SterilTouch

Introduction

A series of silicone samples incorporating SteriTouch® additives were evaluated using the JIS Z 2801:2000 test method in order to ascertain the level of antimicrobial performance against different organisms at a variety of temperatures.

Test Samples

Control: Untreated Polyethylene film, measuring 50mm x 50mm

Test samples: Silicone sheet incorporating SteriTouch® ST1006 antimicrobial additive, measuring 50mm x 50mm

Test Method

The samples were tested according to the JIS Z 2801:2000 method, briefly summarised as follows;

Each test sample was inoculated with a suspension of the test organism (for example, MRSA). The inoculum was held in contact with the test sample using a sterile polyethylene film. All test samples were inoculated in triplicate, with an additional three replicates of the control.

The bacterial population on three control replicates was evaluated immediately following inoculation. This was assumed to be the initial population on all test samples (i.e. the population at zero hours).

The remaining samples, including the remaining control samples, were incubated for the test period, after which time the bacterial population was evaluated.

The bacterial population found on the test samples, in colony forming units, was compared with that of the control and a percentage reduction calculated. These results were illustrated in both tabular and graphical format.

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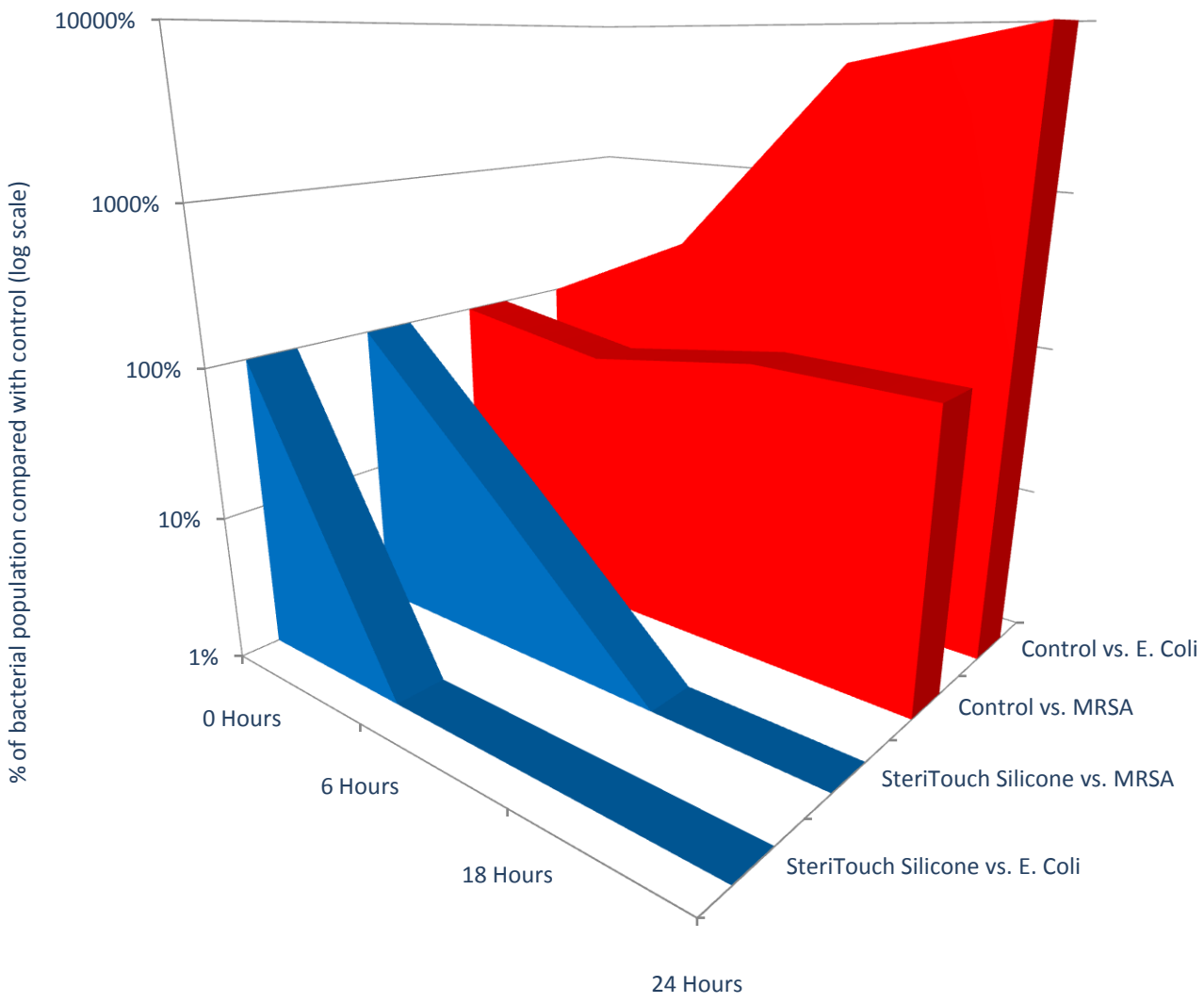
Results – samples tested at 35°C

