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testing of natural graphite**

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Carbon Association (JCA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS M 8511:2005** is replaced with this Standard.

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Methods for industrial analysis and testing of natural graphite

1 Scope

This Japanese Industrial Standard specifies the methods for industrial analysis and testing of natural graphite. This Standard is also applicable to the analysis and testing of graphite resembling products as appropriate.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

- JIS K 0129 *General rules for thermal analysis*
- JIS M 8100 *Particulate materials — General rules for methods of sampling*
- JIS M 8813 *Coal and coke — Determination of constituents*
- JIS R 1301 *Porcelain crucibles for chemical analysis*
- JIS R 1306 *Porcelain combustion boats for chemical analysis*
- JIS R 1307 *Porcelain combustion tubes for chemical analysis*
- JIS R 1629 *Determination of particle size distributions for fine ceramic raw powders by laser diffraction method*
- JIS R 2212-1 *Methods for chemical analysis of refractory products — Part 1 : Fireclay refractories*
- JIS R 2212-2 *Methods for chemical analysis of refractory products — Part 2 : Silica refractories*
- JIS R 2212-3 *Methods for chemical analysis of refractory products — Part 3 : High alumina refractories*
- JIS R 2216 *Methods for X-ray fluorescence spectrometric analysis of refractory products*
- JIS R 3503 *Glass apparatus for chemical analysis*
- JIS R 7651 *Measurement of lattice parameters and crystallite sizes of carbon materials*
- JIS Z 8401 *Guide to the rounding of numbers*
- JIS Z 8801-1 *Test sieves — Part 1 : Test sieves of metal wire cloth*
- JIS Z 8802 *Methods for determination of pH of aqueous solutions*
- JIS Z 8805 *Glass electrodes for measurement of pH*

JIS Z 8830 Determination of the specific surface area of powders (solids) by gas adsorption — BET method

3 Method for analysis of moisture

3.1 Sample

Use the sample taken in accordance with the sampling method for moisture content specified in **JIS M 8100**.

3.2 Preparation method for sample

After mixing the sample thoroughly, repeat the reduction in accordance with the increment reduction method specified in **JIS M 8100** or the like, pulverize about 100 g of the final reduced sample to the size about 4 mm or under, and preserve as the analysis sample in a sample bottle sealed with wax. In the case of pulverizing the sample, care shall be taken strictly to prevent the fluctuation of moisture.

Carry out this operation quickly.

3.3 Determination method for total moisture

The determination method for total moisture is as follows.

- a) Take out about 10 g of the sample from the sample bottle and quickly transfer it into the flat weighing bottle of known mass (nominal dimension 40 mm × 20 mm) specified in **JIS R 3503**, and weigh the mass to the nearest 1 mg.
- b) Detach the stopper, and heat the flat weighing bottle in an electric thermostatic vessel kept at 105 °C to 110 °C for 2 h, remove from the vessel and stopper tightly. After leaving as it is to cool to the ordinary temperature (20 °C ± 15 °C) in a desiccator containing calcium chloride or silica gel, weigh the mass of sample to the nearest 1 mg.
- c) Further, heat it about 30 min and weigh the mass to the nearest 1 mg after leaving as it is to cool to the ordinary temperature (20 °C ± 15 °C) in a desiccator. Repeat this operation until a constant mass is attained.
- d) Calculate the moisture content rate according to Formula (1).

$$M = \frac{m_1 - m_2}{m_1} \times 100 \quad \dots\dots\dots(1)$$

where, M : moisture (mass fraction %)
 m_1 : mass obtained in **3.3 a)** (g)
 m_2 : mass obtained in **3.3 c)** (g)

- e) Repeat this operation twice and obtain the average value. In the case where the difference between the two measured values exceeds the tolerance in Table 1, start the operation again from the beginning.