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**Calibration Specification for Electrolytic (Coulometric) Coating
Thickness Instruments
(English Translation)**

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Introduction

JJF 1001 "General Measurement Terms and Definitions", JJF 1059.1 "Measurement Uncertainty Evaluation and Representation", JJF 1094 "Measuring Instrument Characteristics" together constitutes a basic series of documents supporting the development of this calibration specification.

This specification refers to JJG818-2005 "Magnetic, Eddy Current Cladding Thickness Measuring Instrument", JJF 1306-2011 Related content of "X-ray fluorescence coating thickness gauge calibration specification".

This specification is the first release.

Electrolytic (Coulomb) Thickness Gauge Calibration Specification

1 Scope

This specification applies to electrolytic types with a measurement range of (0~20) μm and a resolution of 0.1 μm and 0.01 μm .

(Coulomb) thickness gauge calibration, not suitable for electrolytic (coulomb) thickness measurement of multilayer nickel thickness and wire coating thickness measurement Instrument calibration.

2 reference files

This specification refers to the following documents.

JJF 1071-2010 National Metrology Calibration Specification Writing Rules GB/T 4955-2005 Metal overlay coating thickness measurement anodic dissolution coulometry for dated references, only dated versions apply to this specification; undated quotations the latest version (including all amendments) applies to this specification.

3 Overview

Electrolytic (Coulomb) thickness gauge, also known as electrolytic thickness gauge, Coulomb thickness gauge, is a destructive measurement of conductivity A common instrument for the thickness of metallic coatings. Electrolytic (Coulomb) thickness gauges are designed according to Faraday's law. The measurement principle is Coating based constant current anode dissolution (deplating). Electrolytic (Coulomb) thickness gauge for localizing the metal coating to be tested the anode is dissolved and the thickness of the coating is measured by calculating the amount of electricity required to dissolve the anode plating.

The structure of the electrolytic (Coulomb) thickness gauge is shown in Figure 1.

1-matrix; 2-coating; 3-rubber seal; 4-electrolyzer; 5-electrolyte; 6-control unit.

Figure 1 Schematic diagram of the electrolytic (Coulomb) thickness gauge

4 Measurement characteristics

4.1 Thickness measurement indication error the relative indication error of the instrument coating thickness measurement shall not exceed $\pm 10\%$.

4.2 Thickness measurement indication repeatability the relative indication repeatability of the instrument coating thickness measurement shall not exceed 5%.