

SAFE GUARDS

SGS CONSUMER TESTING SERVICES

SOFTLINES

NO. 028/08 APRIL 2008

Antibacterial Textile Testing Services

To cope with the growing market demand for quality and functionality in textiles; freshness, comfort and hygiene become the competitive features of textile products. By incorporating an antibacterial treatment, both textile and wearer are protected from bacterial attack and odour development.

We, SGS, being the pioneer for the textile industry, can provide professional advice on choosing appropriate test methods for products with different end uses and offer technical solutions for your needs.

Application: General purpose – under wear, socks, sportswear.
Specific purpose – hospital use.

Approach

There are two directions for assessment of antibacterial activity in the market i.e. Qualitative and Quantitative methods. These two approaches serve to evaluate the product to different extents. Below shows the general outline of the two test methods:

Qualitative Evaluation:

Test Standard	- AATCC 147 - BS EN / ISO 20645 - JIS L 1902 (Halo Method)
Objective	As a screening procedure to evaluate the presence of antibacterial activity.
Test Method	Sample is placed on agar plate inoculated with bacteria. The bacterial growth is observed after incubation.
Interpretation	- Occurrence and the size of inhibition zone - Bacterial growth underneath the sample at the contact area to agar plate.

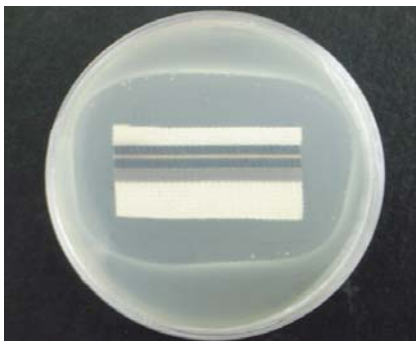


Fig 1: An example of leaching treated sample – zone of inhibition observed.

Quantitative Evaluation:

Test Standard	- JIS L1902 - JIS Z 2801 - AATCC 100 - ASTM E 2149
Objective	A more in-depth study to evaluate the antibacterial activity of sample in terms of bacteriostatic value with comparison to control sample.
Test Method	Known amount of bacteria is inoculated into test sample. The number of bacteria recovered after incubation is determined.
Interpretation	JIS L1902 / JIS Z 2801: Bacteriostatic value AATCC 100 / ASTM E 2149: Percentage reduction of bacteria.



Fig 2: An agar plate showing *Staphylococcus aureus* recovered from samples

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Generally speaking, antibacterial performance is determined by the sample's ability to inhibit or suppress the growth of bacteria. With reference to the international guideline shown below, the selection of bacterial strain for antibacterial activity assessment is dependent on the intended end use (General / Specific) and the nature of any applied treatments to the sample (Antibacterial deodorizing treatment).

An International Guideline for Antibacterial Quantitative Analysis:

Required bacteria	Antibacterial deodorizing treatment	Bacterial control	
		General Use	Specific Use
<i>Staphylococcus aureus</i> (ATCC 6538)	√	√	√
<i>Klebsiella pneumoniae</i> (ATCC 4352)	X	√	√
MRSA (IID 1677)	X	X	√
<i>Escherichia coli</i> (IFO 301)	X	#	#
<i>Pseudomonas aeruginosa</i> (IFO 3080)	X	#	#

Remarks: √ Bacteria required for testing

X Bacteria not Required for testing

Optional Bacterial

General Note:

There are many compounds being used as antibacterial agents on textiles each with their own special properties and benefits and some are durable to washing.

For example:

- Triclosan
- PHMB –biguanide
- Silyl quaternary ammonium salt
- Silver compounds
- Titanium dioxide
- Silyl Quaternary Ammonium Salt
- Chitosan
- Bamboo / Bamboo charcoal



SGS can provide professional advice in choosing appropriate test methods for products with widely different end uses and offer technical solutions to suit your needs. Please contact us for more information.

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