Sample	Organism	% change compared with initial inoculum		
		After 6 hours	After 18 hours	After 24 hours
Silicone control	E. coli	**300% growth**	**5700% growth**	**10000% growth**
Silicone with SteriTouch® ST1006	E. coli	**>99.99% reduction**	**>99.99% reduction**	**>99.99% reduction**
Silicone control	MRSA	**32% reduction**	**4% growth**	**4% growth**
Silicone with SteriTouch® ST1006	MRSA	**85% Reduction**	**>99.99% reduction**	**>99.99% reduction**



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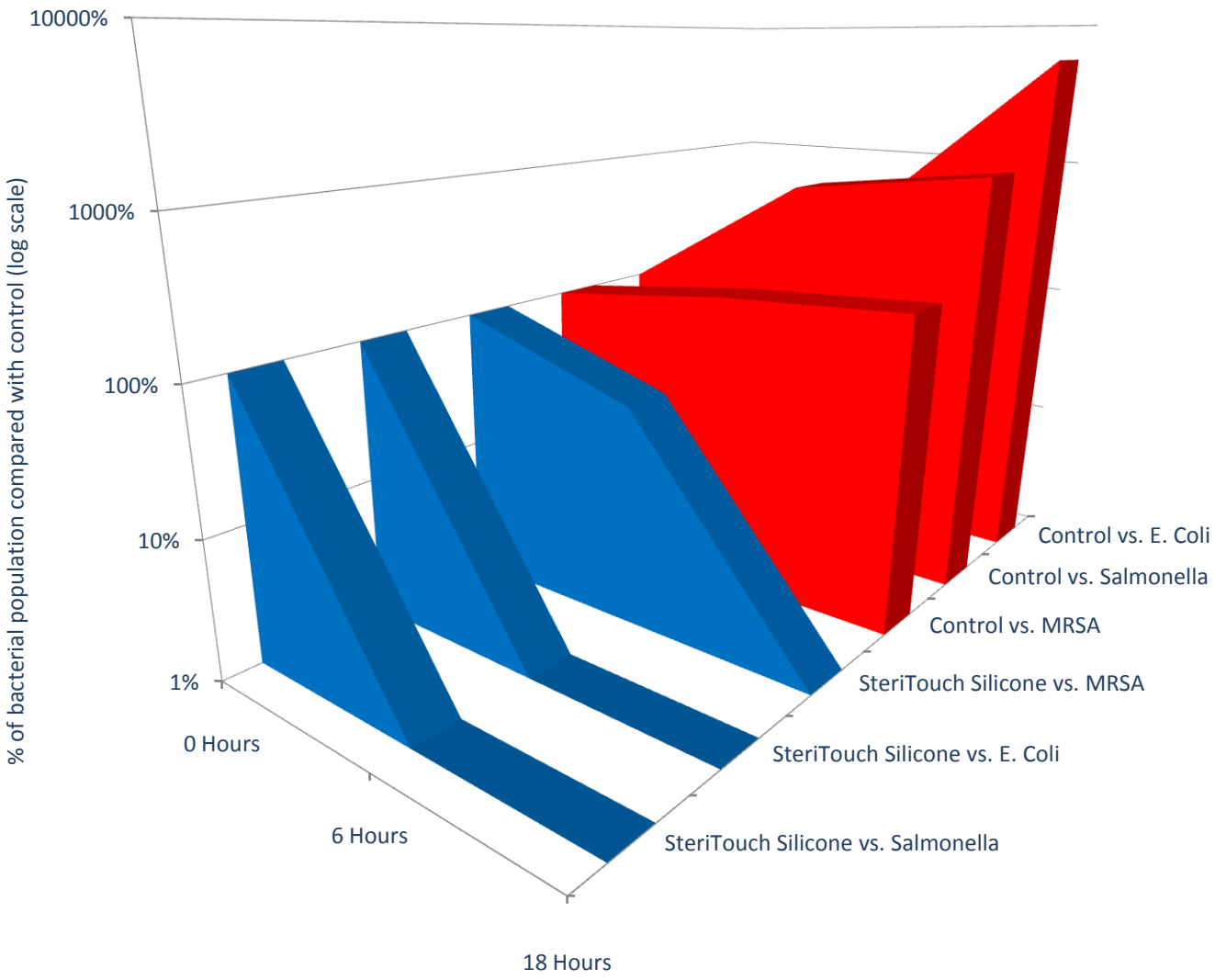
Results – samples tested at 25°C

