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Test methods for density and apparent porosity of fine ceramics

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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 methods for density and apparent porosity of fine ceramics

1 Scope This Japanese Industrial Standard specifies the methods for measuring the apparent density, bulk density and apparent porosity of sintered body of fine ceramics. This Standard does not apply to the fine ceramics the apparent porosity of which exceeds 10 %.

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 7410 *Liquid-in-glass thermometers for testing of petroleum products*

JIS K 2249 *Crude petroleum and petroleum products—Determination of density and petroleum measurement tables based on a reference temperature (15 °C)*

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

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

3 Definitions For the purpose of this Standard, the definitions given in JIS R 1600 and the following definitions apply.

- a) **external volume** Total volume including closed porosity and apparent porosity as well as solid part of test specimen.
- b) **apparent volume** The volume subtracting the apparent porosity from the external volume of the test specimen.
- c) **apparent density** The value (g/cm^3) obtained by dividing the mass (g) of test specimen by the apparent volume (cm^3) of test specimen.
- d) **bulk density** The value (g/cm^3) obtained by dividing the mass (g) of test specimen by the external volume (cm^3) of test specimen.
- e) **apparent porosity** When making the external volume of test specimen 1, its percentage ratio covered by the volume of apparent pores.

4 Apparatus and instruments The apparatus and instruments shall be as follows:

- a) **drier** Electrical thermostat with automatic temperature controller capable of keeping at $110\text{ °C} \pm 5\text{ °C}$.
- b) **mass meter** Mass meter capable of measuring down to the place of 0.1mg.
- c) **water saturating apparatus** Any one of the following apparatus shall be used.
 - 1) In the case of boiling method, the apparatus capable of keeping boiling point of water