

ICS 25.220.40

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

GB/T 11378-2025

Replacing GB/T 11378-2005

**Metallic coatings - Measurement of coating thickness -
Profilometric method**

金属覆盖层 覆盖层厚度测量 轮廓仪法

(English Translation)

Issued on: October 31, 2025

Implemented on: May 1, 2026

Issued by: State Administration for Market Regulation

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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.

This document supersedes GB/T 11378-2005 "Metallic Coating Thickness Measurement - Profilometer Method", and is consistent with GB/T 11378-Compared to 2005, aside from structural adjustments and editorial changes, the main technical changes are as follows.

- Added profile recorder types (see 5.1);
- Some provisions regarding stylus-type instruments have been amended (see 5.2, 4.2 of the 2005 edition);
- The measurement characteristics of the profilograph have been changed (see 5.2.4, 4.2.2 in the 2005 version);
- Some descriptions of inductive measurement probes or displacement sensors have been changed (see 5.3, 4.3 in the 2005 edition);
- Added equipment specifications for the optical profilometer (see 5.4);
- The applicable range of vertical magnification has been expanded (see 6.2);
- Some provisions regarding graphic measurements have been revised (see 6.3, 5.3 in the 2005 edition);
- The applicable range and requirements for the magnitude of the applied force have been expanded (see 6.4);
- Added some specifications for surface roughness (see 6.6);
- Some vibration specifications have been revised (see 6.7, 5.6 in the 2005 edition);
- Some provisions regarding surface curvature have been revised (see 6.8, 5.7 in the 2005 edition);
- The scope of application of the datum has been expanded (see 6.12);
- Some requirements for step preparation have been changed (see 8.1, 7.1 in the 2005 edition);
- Added requirements for the outline recording section (see 8.2);
- Added requirements for thickness measurement (see 8.3);
- The accuracy requirements for overburden thickness measurement have been changed (see 8.4, 7.4 in the 2005 edition);

---Added test report requirements (see Chapter 9).

This document is modified to adopt ISO 4518:2021 "Metallic coatings - Coating thickness measurement - Profilometer method".

The technical differences between this document and ISO 4518:2021, and the reasons therefor, are as follows.

---The vertical magnification requirement has been changed (see 6.2) to improve operability and facilitate the application of this document;

---The vibration requirements have been revised (see 6.7) to increase operability and facilitate the application of this document;

---The surface curvature requirements have been changed (see 6.8) to increase operability and facilitate the application of this document;

---The cleanliness requirements have been revised (see 6.9) to improve operability and facilitate the application of this document;

---The room temperature requirement has been changed (see 6.10) to improve operability and facilitate the application of this document;

---The requirements for creating the step outline have been revised (see 6.11) to increase operability and facilitate the application of this document;

---The requirements for the standard blocks used in calibrating instruments have been changed (see 7.2) to improve data accuracy;

---ISO 2177 (see 8.1.3) has been replaced with the normatively referenced GB/T 4955 to adapt to my country's technical conditions;

---Thickness measurement requirements have been changed (see 8.3) to improve data accuracy;

---The requirements for test reports have been changed (see Chapter 9) to adapt to my country's technical conditions.

The following editorial changes have been made to this document.

---ISO 2064 has been replaced by GB/T 12334 (see 8.1.3), which is cited in the informational reference.

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 Metallic and Non-metallic Coatings (SAC/TC57).

1 Scope

This document describes a method for forming a step between the surface of the coating layer and the surface of the base metal, and then measuring the step using a profile recorder.

The method for determining the thickness of a metallic coating based on height is described, and the characteristics of the instrument and the special measurement procedures for the profilometer method are specified.

This document applies to measuring metallic coatings with a thickness of 0.01 μm to 1000 μm on flat surfaces. With appropriate measures, it can also...

This document describes the measurement of the thickness of the metallic coating on a cylindrical surface. It also applies to the measurement of the thickness of standard coating sheets.

This document is not applicable to the measurement of minute coating thicknesses less than 0.01 μm with low flatness and smoothness of the working surface.

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 4955 Metallic Coatings - Coating Thickness Measurement - Anodic Dissolution Coulometric Method (GB/T 4955-2005, ISO 2177.

2003, IDT)

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4 Principles

Dissolve a portion of the coating layer (acceptance inspection) or cover a portion of the substrate before plating (production inspection) to form a step, marked with a contour.

The recorder measures the height of the step.