

## SURFACE BIOCIDES TESTING

After completion of the PAS 2424 testing the Z-71 - Shield30 trial continued on from **24 hrs to 30 days**. The table below demonstrates that there was still significant residual activity after 30 days. In the absence of an official EN test there is no pass or fail criteria for residual antimicrobial efficacy.

Zoono Z71 - Shield30 (Microbe Shield) Surface Biocide	
Description and Explanation	
Bespoke EN 13697	<p>The EN 13697 test protocol requires the initial application of the test organism to a steel disc and application of the test biocide to establish the log kill (previously described).</p> <p>In the reverse engineered test, the biocide (Zoono Z71 - Shield30) is applied to the steel disc at the required concentration and allowed to dry and bond, providing the residual layer.</p> <p>The test organism is then applied after the required time periods, in the case of the test <b>7 and 30 days</b> after application, to measure the stability of the mono-molecular layer and to establish if there was any antimicrobial activity.</p> <p>As this is not an official EN test, there is no official pass criteria</p> <p>Test organisms: Escherichia coli, Staphylococcus aureus</p>
INTERPRETATION	99.99% reduction <b>after 7 days</b> 71 to 99.8% reduction after <b>30 days</b> (depending on bacteria)
TESTING LABORATORY	MSL Solution providers, Gollinrod, Walmersley, Bury BL9 5NB, United Kingdom
<b>Bespoke EN 13697 (7 day) – both test bacteria 99.99% reduction after 7 days and 71 – 99.8 after 30 days (depending on bacteria)</b>	

# SURFACE BIOCIDES TESTING



### Study Title:

**Chemical disinfectants and antiseptics – Quantitative non-porous surface test for the evaluation of bactericidal and/or fungicidal activity of chemical disinfectants used in food, industrial, domestic and institutional areas (Phase 2, step 2)**

**BS EN 13697:2015 Modified method**

Job reference – J001018-1

**Test results**

Test Organism	Suspension: N	Validation test				Water control		Test Procedure at Concentrations (V/V)			
		NT	NC	Nc	R1 Neat	R2 Neat					
<i>Escherichia coli</i>	10 <sup>6</sup> : >330 ; >330	10 <sup>4</sup> : 22 ; 25	10 <sup>4</sup> : 29 ; 27	10 <sup>4</sup> : 26 ; 27	10 <sup>0</sup> : 6 ; 6	10 <sup>0</sup> : 0 ; 0					
		NT : 6.37	NC : 6.45	Nc : 6.42	Nd : < 2.15	Nd : < 2.15					
	Validated? Yes	Validated? Yes	Validated? Yes	Validated? Yes	Nts : 23	Nts : 0					
				ME : > 4	ME : > 4						
<i>Staphylococcus aureus</i> ATCC 6538	10 <sup>6</sup> : >330 ; >330	10 <sup>4</sup> : 36 ; 41	10 <sup>4</sup> : 36 ; 31	10 <sup>4</sup> : 31 ; 30	10 <sup>0</sup> : 1 ; 1	10 <sup>0</sup> : 0 ; 0					
	10 <sup>7</sup> : 41 ; 45	NT : 6.59	NC : 6.53	Nc : 6.48	Nd : < 2.15	Nd : < 2.15					
	N : 7.03	Validated? Yes	Validated? Yes	Validated? Yes	Nts : 44	Nts : 0					
	Validated? Yes	Validated? Yes	Validated? Yes	ME : > 4	ME : > 4						

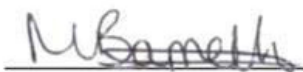
**Acceptance Criteria**

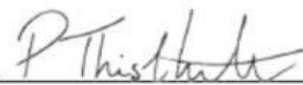
The product when tested according to the standard shall demonstrate at least a 4 log<sub>10</sub> reduction in viable bacterial counts; and at least a 3 log<sub>10</sub> reduction in viable fungal counts.

**Conclusion**

The product **Z-71 Microbe Shield** has achieved a **4 log reduction** against **E.coli and S.aureus**, when tested after a **7 day** conditioning period, with a **5 minute** contact time, under **clean** conditions at a concentration of **neat**.  
*See raw data tables below for test results.*

The sample will be retained for 1 month unless otherwise requested.

  
 Technical Projects Team Leader  
 Megan Barrett

  
 Technical Project Manager  
 Peter Thistlethwaite

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### Study Title:

**Chemical disinfectants and antiseptics – Quantitative non-porous surface test for the evaluation of bactericidal and/or fungicidal activity of chemical disinfectants used in food, industrial, domestic and institutional areas (Phase 2, step 2)**

**BS EN 13697:2015 Modified method**

Job reference – J001018-2

#### Test results

Test Organism	Suspension: N	Validation test		Water control		Test Procedure at Concentrations (V/V)			
		NT	NC	Nc	R1 Neat	R2 Neat			
<b>Escherichia coli</b> ATCC 10536	10 <sup>6</sup> : >330 ; >330	10 <sup>4</sup> : 36 ; 32	10 <sup>4</sup> : 41 ; 32	10 <sup>4</sup> : 33 ; 30	10 <sup>1</sup> : 70 ; 70	10 <sup>1</sup> : 71 ; 71	10 <sup>7</sup> : 34 ; 34	Nd : 3.85	Nd : 3.85
	N : 6.93	NT : 6.53	NC : 6.56	Nts : 15	Nts : 0	Nts : 1	Validated? Yes	Validated? Yes	Validated? Yes
	Validated? Yes	Validated? Yes	Validated? Yes	Validated? Yes	Validated? Yes	ME : 2.65	ME : 2.65	ME : 2.65	ME : 2.65
<b>Staphylococcus aureus</b> ATCC 6538	10 <sup>6</sup> : >330 ; >330	10 <sup>4</sup> : 48 ; 56	10 <sup>4</sup> : 50 ; 52	10 <sup>4</sup> : 49 ; 53	10 <sup>3</sup> : 135 ; 135	10 <sup>3</sup> : 161 ; 161	10 <sup>7</sup> : 36 ; 30	Nd : 6.13	Nd : 6.21
	N : 6.92	NT : 6.72	NC : 6.71	Nts : 17	Nts : 16	Nts : 14	Validated? Yes	Validated? Yes	Validated? Yes
	Validated? Yes	Validated? Yes	Validated? Yes	Validated? Yes	Validated? Yes	ME : 0.58	ME : 0.50	ME : 0.50	ME : 0.50

The product when tested according to the standard shall demonstrate at least a 4 log<sub>10</sub> reduction in viable bacterial counts; and at least a 3 log<sub>10</sub> reduction in viable fungal counts.

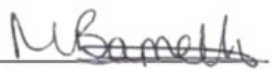
#### Conclusion


The product **Z-71 Microbe Shield** has shown an average **2.65 log reduction** against **E.coli**, when tested after a **30 day** conditioning period, with a **5 minute** contact time, under **clean** conditions at a concentration of **neat**.

The product **Z-71 Microbe Shield** has shown an average **0.54 log reduction** against **S.aureus**, when tested after a **30 day** conditioning period, with a **5 minute** contact time, under **clean** conditions at a concentration of **neat**.

See raw data tables below for test results.

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 Technical Projects Team Leader  
 Megan Barrett

  
 Senior Microbiologist  
 Yvie Newall

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