

SteriTouch® Technical Guidance - Antimicrobial Additives for Silicone

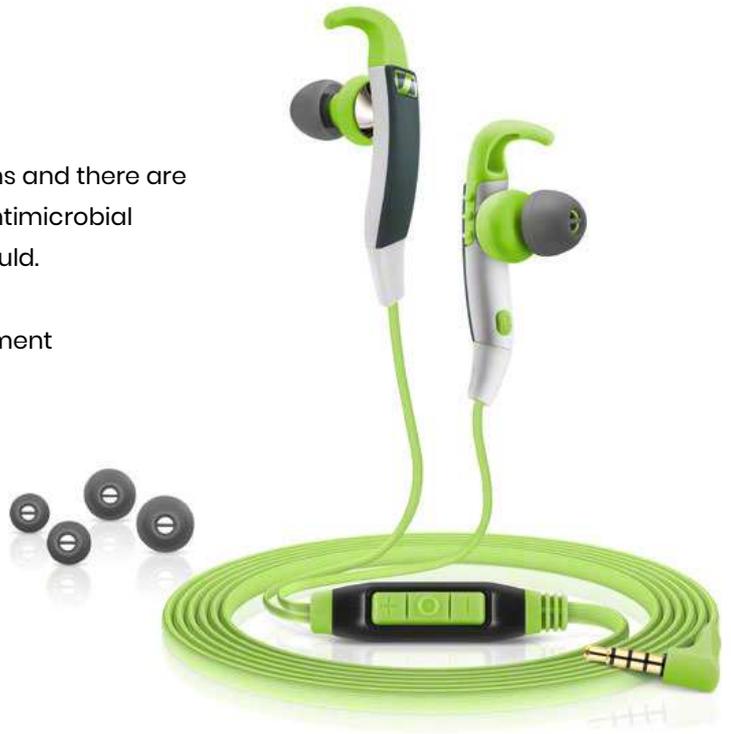
INTRODUCTION

The use of antimicrobial additives in silicone is a relatively straightforward process. We have a range of additives suitable for all types of silicone, including LSR, HTV & RTV. The additives are available as powder, paste or solid silicone masterbatch.

TYPICAL APPLICATIONS

Silicone is used in a very broad range of applications and there are many that will potentially benefit from the use of antimicrobial additives, to reduce the growth of bacteria and mould.

<i>Examples</i>	Gaskets for food processing equipment
	Ear buds & plugs
	Drinking cups, spouts & valves
	Cookware & utensils
	Keypads & switches
	Tubing
	Phone & tablet cases
	Orthopaedic & prosthetic solutions



IN-HOUSE CAPABILITIES & EQUIPMENT

<i>Processing</i>	150mm laboratory Roll Mill
	9 litre laboratory/pilot scale Z-Blade Mixer
	100 litre production Z-Blade Mixtruder

<i>Testing</i>	Q-Lab QUV weathering station
	Atlas SunTest CPS+ Xenon
	10kN Tinius Olsen tensile tester
	Mecmesin 250N tensile tester
	Mecmesin 250N compression/flexure test



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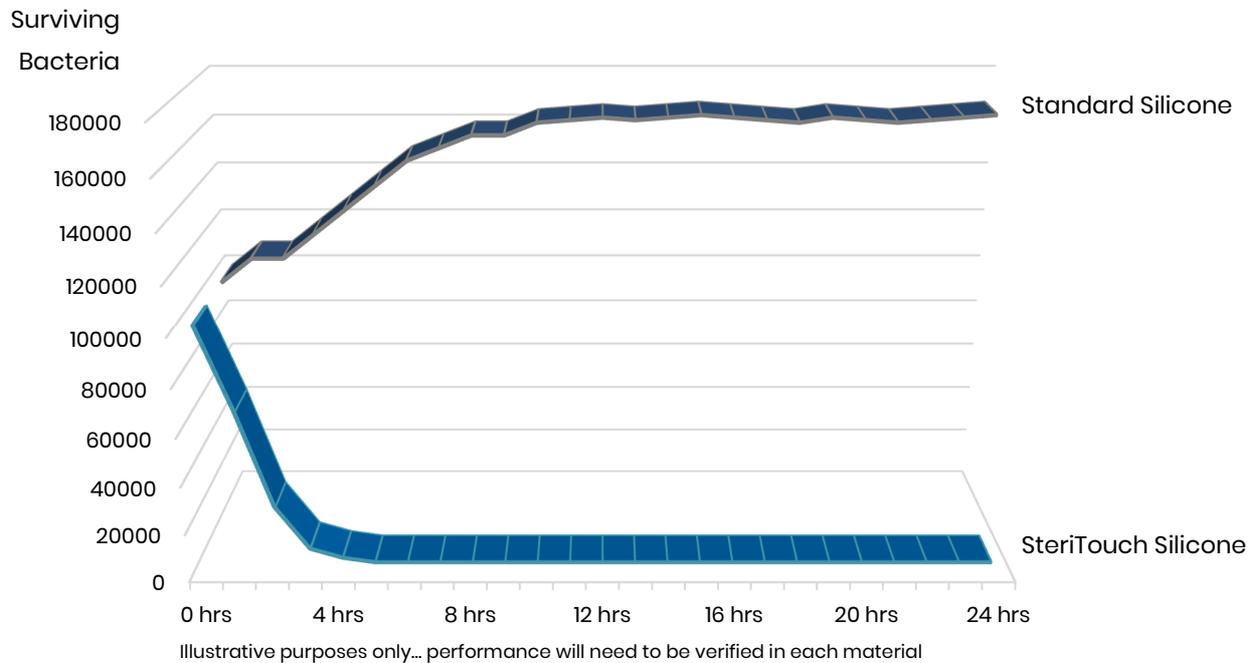


