

TECHNICAL BULLETIN: Coronavirus (COVID-19) and TECcare CONTROL

To Whom it may concern.

Please be advised that whilst TECcare CONTROL is a chlorine-free, alcohol-free disinfectant technology it is proven to be highly effective against both enveloped and non-enveloped viruses, as well as bacteria, bacterial spores and fungi.

In formal testing at accredited laboratories to the internationally recognised EN14476 Virucidal Efficacy test protocol, TECcare CONTROL is proven to kill 99.99% of enveloped viruses (such as COVID-19) and non-enveloped viruses within minutes of contact.

TECcare CONTROL has already been proven to be effective against several different types of coronavirus including;

- SARS-associated coronavirus
- Human coronavirus (VR-740)
- Canine coronavirus (VR-809)

Since Coronavirus (COVID-19) is a new virus there is NO commercially available virucidal efficacy test that can be used for any disinfectant against this specific virus at this point in time (March 2020).

As a specific COVID-19 efficacy test does not currently exist, no disinfectant on the market can claim to be effective against the specific COVID-19 virus causing the current pandemic.

However, since Coronavirus (COVID-19) is classified as an 'enveloped virus', its physical structure is similar to other 'enveloped viruses' which in this case means that the COVID-19 capsid containing the nucleic acid essential to viral replication is surrounded by a lipid membrane, similar to other enveloped viruses such as influenza and the three coronaviruses listed above.

The lipid-based membrane 'envelope' of all enveloped viruses (including COVID-19) contains lipids and proteins and it is these proteins which bind to receptors on host cells and enable the virus to 'infect' the host cells (i.e. result in a human infection).

A key benefit of TECcare CONTROL is that in addition to the physical disruption of the lipid envelope surrounding the COVID-19 virus, TECcare CONTROL will also denature the binding proteins within the envelope and the capsid itself. See Figure 1 below for further information.

Essentially by: (1) disrupting the lipid envelope, (2) changing the shape and structure of the virus binding proteins, and (3) denaturing the proteins of the virus capsid, TECcare CONTROL effectively dismantles the physical structure of enveloped viruses and renders them ineffective and therefore unable to cause infection.

Therefore, by using TECcare CONTROL to clean and disinfect environmental surfaces, these multiple points of attack offered by TECcare CONTROL gives a comprehensive 'belt and braces' approach to reducing the risk posed by COVID-19 on any environmental surface.

In addition, any other problematic bacteria, bacterial spores, viruses or fungi on the surfaces cleaned with TECcare CONTROL will also be controlled, thereby resulting in a cleaner, safer environment for all.

What is TECcare[®] CONTROL?

TECcare[®] CONTROL is a high-level disinfectant technology platform offering safe, effective, user friendly single step cleaning and disinfection across a wide range of industries from healthcare to educational establishments to food processing to veterinary science.

The TECcare[®] CONTROL technology platform is based around the quaternary ammonium compounds didecyldimethyl ammonium chloride (DDAC) and benzalkonium chloride (BAC) with an adjuvant effect to supercharge its antimicrobial efficacy.

A joint paper published by the UK Health Protection Agency Microbiological Services Division, Proton Down, Salisbury and the UK Health Protection Agency Centre for Infections, London, listed a disinfectant using didecyldimethyl ammonium as one of the most potent, effective high-level disinfectants available.

What has TECcare[®] CONTROL been designed for?

TECcare[®] CONTROL has been developed as a combined high-level disinfectant / cleaner for all hard and soft surfaces, environments, equipment and air. It is designed for use in situations where there is a clear need to create and maintain the cleanest possible environment whilst simultaneously reducing the bioburden (i.e. number of microbes present) in order to interrupt the key transmission pathways (surfaces and air) and reduce the risk of infection, cross infection, contamination etc.

