

ICS 59.140.30

CCS Y 46



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 43722.1-2024

**Leather - Determination of antimicrobial activity - Part 1: Film
contact method**

皮革 抗菌性能的测定 第1部分：膜接触法

Issued on: March 15, 2024

Implemented on: October 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 Principle
- 5 Instruments and Equipment

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document is part 1 of GB/T 43722 "Determination of antimicrobial properties of leather". GB/T 43722 has been published in the following parts.

1. Membrane contact method. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by China Light Industry Federation. This document is under the jurisdiction of the National Technical Committee for Standardization of Leather Industry (SAC/TC252). This document was drafted by: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd., Zhejiang Tongtianxing Group Co., Ltd., Dakang Holdings Group Shenzhen Beice Testing Technology Co., Ltd., Shanghai University of Technology, Southwest Jiaotong University, Guangdong Academy of Sciences Microbiology Research Institute Institute (Guangdong Microbiological Analysis and Testing Center), Tianchuang Fashion Co., Ltd., Guangdong Xihuwei Industrial Investment Co., Ltd., Jiangsu Jicui Advanced Fiber Materials Research Institute Co., Ltd., LANXESS Chemical (China) Co., Ltd., Bofu Technology Co., Ltd., Shanghai Xuhui District Disease Control Center Center for Disease Control and Prevention, Shanghai Runhe Nanomaterials Technology Co., Ltd., China Leather and Shoe Research Institute Co., Ltd., China Light Industry Inspection and Certification Co., Ltd. Company, Zhongguancun Huizhi Antibacterial New Materials Industry Technology Innovation Alliance. The main drafters of this document are: Jiang Hong, Chen Jian, Hu Jing, Xu Xiaoling, Peng Ruqun, Xu Xiangjin, Liu Zhiyong, Liao Wuming, Fu Ze'an, Ni Jianming, Liang Jiajun, Zhou Jialiang, Zhang Yu, Liao Yutao, Tao Zhiqing, Sang Jun, Ren Keshuai, Zhang Yingzeng, Zhu Qing, Zhou Yehua, Qian Ziyu, Xie Xiaobao, Wu Peng.

Leather products are processed products of collagen protein. The raw and auxiliary materials used in the processing process contain a large amount of fats, sugars and other

ingredients. It is a good source of nutrition for the growth of bacteria and mold. In addition, the porous and polar structure of leather makes it easy to absorb moisture, which leads to its The leather is susceptible to microbial invasion during storage and use, which not only forms white, blue, yellow or black spots or stains on the leather surface, but also It can also develop into the leather, reducing the leather's wear resistance, strength and elasticity, seriously affecting its appearance and performance. As people's awareness of disease prevention continues to grow, various antibacterial materials and products have become the focus of attention. Leather products have gradually become one of the important factors determining market competitiveness. Leather products are divided into different types according to their sources, processing, etc. For example, according to the difference in surface water absorption, they can be divided into non-absorbent and Leather and leather with strong surface water absorption; According to the different dissolution properties of leather antibacterial agents, it can be divided into non-dissolution antibacterial leather and dissolution antibacterial leather. Leather, etc. The antibacterial properties of leather can be determined by using appropriate testing methods according to the type of leather. GB/T 43722 aims to provide a basis for the determination of the antibacterial properties of leather and is intended to consist of four parts.

1. Film contact method. The purpose is to establish a quantitative test method for the determination of antimicrobial properties of non-absorbent leather.
2. Agar plate diffusion method. The purpose is to establish a qualitative test and evaluation method for the determination of antimicrobial properties of leather.
3. Bacterial liquid absorption method. The purpose is to establish a quantitative test method for the determination of antibacterial properties of leather with strong surface water absorption. Test method.
4. Oscillation method. The purpose is to establish the leather that is not suitable for other membrane contact methods and bacterial liquid absorption methods (especially for leather that is used A quantitative test method for determining the antibacterial properties of leather containing non-dissolving antibacterial agents. Determination of antibacterial properties of leather Part

1 Scope

Part 1 of China's national method for determining the antimicrobial activity of leather, using the film contact technique. Antimicrobial treatment of leather is applied to footwear linings, to insoles, to gloves and to upholstery, and its purpose is to control the bacteria and fungi that cause odour and that degrade the leather itself - a hide is a protein substrate in a warm, damp environment, which is a good growth medium. Measuring the activity requires bringing a known inoculum into intimate contact with the surface, and the film contact method does that by covering the inoculated specimen with a thin film so that the liquid spreads across the whole area rather than beading. Without it a porous, hydrophobic

material like finished leather gives erratic results, because whether the organisms contact the treated surface at all depends on how the drop happened to sit.

---The microorganisms mentioned in this document can cause infection and disease. Operators should take all necessary protective measures to avoid harm to personnel and the environment. The test should be conducted by professionals with microbiological training and practical experience in laboratories equipped with the technical conditions for handling microorganisms. Carried out indoors.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document. QB/T 2707 Preparation and conditioning of leather physical and mechanical test specimens

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 The ability to kill or hinder the growth and reproduction of bacteria and fungi by chemical or physical methods to reduce their number and activity. [Source: WS/T 650-2019, 3.1, modified]

3.2 control sample Samples that have not been treated with antimicrobial agents and are used to verify the growth conditions of test microorganisms.

4 Principle

By inoculating a certain amount of microorganisms onto the surface of a non-absorbent leather sample, the microorganisms are evenly contacted with the sample surface by using a film-sticking method. After a certain period of incubation, the number of live bacteria on the surface of the sample was determined and the antibacterial rate was calculated to indicate the antibacterial performance of the sample.

5 Instruments and Equipment

5.1 Constant temperature incubator, with a temperature control accuracy of $\pm 1^{\circ}\text{C}$.

5.2 Refrigerator, the temperature can be maintained at $2^{\circ}\text{C}\sim 10^{\circ}\text{C}$.

5.3 Class II biological safety cabinet.