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

GB/T 47233-2026

**Test methods for the adhesion performance of bionic dry
adhesive materials**

仿生干黏附材料黏附性能测试方法

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Bionics (SAC/TC598). This document was drafted by: Nanjing University of Aeronautics and Astronautics, Beijing Institute of

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1 Scope

GB/T 47233-2026 is the Chinese national standard covering gecko-style dry adhesives - surfaces covered in fine pillars that stick by van der Waals forces alone, with no glue, and that release when peeled in the right direction, which is exactly what makes them hard to measure. First edition, in force since 1 September 2026, with the biomimetic friction and structure standards of the same batch. It was issued on 27 February 2026 and has been in force since 1 September 2026, as a first edition. The document is under the responsibility of the China Machinery Industry Federation. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes a test method for the adhesive properties of biomimetic dry adhesive materials. This document is applicable to testing the normal adhesion strength, tangential adhesion strength, and 90° and 180° peel strength of biomimetic dry adhesive materials. This provides a reference for interfacial contact mechanics testing of other similar biomimetic materials.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 16825.1-2022 Inspection and Calibration of Static Uniaxial Testing Machines for Metallic Materials - Part

1. Tensile and/or Compressive Testing Inspection and calibration of the machine force

measurement system

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Surface and interface adhesion functional materials based on the micro-nano adhesion structures of the feet of terrestrial organisms such as geckos, beetles, and spiders.

3.2 Area of contact The total apparent area of the biomimetic dry adhesive material sample when it comes into contact with the surface to be bonded.

Note. The actual contact area may be smaller than this apparent area. [Source: GB/T 40721-2021, 3.2, with modifications]

3.3 preload force The normal pressure perpendicular to the contact surface is applied to ensure good contact between the biomimetic dry adhesive material sample and the surface to be bonded.

3.4 Normal adhesive force Under certain conditions, a biomimetic dry adhesive material sample forms an adhesive contact interface with the bonded surface, and the adhesive contact interface exhibits The ability to resist separation perpendicular to the contact interface.

3.5 Tangential adhesive force Under certain conditions, the adhesion contact interface exhibits the ability to resist separation parallel to the contact interface.

3.6 Peel force Under certain conditions, the ability of the adhesive contact interface to resist peeling.