

SteriTouch® Technical Guidance - Antimicrobial Additives for ABS

INTRODUCTION

ABS is one of the most commonly used polymers among our customers. While it can be a straightforward material from an antimicrobial perspective, there are a number of important considerations. We will work with you to ensure optimum performance in the grade you use.

TYPICAL APPLICATIONS

ABS 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>	Remote control handsets
	Electronic equipment enclosures
	Computer keyboards & mice
	Keypads & switches
	Kitchen utensils
	Musical instruments
	Toys



IN-HOUSE CAPABILITIES & EQUIPMENT

<i>Processing</i>	30mm twin-screw extruder
	36mm twin-screw extruder
	Boy 15T injection moulder
	Arburg Allrounder 270S injection moulder

<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
	Ray-Ran IZOD impact tester
	Ray-Ran CHARPY impact tester



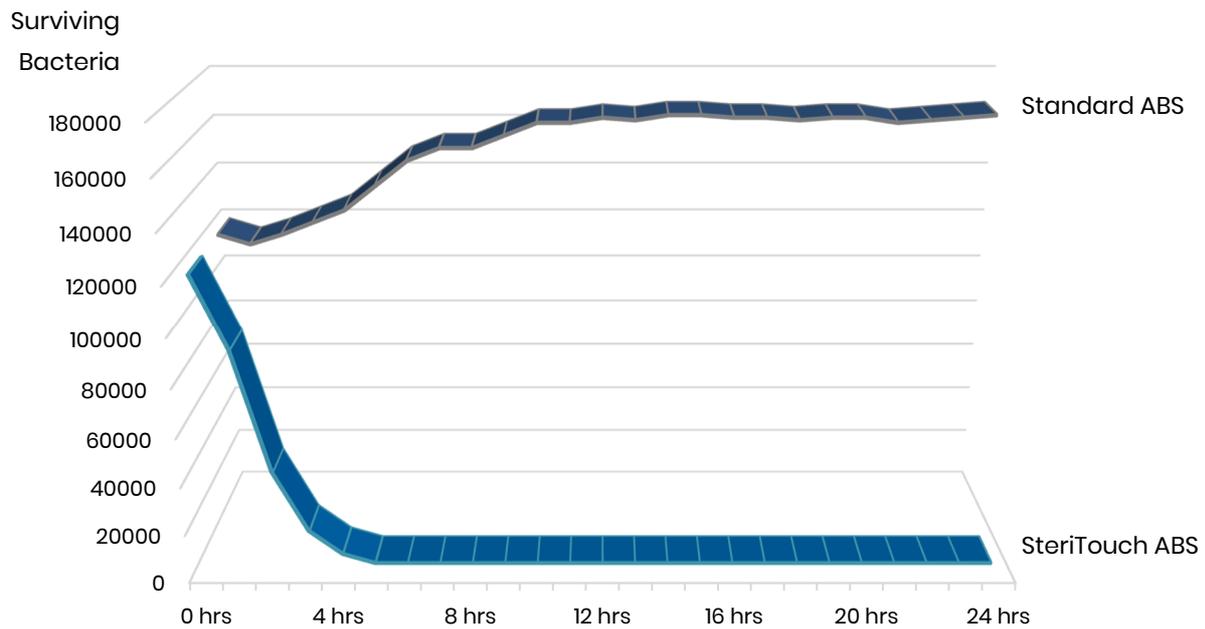
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ANTIMICROBIAL PERFORMANCE

There can be very significant variations in composition from one grade of ABS to the next. Additionally, residual components from the manufacturing process can adversely affect the performance of antimicrobial additives. We have developed techniques to mitigate the negative effects of the more 'troublesome' grades of ABS but would still consider it essential to verify the performance through laboratory testing.

In most cases, our recommended level of masterbatch would be sufficient to provide minimum of log3 or 99.9% reduction when tested using the ISO 22196 or JIS Z 2801 method.



Illustrative purposes only... performance will need to be verified in each material

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



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LISTERIA MONOCYTOGENES	JIS Z 2801	>99.99% REDUCTION
CANDIDA ALBICANS	JIS Z 2801	>99.99% REDUCTION
PENICILLIUM FUNICULOSUM	JIS Z 2801	>99.99% REDUCTION

COMPATIBILITY TESTING

As mentioned above, the compositional variations between different grades of ABS necessitate antimicrobial testing in each grade that might be used in production, but there are a number of other considerations.

Probably the most common and most often encountered issue is with halogenated flame retardants. In essence, these will react with silver based additives, reducing or even negating the antimicrobial properties. In many instances, introducing a silver based additive to a V0 rated ABS will result in a moulding/extrusion that is neither antimicrobial nor flame retardant. Again, there are ways to mitigate this effect, but the most efficient solution is to switch to a non-halogenated flame retardant.

As with all materials, 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.

It is generally also recommended to test for changes in chemical & physical properties such as tensile or impact strength, 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
Masterbatch	STI0244	3% by weight	For opaque ABS only
Masterbatch	STI0290	3% by weight	For transparent ABS only ^{Note 1}

Notes: 1. May be suitable for some grades of opaque ABS



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ADDITIONAL INFORMATION

Packaging	1kg, 5kg, 25kg
Shelf Life	12 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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