

Pedex & Co. GmbH

(Germany)

**Determination of the anti-microbial efficacy of
PA / PBT filament samples treated with Ciba®
Irgaguard® B 5120**

Technical Report No. TA 17361-001

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Determination of the anti-microbial efficacy of PA / PBT filament samples treated with Ciba® Irgaguard® B 5120

Determination of the bactericidal activity according to the modified AATCC 100-1998 method

- Samples:** PA / PBT filament
1. PX Antibacterial Filaments with 2.5% Irgaguard B 5120
 2. PBT Filaments with 2.5% Irgaguard B 5120
 3. PA 6.12 Filaments with 2.5% Irgaguard B 5120
- Test strains:** Staphylococcus aureus ATCC 9144
Streptococcus mutans ATCC 25175
Bacteria strains were diluted 1:1000 in sterile 0.85% saline solution + 0.05% Caso broth.
Each sample (300 mg) was inoculated with 0.5 ml of each bacterial suspension (= final concentration on the sample: ~ 10⁵ cfu) and placed in a dessicator (> 90% humidity).
- Material:** Sterile petri dishes (diameter 55 mm)
Sterile glass flasks (100 ml)
Humid chamber
Sterile plastic Stomacher bags
Sterile forceps
Incubator 37°C +/- 1°C
- Neutralizer:** Phosphate buffer 0.07 molar, pH 7.4 + 1% Tween 80 + 0.3% lecithin (20 ml / Stomacher bag)
- Dilution media:** Sterile deion. water, pH 7.4
- Media:** Casein soy meal agar + 3% Tween 80 + 0.3% lecithin + 0.1% L-histidine (Merck) for bacterial numbers
- Contact times:** Immediately after inoculation and after 24 hours at 37°C
- Incubation of plates:** At 37°C for about 24 – 48 hours



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Principle

300 mg of each sample were put in sterile glass recipients (100 ml). The test samples were then inoculated with 0.5 ml of the bacterial suspension (= about $\sim 10^5$ cfu / sample), placed in a desiccator and incubated at 37°C.

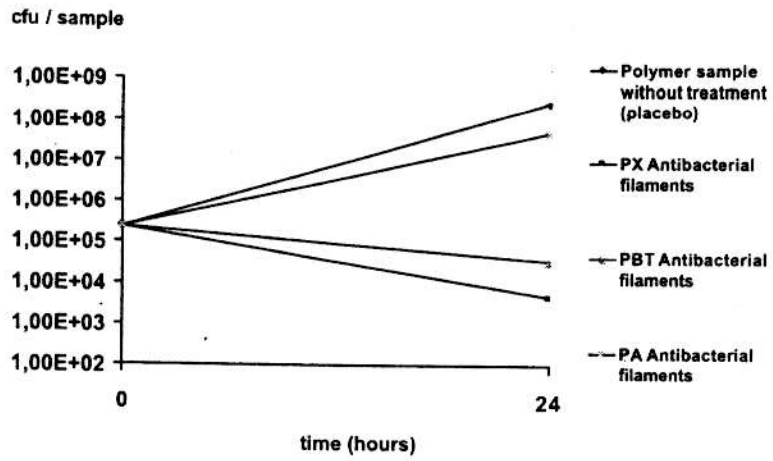
Immediately after inoculation and after 24 hours at 37°C, 20 ml phosphate buffer 0.07 molar, pH 7.4 containing 1% Tween 80 and 0.3% lecithin were given to the sample and shaken for 1 minute.

After shaking 1:10 dilutions until 10^4 in sterile deionised water were made. From the undiluted and from the dilutions, samples of 100 μ l were plated out by the mean of a spiral plater. After incubation the surviving colonies were counted and reported in a table as cfu / sample.

Results (cfu / sample)

Test strain →	Staphylococcus aureus ATCC 9144			
	0'	After 24 hrs	After 24 hrs average	Log reduction
Polymer sample (300 mg) without treatment (placebo)	2.2 x 10 ⁵ 2.6 x 10 ⁵	2.0 x 10 ⁸ 2.8 x 10 ⁸	2.4 x 10 ⁸	
PX Antibacterial Filaments (300 mg) with 2.5 % Irgaguard B 5120	2.2 x 10 ⁵ 2.6 x 10 ⁵	4.3 x 10 ³ 5.3 x 10 ³	4.8 x 10 ³	3.7 (99.98% reduction)
PBT Filaments (300 mg) with 2.5 % Irgaguard B 5120	2.2 x 10 ⁵ 2.6 x 10 ⁵	1.8 x 10 ⁴ 5.1 x 10 ⁴	3.45 x 10 ⁴	3.8 (99.99% reduction)
PA 6.12 Filaments (300 mg) with 2.5 % Irgaguard B 5120	2.2 x 10 ⁵ 2.6 x 10 ⁵	4.7 x 10 ⁷ 4.7 x 10 ⁷	4.7 x 10 ⁷	0.7 (80% reduction)
Test strain →	Streptococcus mutans ATCC 25175			
	0'	After 24 hrs	After 24 hrs average	Log reduction
Polymer sample (300 mg) without treatment (placebo)	3.3 x 10 ⁵ 3.2 x 10 ⁵	1.0 x 10 ⁸ 1.2 x 10 ⁸	1.1 x 10 ⁸	
PBT Filaments (300 mg) with 2.5 % Irgaguard B 5120	3.3 x 10 ⁵ 3.2 x 10 ⁵	2.0 x 10 ³ 4.1 x 10 ³	3.05 x 10 ³	4.6 (99.997% reduction)
PA 6.12 Filaments (300 mg) with 2.5 % Irgaguard B 5120	3.3 x 10 ⁵ 3.2 x 10 ⁵	6.9 x 10 ⁵ 7.2 x 10 ⁵	7.05 x 10 ⁵	2.2 (99.4% reduction)

AATCC 100-1998 / Staphylococcus aureus ATCC 6538



AATCC 100-1998 / Streptococcus mutans ATCC 25175