As a combined disinfectant cleaner TECcare[®] CONTROL is intended for single stage cleaning and disinfection protocols. If local policy dictates a two-stage clean, then disinfect, process then TECcare[®] CONTROL is suitable for either stage of this process.

The prolonged effect of TECcare CONTROL.

TECcare CONTROL delivers a prolonged antimicrobial effect on all surfaces after application. What this means for the users is that it continues to work and kills or attenuates microbes for hours to days after it has been used on a surface.

Therefore, any virus particles falling onto, or being deposited onto a surface that has been cleaned and disinfected with TECcare CONTROL will come under attack from the disinfectant and therefore be less likely to affect the next person to touch them.

How does TECcare[®] CONTROL affect microbes?

TECcare[®] CONTROL has multiple simultaneous affects and points of action on the microbe which include: -

- Inactivation of energy-producing enzymes
- Denaturation of essential microbial proteins
- Physical disruption of membrane lipids

Proteins and lipids are essential components of bacteria, viruses, fungi and bacterial spores. Significant damage to these key microbial components is often fatal for the organism. TECcare[®] CONTROL causes rapid and significant changes at multiple sites within the microbe. The magnitude of this affect is so great that it is typically lethal to the microbe within minutes of contact.

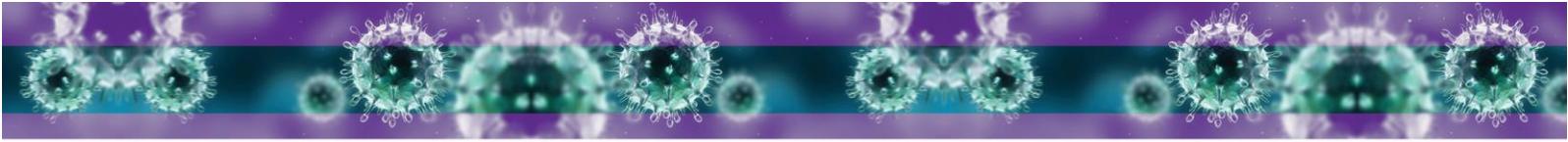
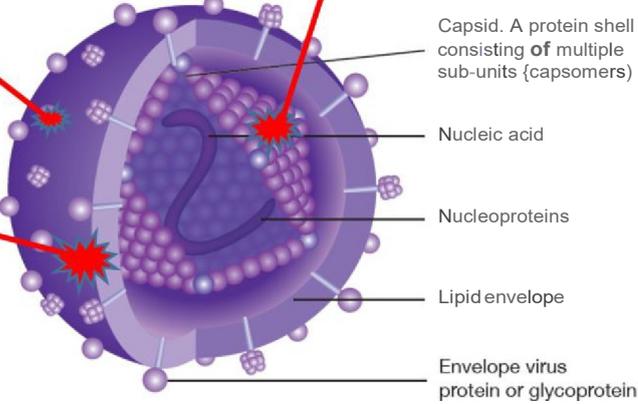


Figure 1. The enveloped virus structures affected by TECcare CONTROL

ENVELOPE PROTEINS/ GLYCOPROTEINS are essential for enveloped viruses to gain entry **into** host cells. TECcare CONTROL denatures these proteins rendering them unable to bind with specific host cell receptors. Inability to bind to host cell receptors prevents the virus gaining entry to host cells.

CAPSID. Exposure of the CAPSID to TECcare CONTROL results in the structure being physically pulled apart. This disintegration of the protein capsid prevents the entry of non-enveloped viruses into host cells.

LIPID ENVELOPE assists with the entry of enveloped viruses into host cells by fusing with the host cell membrane and depositing the viral capsid into the host cell cytoplasm. TECcare CONTROL effectively strips away the lipid envelope thereby inhibiting entry into the host cell.



- Capsid. A protein shell consisting of multiple sub-units (capsomers)
- Nucleic acid
- Nucleoproteins
- Lipid envelope
- Envelope virus protein or glycoprotein

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