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NATIONAL METROLOGY TECHNICAL SPECIFICATION OF THE

PEOPLE'S REPUBLIC OF CHINA

JJF 1926-2021

Calibration Specification for Thermocouples at Palladium Melting Point by Wire-Bridge Method

热电偶钯点熔丝法校准规范

(English Translation)

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Preview: page 1 of 4 shown, 12 in the full document. Complete English PDF, instant download:
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Table of Contents

1 Scope(1)
2 References (1)
3 Terms and units of measurement(1)
4 Overview(1)
5 Metrology Characteristics(1)
6 Calibration Conditions(2)
6.1 Environmental conditions (2)
6.2 Measurement standards and supporting equipment (2)
7 Calibration items and calibration methods (4)
7.1 Calibration items(4)
7.2 Calibration method(4)
7.3 Data processing(5)
8 Expression of calibration results (6)
9 Recalibration interval(6)
Introduction

9 Recalibration interval(6)

Appendix A Original Record Reference Format(7)

Appendix B Calibration Certificate Inside Page Reference Format(8)

Appendix C Method for Quantity Verification of Calibration Device of Palladium Point Fuse Method (9)

Appendix D Example of Measurement Uncertainty Evaluation of Calibration Result of Palladium Point Fuse Thermocouple (10)

Introduction

JJF 1071 "Rules for Compilation of National Metrology Calibration Specifications", JJF 1001 "General Metrology Terms and Definitions", JJF 1059.1 "Assessment and Representation of Measurement Uncertainty" together constitute the basic series of specifications supporting this specification.

This specification mainly refers to the third part of "International Temperature Scale Approximation Technology in 1990" (China Metrology Press, 1993).

Preview: page 2 of 4 shown, 12 in the full document. Complete English PDF, instant download:
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Chapter "Special Fixed Point" and GB/T 18036-2008 "Measurement Method of Thermoelectromotive Force of Platinum-Rhodium Thermocouple Filament" related content.

This specification is published for the first time.

Specification for calibration of thermocouple palladium point fuse method

1 Scope

This specification applies to high temperature thermocouples such as precious metals and tungsten rhenium (hereinafter referred to as thermocouples) at the melting point of palladium (1554.8°C) For calibration by the fuse method, the diameter of the thermocouple electrode should be (0.3~1.0) mm, and the length should be (0.3~1.0) mm.

Not less than 750mm. Calibration using the melting point of other pure metals (eg platinum, gold) may refer to this specification.

2 Reference documents this specification references the following documents.

JJF 1176-2007(0~1500)°C Calibration specification for tungsten-rhenium thermocouple GB/T 16839.1-2018 Thermocouple Part 1: Electromotive force specification and tolerance GB/T 18036-2008 Thermoelectromotive force measurement method of platinum-rhodium thermocouple filament GB/T 29822-2013 Tungsten-rhenium thermocouple wire and graduation table Compiled by the International Temperature Advisory Committee. Approximation technology of the international temperature scale in 1990 [M]. Ling Shankang, Chen Xiaolin, translation.

Beijing. China Metrology Press, 1993.

For dated references, only the dated version applies to this specification; for undated references documents, the latest edition of which (including any amendments) applies to this specification.

3 Terminology and units of measurement the equilibrium temperature at which metal palladium transitions from the solid phase to the liquid phase is referred to as the palladium point.

Note: The metal palladium point temperature given in the "1990 International Temperature Scale Approximation Technology" in an oxygen-free environment is 1554.8 °C.

3.2 fuse method wire-bridgemethod Use the temperature hysteresis that occurs when the pure metal wire bundled or welded at the measuring end of the thermocouple melts to calibrate the thermocouple method, the pure metal wire materials usually recommended are palladium, gold and platinum.

4 Overview

Thermocouple palladium point fuse method calibration is a method to realize thermocouple calibration by using pure metal palladium solid-liquid phase transition. calibration as the

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furnace temperature rises, when the palladium wire bundled or welded on the measuring end of the thermocouple melts and maintains the melting point temperature for a period of time when, the thermoelectric output of the thermocouple stagnates briefly. Through continuous measurement of thermoelectric potential, data processing and analysis, the thermal the thermoelectric potential of the galvanic couple at the palladium point.

5 Metrology characteristics the thermoelectric characteristics of the thermocouple at the palladium point (1554.8°C) shall meet the requirements in Table 1.

Preview: page 4 of 4 shown, 12 in the full document. Complete English PDF, instant download:
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