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NATIONAL STANDARD OF THE
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ICS 31-030

L 90

GB/T 11446.4-2013

Replacing GB/T 11446.4-1997

Test method for resistivity of electronic grade water

电子级水电阻率的测试方法

Issued on: December 31, 2013

Implemented on: August 15, 2014

**Issued by: General Administration of Quality Supervision, Inspection and Quarantine of PRC;
Standardization Administration of PRC.**

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Test method for resistivity of electronic grade water

1 Scope

This Part of GB/T 11446 specifies the test method for the electrical resistivity of electronic grade water.

This Part applies to the testing of resistivity of electronic grade water.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 11446.1-2013 Electronic grade water

GB/T 11446.3-2013 Generic rules for test methods of electronic grade water

3 Terms and definitions

The terms and definitions as defined in GB/T 11446.3-2013, as well as the following terms and definitions, apply to this document.

3.1

Electrical conductivity

The conductivity is the reciprocal of the resistivity, which is represented by the symbol δ , in the unit of Siemens per centimeter (S/cm). The theoretical conductivity of pure water is 0.05482 $\mu\text{S/cm}$ (25 °C).

3.2

Cell constant

The ratio of the effective distance (L) between the two electrode plates TO the space's cross-sectional area (A), in unit of per centimeter (cm^{-1}).

The EW-I electronic grade water, which is specified in GB/T 11446.1-2013. The water, which is used to prepare the potassium chloride conductivity standard solution, shall be exposed to the laboratory atmosphere, to achieve equilibrium.

6.2 Potassium chloride standard solution

Bake the solid conductivity standard potassium chloride (standard substance BW 0401) at 110 °C, for 2 h, before use. Then put it in a desiccator, to cool to room temperature, before use. When preparing the solution, the ambient temperature shall be 20 °C ± 2 °C. See Appendix B, for the relationship between potassium chloride standard solution and conductivity.

7 Measuring instruments

7.1 Conductivity meter

For the instrument used in this method, the AC signal, that passes through the conductivity cell, during measurement, shall be an AC signal; its frequency can be in the range of 25 Hz ~ 100 Hz.

7.2 Conductivity cell

The cell constant of the conductivity cell is generally 0.01 cm⁻¹ ~ 0.1 cm⁻¹. According to the conductivity range of the specimen, select a conductivity cell, which has a suitable cell constant, for measurement. See Appendix B, for the selection of the cell constant.

7.3 Thermometer

The measuring range of the thermometer shall be 0 °C ~ 35 °C, which has an accuracy of 0.1 °C.

7.4 Constant temperature water bath

25 °C ± 0.1 °C constant temperature water bath.

8 Measurement procedures

8.1 Determination of the cell constant

Use the electronic grade water, that is exposed to the laboratory air, where the air reaches an equilibrium with the carbon dioxide in the air, to thoroughly clean the conductivity cell. Then use the corresponding potassium chloride standard solution, to rinse it 3 times. Then fully fill conductivity cell, with the standard solution (the standard solution used shall be as close as possible to the conductivity of the measured water). Put it in a constant temperature bath.

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Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

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