

SteriTouch® Technical Guidance - Antimicrobial Additives for Polycarbonate

INTRODUCTION

While polycarbonate can be a straightforward material from an antimicrobial perspective, there are some important considerations. We will work with you to ensure optimum performance in the grade you use.

TYPICAL APPLICATIONS

Polycarbonate 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 Keypads & switches Mobile phone cases Safety visors Lighting Spectacle frames
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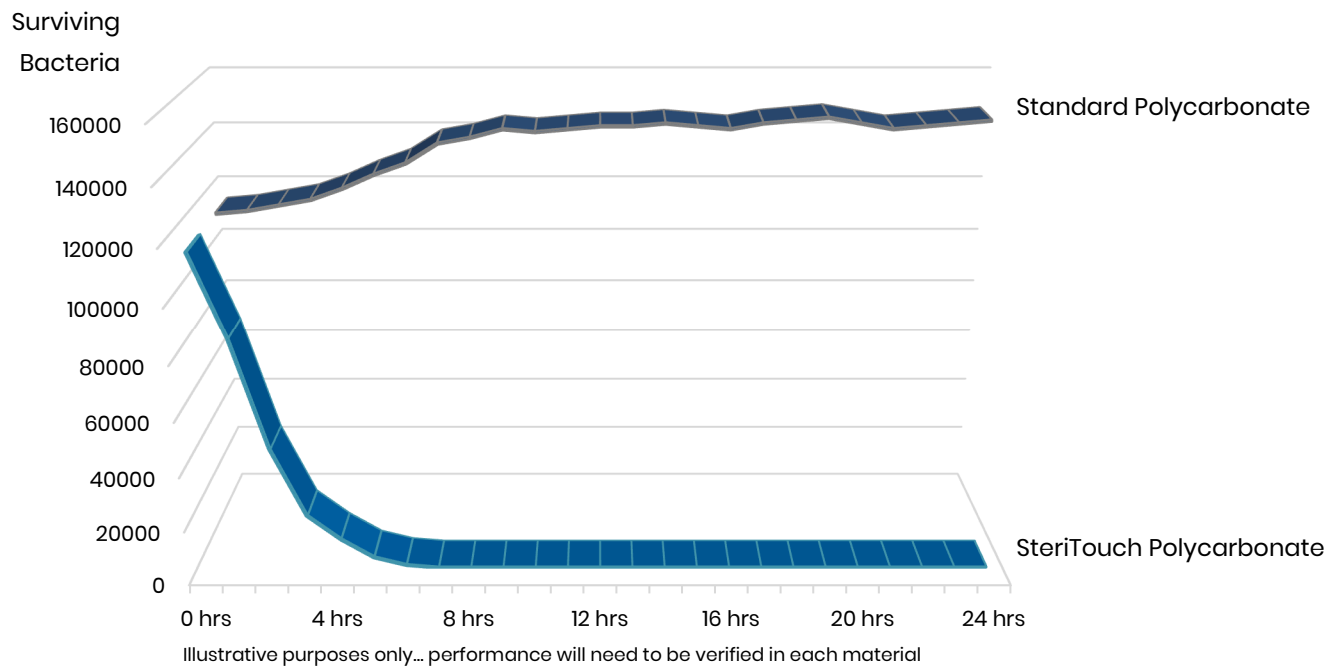


IN-HOUSE CAPABILITIES & EQUIPMENT

<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

ANTIMICROBIAL PERFORMANCE

There can be significant variations in composition from one grade of polycarbonate to the next, so would still consider it essential to verify the performance through laboratory testing. However, 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.



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

COMPATIBILITY TESTING

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

The most critical is to avoid halogenated flame retardants. These will adversely react with silver based additives, reducing or even entirely negating both the flame retardant and antimicrobial properties.

As with all materials, it is important to note 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	STI0472	3% by weight	For transparent polycarbonate ^{Note 1}
Masterbatch	STI0224	3% by weight	For opaque polycarbonate only

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

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



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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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