

JIS

JAPANESE INDUSTRIAL STANDARD

Electroplated coatings of gold and gold alloy for decorative purposes

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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Electroplated coatings of gold and gold alloy
for decorative purposes

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1. Scope This Japanese Industrial Standard specifies the electroplated coatings of gold and gold alloy of 0.3 μm or over in thickness of the significant surface ⁽²⁾ (hereafter referred to as "electroplated coatings") applied on the metallic or nonmetallic basis materials for decorative purposes ⁽¹⁾.

Notes ⁽¹⁾ The decorative purposes mean the application of electroplated coatings mainly for watches, personal ornaments, personal sundries and others of which the properties such as appearance and wear resistance are considered to be important.

⁽²⁾ The significant surface means the surface essential for serviceability and/or appearance.

Remarks 1. This Standard shall be applied only to the formed parts.

2. The following standards are cited in this Standard.

JIS H 0400 Glossary of terms used in electroplating

JIS H 0404 Graphical symbol for electroplated coating

JIS H 8501 Methods of thickness test for metallic coatings

JIS H 8502 Methods of corrosion resistance test for metallic coatings

JIS H 8503 Methods of wear resistance test for metallic coatings

JIS H 8504 Methods of adhesion test for metallic coatings

JIS Z 2244 Method of Vickers hardness test

JIS Z 2251 Method of Knoop hardness test

ISO 4524: 1985 Metallic coatings – Test methods for electrodeposited gold and gold alloy coatings

Part 1: Determination of coating thickness

Part 2: Environmental test

Part 3: Electrographic tests for porosity

Part 4: Determination of gold content

Part 5: Adhesion tests

2. Definition For the main terms used in this Standard, the definitions in JIS H 0400 apply, and the rest of the terms shall be as follows:

(1) electroplated coatings of gold Electroplated coatings of 99.9 % or over in gold content. They are generally soft electroplated coatings.

- (2) electroplated coatings of gold alloy Electroplated coatings of 58.5 % or over to and excl. 99.9 % in gold content. The hardness of the electroplated coatings of gold alloy is generally harder in comparison with electroplated coatings of gold.
- (3) multilayer coatings The electroplated coatings consisting of two or more layers of differing gold content.

3. Symbols The symbols of electroplated coatings shall be indicated by prefixing the symbol D indicating the decorative purposes to the element symbol Au of electroplated coatings of gold with a hyphen "-" between them, and otherwise shall be in accordance with JIS H 0404.

4. Quality

4.1 Appearance of electroplated coatings The appearance of electroplated coatings shall be subjected to the test in 7.2, and the significant surface shall be free from defects of electroplated coatings such as rough surface, burnt deposits, crack, pit, development of dendrite at an edge part, bare spots, etc. in basis material or electroplated under-coatings, symptoms of failures in adhesion such as blister, peeling, etc., and further stains, flaws, etc.

Remarks: When gloss, brightness, hue, etc. are specified, they shall be as agreed upon between the purchaser and supplier.

4.2 Thickness of electroplated coatings The thickness of electroplated coatings shall be specified as agreed upon between the purchaser and supplier. The thickness shall be tested in accordance with 7.3, and the result shall conform to the specified thickness of electroplated coatings at any position on the significant surface.

Informative reference: The classification of the minimum thickness of electroplated coatings which are generally used, is as given in Informative reference Table 1.

Informative reference Table 1. Classification by minimum thickness of electroplated coatings

Minimum thickness of electroplated coatings μm										
0.3,	0.5,	1.0,	2.0,	3.0,	5.0,	10.0,	20.0,	30.0,	40.0	

4.3 Gold content in electroplated coatings When the gold content of electroplated coatings (the gold content of each layer for multilayer electroplated coatings) is specified, the content of gold shall be tested in accordance with 7.4, and it shall conform to the specified value.

4.4 Degree of porosity of electroplated coatings When the degree of porosity of electroplated coatings is specified, the porosity shall be tested in accordance with 7.5, and the results shall conform to the specified value.

4.5 Corrosion resistance of electroplated coatings When the corrosion resistance of electroplated coatings is specified, the corrosion resistance shall be tested in accordance with 7.6, and the result shall conform to the specified value.

4.6 Adhesion of electroplated coatings The adhesion of electroplated coatings shall be tested in accordance with 7.7, and the electroplated coatings shall be free from appearance of symptom of faults in adhesion such as peeling, blister, etc.

When there is no peeling in electroplated coatings and the basis material is broken by cracks, it is not taken as faults in adhesion.

4.7 Hardness of electroplated coatings When the hardness of electroplated coatings is specified, the hardness shall be tested in accordance with 7.8, and the result shall conform to the specified value.

4.8 Wear resistance of electroplated coatings When the wear resistance of electroplated coatings is specified, the wear resistance shall be tested in accordance with 7.9, and the result shall conform to the specified value.

5. Basis material Since the condition of basis material before electroplated coating has an important influence on the quality of electroplated coatings, especially when the material for the basis material is supplied from a purchaser, the purchaser shall indicate information concerning the material for the basis material in the specification on processing or the like.

6. Electroplated under-coating When electroplated under-coating is executed in order to improve the appearance, corrosion resistance, adhesion, etc. of electroplated coatings, the classification and thickness of the said electroplated coatings shall be as agreed upon between the purchaser and supplier.

7. Tests

7.1 Preparation of test piece A test piece shall be, as a rule, prepared from products. However, when the electroplated product itself can not be used as the test piece, the test may be executed by a substitute test piece. The substitute test piece shall be prepared by using the same material under the same electroplating conditions as those for preparation of the electroplated original product as far as possible.

7.2 Visual test The visual test shall be as stated in Annex 1.

7.3 Thickness test The thickness test shall be in accordance with the method for microscopical examination of cross section, fluorescent X-ray spectrometric test method, beta back-scatter test method for measuring thickness or the micrometrical testing method specified in JIS H 8501. Otherwise, ISO 4524/1 shall be applied thereto. The thickness of electroplated coatings shall be indicated to one place of decimal by μm unit.

7.4 Gold content test The gold content test shall be in accordance with Annex 2 or ISO 4524/4.

The gold content shall be indicated to one place of decimal by mass %.