Sample	Organism	% change compared with initial inoculum	
		After 6 hours	After 18 hours
Silicone control	E. coli	**218% growth**	**7400% growth**
Silicone with SteriTouch® ST1006	E. coli	**>99.99% reduction**	**>99.99% reduction**
Silicone control	Salmonella	**820% growth**	**1300% growth**
Silicone with SteriTouch® ST1006	Salmonella	**>99.99% reduction**	**>99.99% reduction**
Silicone control	MRSA	**15% growth**	**46% growth**
Silicone with SteriTouch® ST1006	MRSA	**48% reduction**	**>99.99% reduction**



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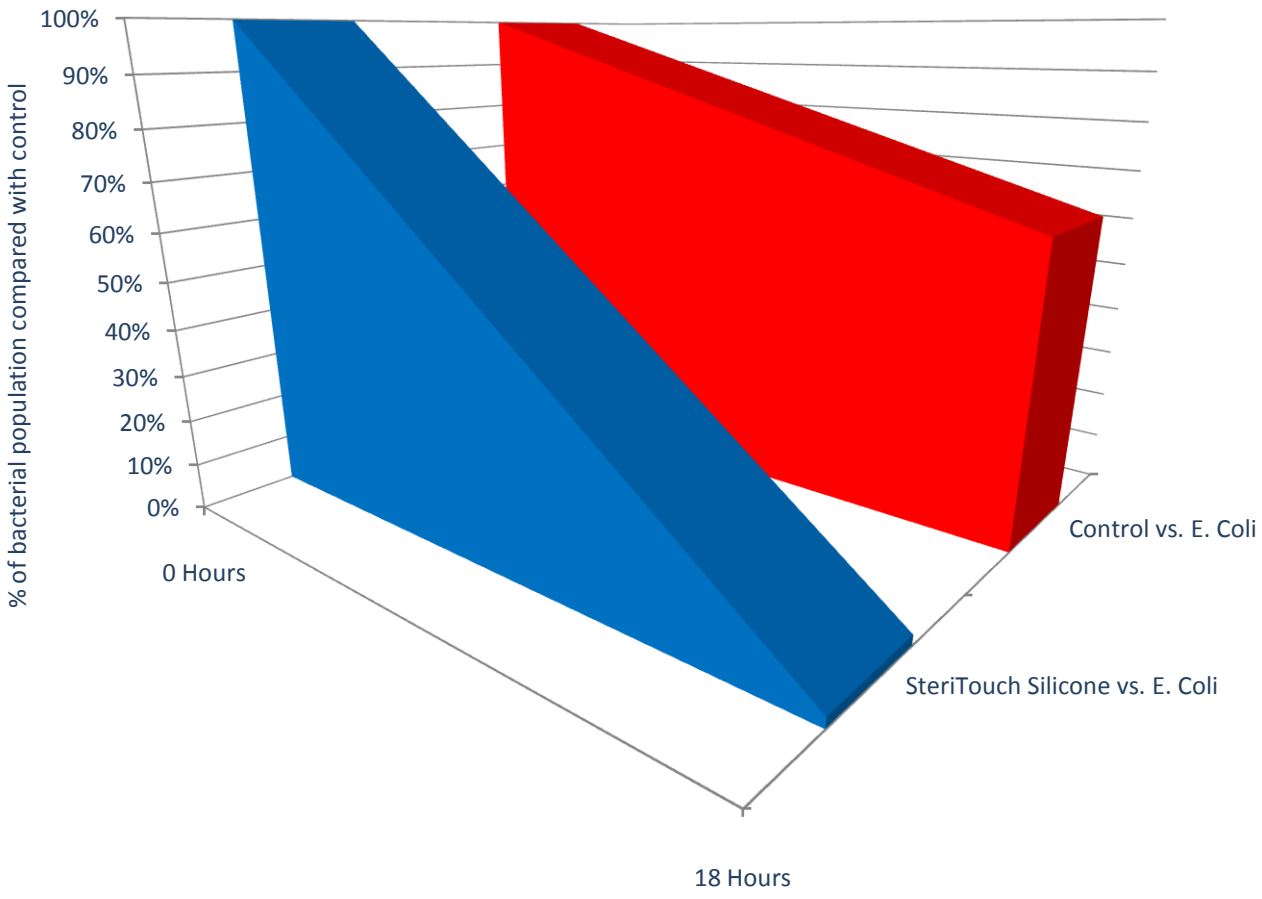
Results – samples tested at 4°C

