

Antibacterial efficacy of textiles and other porous surfaces

Using various internationally recognized test standards, the antimicrobial activity of textiles or other porous surfaces against bacteria is investigated.

Hohenstein Laboratories has obtained accreditation by the German DAkkS for these tests with a flexibilisation that allows the free selection of standardised or equivalent test methods.

Customer benefit

- Product optimization during development
- Consumer safety
- Proof of efficacy
- Advertising impact

This test is particularly suitable for

- Textiles with biocidal finish
- Clothing
- Functional fabrics
- Outdoor materials
- Carpets
- Filters
- Technical textiles
- Construction materials
- Other absorbent materials



Test principle

A suspension of the test organism (inoculum) is brought into contact with the test specimen under defined conditions. After a defined contact time, the bacterial count of the test strain is quantified. A reduction value is calculated for the test sample in comparison to a non-functionalized reference material.

Internationally recognised procedure is the test and assessment of efficacy according to ISO 20743. The following table shows a comparison of suspension tests according to different test standards.

Test standard	ISO 20743	AATCC 100	ASTM E 2149
Sample amount per approach	0,4 g	amount of textile that absorbs 1 ml	1,0 g
Test strains	<i>Staphylococcus aureus</i> AATCC 6538 <i>Klebsiella pneumoniae</i> AATCC 4352	<i>Staphylococcus aureus</i> AATCC 6538 <i>Klebsiella pneumoniae</i> AATCC 4352	<i>Escherichia coli</i> AATCC 25922
Volume of inoculum	0,2 ml	1 ml	50 ml
Nutrient content in the inoculum	5 % nutrient solution	5 % nutrient solution	0 %
Contact time	18-24 h	18-24 h	1 h
Conditions during the contact time	36 °C static	36 °C static	room temperature with shaking

Tests with additional or alternative test strains can be performed on request.

Alternative methods

Qualitative agar diffusion tests (e.g. ISO 20645 or AATCC 147) are also available. With these methods, the active substance from the test item penetrates the agar of culture medium inoculated with the test organism and can prevent it from growing, resulting in the formation of an inhibition zone.

If the active substance does not leach from the sample material, the test principle is not suitable and a suspension test should be carried out to assess the efficacy of the sample.

Marketing instruments

On passing the test, the product may be awarded the certificate “Antibacterial Activity” and/or the Quality Label “Antibacterial” (validity: 1 year). The term “Antibacterial” is used when there is significant to strong efficacy against Gram-positive and Gram-negative bacteria.

Test sample requirements

General

- Test samples will be examined as sent in, unless otherwise agreed. The samples are usually decontaminated using UV.
- At the customer's request, the test can also be performed after a simulation of use (i.e. after defined number of reprocessing cycles)
- Test samples must be packed to avoid contamination during transport, e.g. separately in plastic bags
- Provide sufficiently precise designations of the test sample (material composition, item number, colour etc.)

Quantity of test material

- At least 20 g

Test duration

- 2 - 3 weeks; date confirmation after receipt of test sample