“Harmful substances found: One product fails”

“Chlorate. Testers found a substantially high concentration of chlorate in a further sample of milk. It can enter the product from the disinfectants dairies are using and prevent iodine being absorbed by the thyroid glands.”

“Substances harmful to health found in some colas”

“Some colas contain substances harmful to health, such as chlorate, which may originate from residues of cleaning agents and disinfectants.”

Source: Warentest Foundation, test.de

Apart from the concentrations of chlorate already found in these products from the food and beverage industry, this harmful salt is produced as a by-product when using disinfectants containing chlorate.

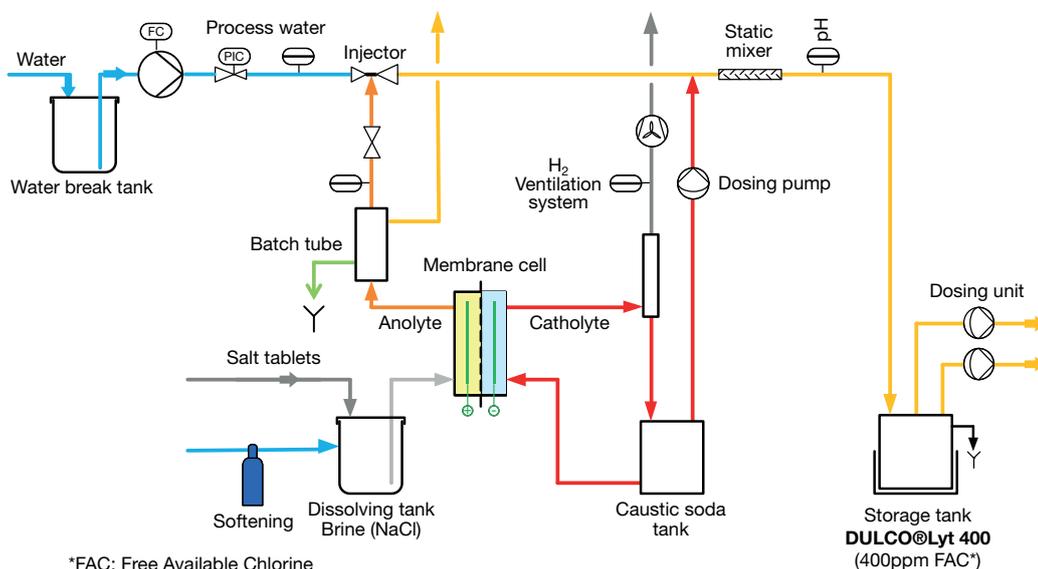
The concentration of chlorate caused by disinfection in the production and processing process therefore has to be reduced to a minimum.

Technical solution: the diaphragm electrolysis process DULCO®Lyse

ProMinent, which has specialised in water disinfection, has optimised its diaphragm electrolysis process **DULCO®Lyse** to meet the aforementioned objective.

The system generates the highly effective disinfectant **DULCO®Lyt 400** from sodium chloride and water.

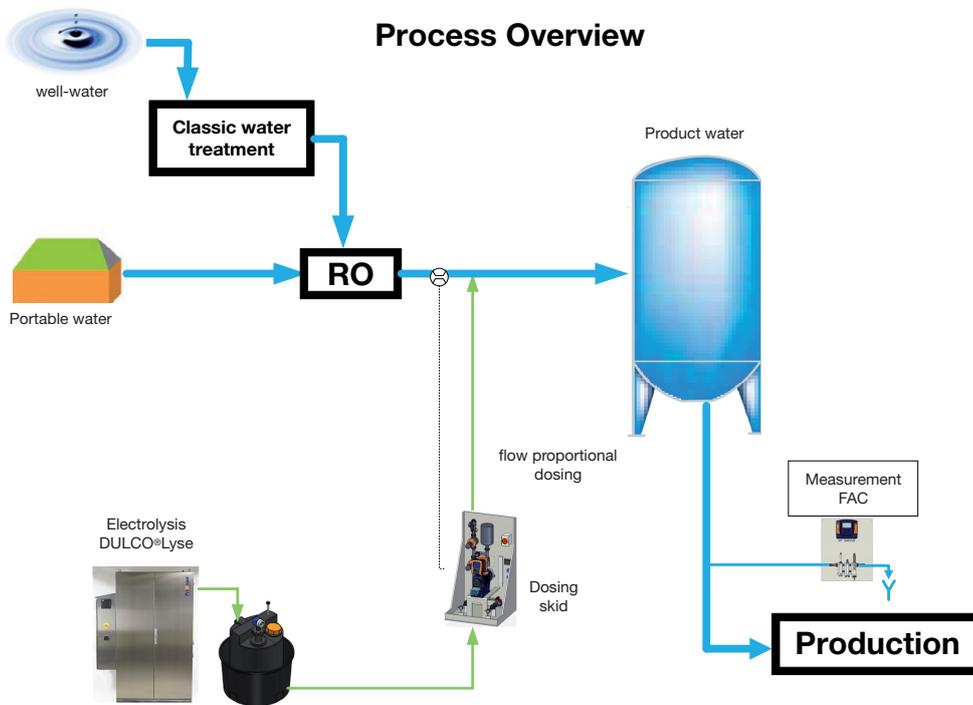
Absolute reliability is guaranteed by ensuring consistent parameters within the process, while the concentration of the disinfectant always remains stable. **DULCO®Lyse** produces precisely the quantity of disinfectant needed for immediate use, thereby avoiding long storage periods, during which chlorate can form, and also obviating the need for large storage tanks.