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ANTIMICROBIAL PERFORMANCE

Due to the variation between grades of silicone, it is necessary to verify the performance through laboratory testing, however at the recommended levels it is reasonable to expect a minimum of log3 or 99.9% reduction when tested using the ISO 22196 or JIS Z 2801 method.



ORGANISM	TEST METHOD	RESULT
METHICILLIN RESISTANCE STAPH. AUREUS	JIS Z 2801	>99.99% REDUCTION
ESCHERICHIA COLI	JIS Z 2801	>99.99% REDUCTION
PSEUDOMONAS AERUGINOSA	JIS Z 2801	>99.99% REDUCTION
SALMONELLA ENTERITIDIS	JIS Z 2801	>99.99% REDUCTION
KLEBSIELLA PNEUMONIAE	JIS Z 2801	>99.99% REDUCTION
CAMPYLOBACTER JEJUNI	JIS Z 2801	>99.99% REDUCTION
LISTERIA MONOCYTOGENES	JIS Z 2801	>99.99% REDUCTION
CANDIDA ALBICANS	JIS Z 2801	>99.99% REDUCTION
PENICILLIUM FUNICULOSUM	JIS Z 2801	>99.99% REDUCTION



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COMPATIBILITY TESTING

One of the most important considerations with silicone is compatibility of the antimicrobial additive with the silicone catalyst. We have provided guidelines below for a quick test to ascertain whether there are likely to be any compatibility issues and we can modify our additive recommendation if necessary.

Guidelines Mix a small amount of the first component of the silicone with the same amount of additive (e.g. 1g + 1g) and spread onto a white substrate such as paper, card or plastic. We would also recommend spreading a similar amount of the component without additive to enable easy comparison. Repeat for each component. Observe for a minimum of 24 hours. Incompatibilities will generally manifest as discolouration, most commonly with the catalyst component.

Catalyst with Ionpure IPL (24 hrs)



Catalyst with SteriTouch STI158 (24 hrs)



Catalyst with JMAC TD100 (24 hrs)



Catalyst with Ionpure WPA (24 hrs)



Another consideration is the potential interaction of pigments with the antimicrobial additive. This is relatively uncommon, but some pigments (e.g. sulphur containing blue, or chlorinated green) can adversely affect the antimicrobial performance. For this reason, it is important to conduct antimicrobial testing on each colour variant.



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It is generally also recommended to test for changes in chemical & physical properties such as Young's modulus or tensile strength, for each individual application system, as well as the effects of external factors such as pH, moisture, temperature and UV light.

ADDITIVE RECOMMENDATIONS

ADDITIVE TYPE	PRODUCT CODE	ADDITION RATE	NOTES
Powder	STI158	1% by weight	
Paste	STI155	1.5% by weight	Paste is typically 65% additive in silicone oil
Masterbatch	TBC ^{Note 1}	2% by weight	Masterbatch is typically 50% additive in silicone dough

Notes: 1. The product code will depend on the grade of silicone required as the masterbatch carrier. In most cases, we are happy to use a customer specified grade.

ADDITIONAL INFORMATION

Packaging	Additive & Masterbatch - Moisture barrier foil bag - 1kg, 5kg Paste - HDPE wide neck container - 1kg, 5kg
Shelf Life	Additive - 12 months from date of supply Paste - 3 months from date of supply Masterbatch - 3 months from date of supply
Storage:	Use original containers Recommended storage temperature 5°C - 30°C Protect against humidity, heat and direct sunlight

Notes: These characteristics do not constitute a sales specification. The information contained in this document is intended to be of assistance to users but is without guarantee. Variations can occur in application and users are advised to conduct their own tests. Suggestions for use neither give nor imply any freedom from patent infringement.



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