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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 16701.1-1996

Replacing GB/T 16701.1-1996; GB/T 16701.2-1996

**Methods for measuring the thermoelectric force of noble metal
and base metal thermocouple wires**
(English Translation)

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Foreword

This standard replaces GB/T 16701.1-1996 "thermocouple material test methods - Part 1. precious metal thermocouple wire measuring thermal emf Volume method "and GB/T 16701.2-1996" test methods for thermocouple materials - Part 2. metal thermocouple wire thermal EMF measurement method".

This standard and GB/T 16701.1-1996 and GB/T 16701.2-1996 compared, in addition to editing, text, revised format on the outside, the main changes are as follows.

- Increasing the terms and definitions of comparative law;
- Remove the appendix about the test data recording table.

Measurement methods in the precious metal thermocouple wire thermal emf.

- Measurement temperature range of 300 °C ~ 1600 °C;
- Measuring point temperature to the freezing point of aluminum (660.323 °C) in place of antimony freezing point (630.63 °C);
- B-type thermocouple wire temperature detection point is amended as. 1100 °C, 1300 °C, 1500 °C;
- Increased S, R, B-type standard grade thermocouple wire temperature detection point and the selection criteria for the corresponding provisions;
- The high-temperature tube furnace length test is amended as 600mm, mounted on the back of the furnace provided B-type thermocouple wire insertion depth is amended as 300mm;
- Increased S, R and B grade standard dual wire annealing time and temperature stability.

In the metal thermocouple wire thermal EMF measurement methods.

- Reference pure platinum wire require modification to its average resistance temperature

coefficient in the temperature range of 0 °C ~ 100 °C should ≥ 0.003920 ;

--- Tubular axial test furnace temperature field changed to a uniform temperature on the highest center of the field test and the geometric center of the furnace along the axis should not exceed deviate 10mm, and an increase in provisions radial temperature field;

--- Increasing the detection stage I grade thermocouple wire should not be less than first-class standard platinum and rhodium 10 - platinum thermocouple requirements;

--- In tying the request to cancel the provisions of the count, and revised as follows. The total number of thermocouples including standards, that should be tied into bundles to meet Size and temperature field tubulars test furnace requirement is appropriate.

Appendix A of this standard and Appendix B is an informative annex.

The standard proposed by the Machinery Industry Federation.

The standard instrument functional materials by the National Standardization Technical Committee (SAC/TC419) centralized.

1 Scope

This standard specifies the method for measuring comparative law precious metals and metal thermocouple wire thermal EMF.

This standard applies to indexing number is S, R and B of the precious metal thermocouple wire (hereinafter referred to as S-type, R-type and B-type thermocouple wire) in 300 °C ~ 1600 °C thermal EMF measurements and sub-degree temperature range within each section is K, T, E, J and N metal thermocouple wire (to Hereinafter referred to as K-type, T-type, E type, J-type, N-type thermocouple wires) thermal emf measurements in -196 °C ~ 1200 °C temperature of each range.

For other types of precious metals, metal thermocouple wires may also refer to adoption. This standard does not apply to material sheathed thermocouple thermal emf Measurement.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 1598 platinum and rhodium 10 - platinum thermocouple wire, platinum and rhodium 13 - platinum thermocouple wire, platinum and rhodium 30 - 6 platinum and rhodium thermocouple wires GB/T 2614 nickel-chromium - nickel silicon thermocouple wire GB/T

2903 copper - copper-nickel (constantan) thermocouple wire GB/T 4993 nickel-chromium - copper-nickel (constantan) thermocouple wire GB/T 4994 iron - copper-nickel (constantan) thermocouple wire GB/T 17615 Ni-Cr-Si - Ni-Si-Mg thermocouple wire JB/T 6819.2 meter material terms. Temperature Materials

3 Terms

JB/T 6819.2 and established the following terms and definitions apply to this standard.

Tolerance

When the thermocouple reference junction temperature of 0 °C junction temperature is measured for a set temperature, the measured actual thermal emf - temperature relationship Departing from the indexing table at the temperature point nominal value of the maximum allowable range.

Comparative Law comparetestmethods in a constant temperature, indicating the value of the standard value to the measured thermocouple indication determined by comparing the actual value of the measured thermocouple.

4.1 Bipolar Comparative Law

Bipolar connection line comparison of FIG 1, FIG 2.