DULCO®Lyse: Production of the disinfectant DULCO®Lyt 400 with minimum chlorate content

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Integration of DULCO®Lyse into the entire process

Minimal chlorate content with maximum effectiveness – DULCO®Lyt 400 disinfectant

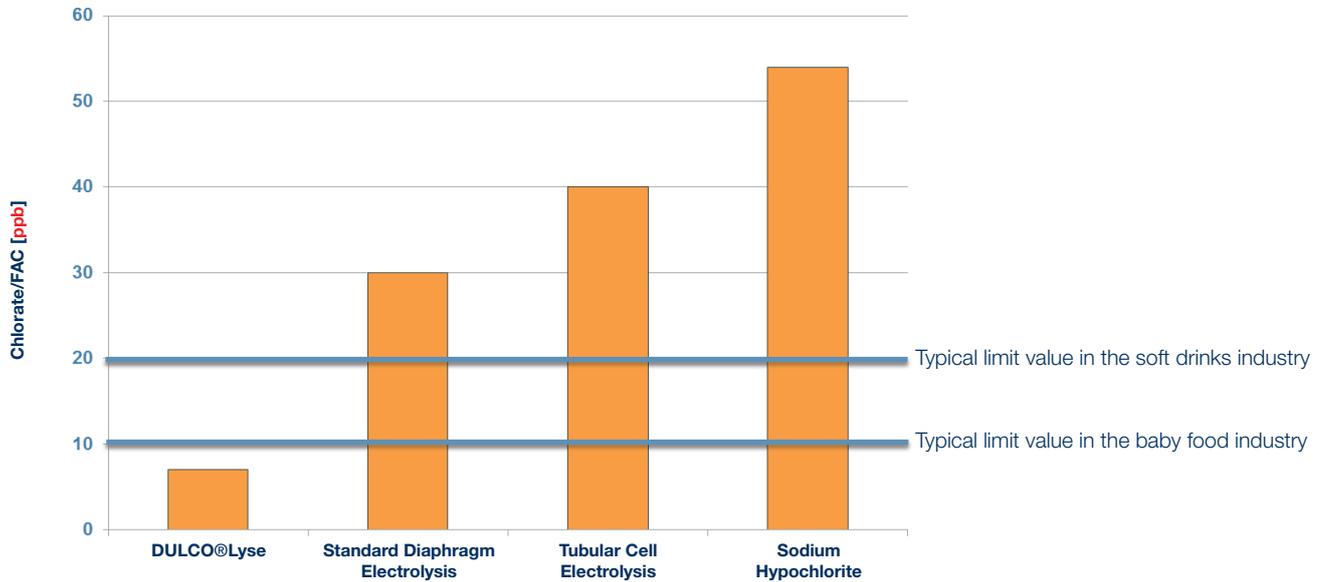
With ready-to-use disinfectants, the chlorate content can more than double depending on the ambient temperature and storage period. By contrast, the amount of **DULCO®Lyt 400** required is produced on site and metered directly into the process. The disinfectant is thus not exposed to temperature fluctuations and is not affected by long periods of storage.

Moreover, unlike other disinfectants produced by electrolysis, the chlorate concentrations of **DULCO®Lyt 400** are many times lower. Less than 0.01 ppm (10 ppb) of chlorate is produced when metering 1 ppm of FAC (Free Available Chlorine).

It has also proved to have an optimum and reliable bactericidal, viricidal and fungicidal efficacy.

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Less than 0.01 ppm (10 ppb) of chlorate is produced when metering 1 ppm of FAC.

Persuasive proof from the lab and industry

Countless repeated measurements and tests in renowned laboratories deliver proof of the extremely lower chlorate values.

The successful use of the system, by a leading international soft drinks producer, dairy product and baby food producers, among others, confirms these chlorate concentrations.

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Summary: Persuasively low chlorate values

The diaphragm electrolysis process **DULCO®Lyse** is an efficient and cost-effective alternative to conventional disinfection processes.

It represents a safe and reproducible process for the production of highly effective **DULCO®Lyt 400**. The quantity of disinfectant produced directly on site from water and sodium chloride has an extremely low chlorate value.

The special disinfection process thus reliably minimises the concentration of chlorate throughout the food and beverage production chain, at the same time as ensuring excellent process reliability, thanks to very accurate metering.

This safe disinfection effect has been confirmed many times over in countless independent lab tests and in successful industrial use with major producers of soft drinks, dairy products and baby food.



DULCO®Lyse: low-chlorate and process-safe.