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**Test method for thickness of fine
ceramic thin films — Film thickness
by contact probe profilometer**

ICS 81.060.01

Descriptors : ceramics, special ceramics, hardness, strength of materials, chemical elements and inorganic compounds, non-metals, surface-roughness measurement, membranes

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

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Test method for thickness of fine ceramic thin films

— Film thickness by contact probe profilometer

1 Scope This Japanese Industrial Standard specifies the test method for thickness of fine ceramic thin films by a contact probe profilometer. The applicable range of the film thickness shall be 10 nm to 10 000 nm.

Remarks : This Standard can be applied to a case where the fine ceramic thin film (ITO film, SnO₂ film, etc.) is covered on the substrate (glass substrate, etc.), and a case where a clear step is formed in the boundary part between the uncovered part and the covered part, but can not be applied to the case where the boundary is not clear.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards indicated below shall be applied.

JIS B 0651 *Surface texture—Instruments for the assessment of surface texture—Profile method*

JIS R 1600 *Glossary of terms relating to fine ceramics*

JIS Z 8401 *Rules for rounding off of numerical values*

ISO 3274 *Geometrical Product Specifications (GPS)—Surface texture : Profile method—Nominal characteristics of contact (stylus) instruments*

3 Definitions For the main terms used in this Standard the definitions in JIS R 1600 apply, and the rest of the terms are as follows.

- a) **fine ceramic thin film** The film made of fine ceramics where thin coating is provided on the surface of the substrate. The material examples include the oxide, carbide and nitride, and the examples of the coating method include the vacuum deposition, sputtering, and CVD.
- b) **ITO** Indium tin oxide. The coating of thin film is provided on the glass substrate, which is extensively put into practical use as the transparent conductive film. One of the typical fine ceramic thin films.

4 Principle of measurement In the principle of measurement by the contact probe profilometer, the stepped part (B) of the boundary part formed by the part not covered on the substrate and the part covered on the substrate is scanned by the contact probe in the order of A→B→C, and the film thickness (t) is obtained from the difference in height at the profile.