

# The Next Generation Sporicidal Disinfectant & Cleaner



## EPA REGISTERED AGAINST BIOFILM

For Hospitals & Healthcare  
Facilities

Developed to optimize cleaning and disinfection  
when used with TRUST Microfiber Mops  
and TRUST L3 Wipes



## How Defender Works

The active agent in Defender is sodium troclosene (NaDCC).

While it does provide chlorine for disinfection purposes, it is not a hypochlorite like bleach. The chemistry and mode of action of NaDCC is significantly different, providing a product that is more effective and more stable than hypochlorites, particularly in the presence of organic contaminants.

NaDCC is an organic chlorine donor that forms a use-solution with a pH of 6-7 when mixed with water. Bleach and other hypochlorites are inorganic chlorine donors that form alkaline use-solutions with a pH that may be well above 7.

There is a huge difference in the anti-microbial efficacy and the stability of the use-solution of these two different types of compounds, even with the pH change as small as that which we see involved in this case, from 6.5 (NaDCC) to 7.5 (regular bleach) or 11+ (stabilized bleach).

When NaDCC is mixed with water, it yields hypochlorous acid (HOCL) and monosodiumcyanurate (NaOCl) in a slightly acidic use-solution. These two ingredients remain in a constant 50-50 ratio in the use-solution, so that as part of the free chlorine is used up (due to reaction with bacteria, organic material, etc), part of the combined chlorine in the NaOCl is freed to restore the 50-50 ratio and continue the disinfecting process. THIS IS AN IMPORTANT CHARACTERISTIC of Defender to note, because unlike bleach and all other hypochlorites, this product possesses a reserve killing power that continues to be made available even after contact with organic soils. Bleach would immediately be deactivated on contact with organic soils.

Studies show that undissociated hypochlorous acid (HOCl) has four times the anti-microbial killing power of that associated with hypochlorites. It is believed that this is due to the fact that HOCl is very similar to the structure of HOH (water), of similar molecular size, and is electrically neutral – thus allowing it to penetrate cell walls as easily as water. It is AN IMPORTANT CHARACTERISTIC of Defender, that when it is diluted, it results in a slightly acidic use-solution in which over 90% of the HOCL is undissociated. This makes it many times more reactive against microbes than is bleach. With bleach, only 10% of the HOCl remains undissociated, as it quickly dissociates into H+ and the hypochlorite ion, OCl-. The hypochlorite ion is electrically charged, and is otherwise, dissimilar to water.

Bleach, which is very reactive, unstable, and very sensitive to light and higher temperatures, begins to degrade almost from the moment it is made. Within a month of being manufactured, it can easily lose a third or more of its activity - losing most of its activity as quickly as two months. Once bleach is mixed with water, it can lose activity so fast that it should be discarded within 1 – 2 hours. Unless activity levels are tested when the hypochlorites are diluted, there is no legal assurance that there is sufficient antimicrobial activity for the disinfection task being addressed. Defender does not show this type of sensitivity in its tablet form and can be used throughout the day, after being diluted with water. Testing on metal substrates demonstrates that Defender is about 50% less corrosive than bleach. The rate at which the tablets dissolve in water is temperature sensitive. In warm water the tablets will typically dissolve in about 7-8 minutes, while in cold water it can easily take 10 – 12 minutes.