Sample	Organism	% change compared with initial inoculum
		After 18 hours
Silicone control	E. coli	**37% reduction**
Silicone with SteriTouch® ST1006	E. coli	**98% reduction**



Frequently Asked Questions

What is SteriTouch?
SteriTouch® is a comprehensive range of antimicrobial additives designed to reduce the growth of harmful organisms such as bacteria, mould and fungi, while remaining entirely safe for even the most sensitive applications.

SteriTouch® additives utilise the natural sterilising properties of silver and can be incorporated into most products, either at the point of manufacturing or retrospectively through the use of coatings.

How is SteriTouch® used?

SteriTouch® can be supplied as a plastic masterbatch, a dry powder or a liquid dispersion. The masterbatch allows SteriTouch® to be added to injection moulded and extruded plastics at the point of manufacture in the same way as a colour additive. The dry powder is suitable for blending with other powders, non-aqueous liquids & liquid plastics, which the dispersion is ideal for addition to paints, inks and lacquers, particularly those which are water based. SteriTouch® fabric treatment can be washed into existing garments, or padded/exhausted onto textiles during production.

Against which organisms is SteriTouch® effective?

Independent testing has shown SteriTouch® to be effective against many organisms, including bacteria such as methicillin resistant staphylococcus aureus (MRSA), escherichia coli, pseudomonas aeruginosa, salmonella enteritidis and listeria monocytogenes, and moulds such as aspergillus niger.

How does SteriTouch® kill these organisms?

Studies of the means by which silver acts on microbial cells have demonstrated several mechanisms: interaction with sulfhydryl groups of proteins; inhibition of cell wall synthesis during mitosis (the process of cell division by which the bacteria replicates); disabling of the cell's proton pump; unwinding of cell DNA; interruption of hydrogen bonding processes within the cell.

How quickly will SteriTouch® work?

Bacteria will be exposed to the active component, ionic silver, on contact with a SteriTouch® treated surface. However, the speed of effect will be dependent on a number of factors, including the level of antimicrobial present in the treated article, the composition of the treated article (e.g. the polymer in the case of a moulded product), the environment (e.g. cool or warm, dry or humid) and the type of organism.

The standard test used to establish antimicrobial effect is JIS Z 2801:2000. This is a Japanese protocol, which has been generally adopted as the most effective means of comparing the performance of antimicrobial surfaces. The protocol stipulates a test temperature of 35°C and a duration of 24 hours, but the latest SteriTouch® coatings have also been demonstrated to achieve excellent antimicrobial performance at temperatures as low as 4°C and over time periods as short as two hours.

Will the use of SteriTouch® create yet more resistant strains of bacteria?

Bacteria have been shown to develop resistance to organic antimicrobial agents, which typically have a single mode of action, such as Triclosan. Since the ionic silver used in SteriTouch® employs several modes of action, the likelihood of bacterial resistance is considered to be very low indeed. It is worth noting that silver has been used for it's sterilising properties for many hundreds of years, yet there is no evidence of naturally occurring resistance among bacteria.

What approvals do SteriTouch® additives have?

All antimicrobials used in the SteriTouch® range of additives have EFSA, EPA and FDA registration and are notified on the European Biocidal Products Directive.

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