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JIS

JAPANESE INDUSTRIAL STANDARD

Titanium nitride coatings by dry processing

JIS H 8690—1993

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In the event of any doubt arising,
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Titanium nitride coatings by dry processing H 8690-1993

1. Scope This Japanese Industrial Standard specifies the significant surface (3) of titanium nitride coatings by dry processing (hereafter, referred to as "coatings") carried out for the decorative purpose(1) or engineering purpose(2) on metallic or non-metallic basis material.

Notes (1) The decorative purpose aims at the use intended principally for clock, personal ornaments, personal sundry goods, etc., i.e. coating which requires characteristics such as appearance, abrasion resistance, corrosion resistance, etc.

(2) The engineering purpose aims at the use intended for tools, various machine parts, other functional parts, etc., i.e. coating which requires characteristics such as abrasion resistance, corrosion resistance, etc.

(3) The significant surface means the surface essential for intended uses.

Remarks 1. The following standards are cited in this Standard.

JIS H 0211	Glossary of terms used in surface treatments by dry processing
JIS H 0400	Glossary of terms used in electroplating
JIS H 0404	Graphical symbol for electroplated coating
JIS H 1612	Methods for determination of nitrogen in titanium and titanium alloys
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 H 8622	Electroplated coatings of gold and gold alloy for decorative purposes
JIS Z 2244	Method of Vickers hardness test
JIS Z 2251	Method of Knoop hardness test

2. Definitions For the main terms used in this Standard, the definitions specified in JIS H 0211 and JIS H 0400 apply, and the rest of the terms shall be as follows.

(1) nitriding means formation of a compound with nitrogen or substance enriched with nitrogen by chemical reaction, diffusion, ion implantation, etc.

(2) titanium nitride is a substance wherein titanium is nitrided.

(3) titanium nitride coating is a titanium nitride film formed on metallic or non-metallic basis material.

(4) multilayer coating is a coating wherein at least two layers of titanium nitride films of different nitrogen contents or films of entirely different compositions are multi-applied.

(5) gradient coating is a titanium nitride coating of which the nitrogen content is continuously varied.

3. Symbol For main symbols in this Standard, those in JIS H 0404 apply, and the rest of the symbols shall be as follows:

(1) Symbol expressing coating A symbol expressing coating shall be Dp.

(2) Symbol expressing the class of coating A symbol expressing the class of coating shall be expressed by prefixing a symbol D to symbol TiN expressing titanium nitride for a decorative purpose or a symbol E thereto for an engineering purpose and connecting with a hyphen "-".

4. Quality

4.1 Appearance of coating The appearance of coating shall be tested as given in 7.2, and free from defects of gloss, brightness, hue or the like; free from rough surface, crack, pit, exposure of basis material; symptom of inferiority in adhesion such as peeling; and other defects harmful to intended uses on the significant surface of the coating.

Remarks 1. When gloss, brightness, hue, etc. are specified, the appearance of the coating shall be as agreed upon between the parties concerned with delivery.

2. When a film of gold, gold alloy, etc. is formd on an upper layer in order to improve hue, the appearance of the coating shall be as agreed upon between the parties concerned with delivery.

4.2 Thickness of coating The thickness of coating shall be specified as agreed upon between the parties concerned with delivery. The thickness shall be tested as given in 7.3, and the result shall conform to the specified coating thickness at any position on the significant surface.

Informative reference: The classification of the minimum thickness of coating used generally shall be as given in Informative reference Table 1, and Informative reference Table 2.

Informative reference Table 1. Classification by the minimum thickness of coating (for decorative purpose)

The minimum thickness of coating (μm)							
0.05	0.1	0.3	0.5	1.0	3.0	5.0	10.0

Informative reference Table 2. Classification by the minimum thickness of coating (for engineering purpose)

The minimum thickness of coating (μm)						
0.1	0.5	1.0	3.0	5.0	10.0	20.0