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Vernacare

Efficacy testing of surface disinfection wipes

How does traditional wipes testing work?

Traditional methods involve performing a carrier test on the disinfectant solution, essentially squeezing the liquid from the wipe and then testing the efficacy of the impregnating liquid.

These standard EN tests involve counting a number of pathogens before submerging them into the liquid. The pathogen is then re-counted after a set period of time, (referred to as 'contact time') and allocated a score (referred to as 'log-reduction'), which measures how many pathogens have been eradicated.

Issues with this method include:

- Does not replicate the effects of the mechanical wiping action in real-life situations.
- Does not account for any interaction between the wipe material and the active ingredients within the solution.
- Does not identify if the act of wiping could lead to cross-contamination.

The term 'contact time' can be a little misleading. If a product has a 60 second contact time, this does not mean that the person using the wipe needs to be wiping the surface continually for 60 seconds to achieve a particular 'log reduction'.

Active ingredients within disinfectant formulations begin to work instantly on contact with pathogens and the time taken to fully eradicate them is different for each specific pathogen due to their resistance to the solution in a lab-based environment.

How is 'log-reduction' calculated?

This is a reference to the % of micro-organisms eradicated within the testing. For example:

1-log reduction = 90%
2-log reduction = 99%
3-log reduction = 99.9%
4-log reduction = 99.99%
5-log reduction = 99.999%

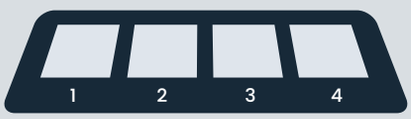
What is the 'four-field' test?

Introduced in 2018, the four-field test (EN 16615:2015) better replicates a 'real-world' environment as it evaluates the efficacy of the disinfectant solution and the wipe material combined, as opposed to simply isolating the solution. Our wipes are tested to both this standard and traditional EN methods.

How is the four-field test carried out?

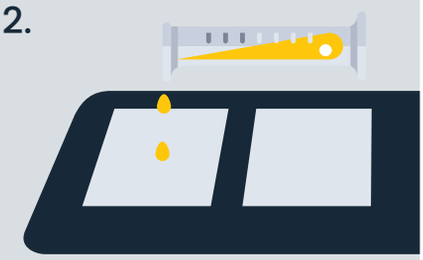
The test method is illustrated below.

1.



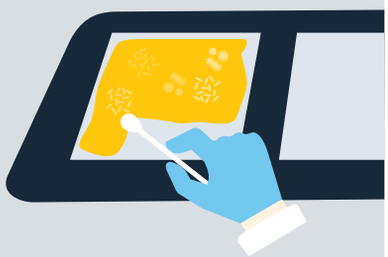
A test area is prepared outlining four 5 x 5cm squares on a polyurethane coated surface. These are the 'four fields'.

2.



The first square is inoculated with 50ml of either bacteria or yeast.

3.

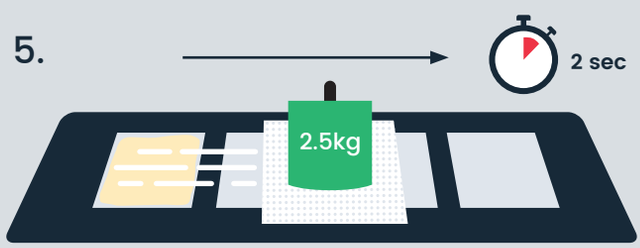


The inoculum is spread evenly across the first square and allowed to dry.

4.

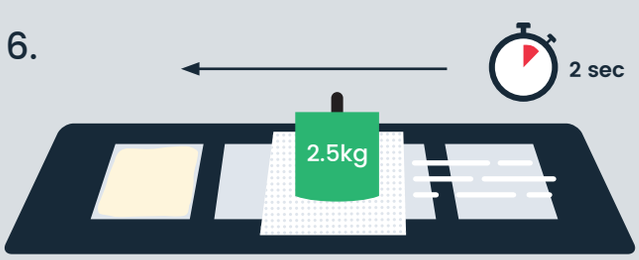
To simulate the physical downward force for a hand, a 2.5kg weight is positioned on top of the wipe. This also ensures a more realistic amount of liquid is expelled from the wipe onto the surface.

5.



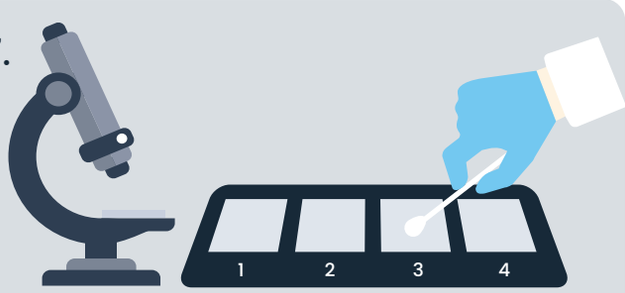
The weight is moved across the first square all the way to the fourth square in a swift two-second motion, intended to replicate a physical wiping action.

6.



The weight is then moved back across all of the squares to the first square, in another swift two-second motion.

7.



After the specified contact time, each field is swab tested to measure the presence of micro-organisms.

To achieve a successful pass, the test must eliminate 99.999% of bacteria within the first field on the surface (5-log reduction) or 99.99% of yeasts (4-log reduction) and leave no more than 50 colony forming units (cfu) within the remaining three fields.

Benefits of this method include:

- Better replicates the use of disinfectant wipes in a 'real-world' environment.
- Evaluates the potential for cross-contamination caused by the use of wipes.
- Takes into account the compatibility between the active ingredients in the solution and the wipe material itself.

What about viruses and spores?

Equivalent EN standards are currently in development for testing wipes against viruses and spores. Contact your Vernacare representative for further information.

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