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Proton Exchange Membrane Fuel Cell—Part 6: Test
Method of Bipolar Plate Properties
质子交换膜燃料电池
第 6 部分：双极板特性测试方法

(English Translation)

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CONTENTS

Foreword	II
Introduction.....	IV
1 Scope.....	1
2 Normative References	1
3 Terms and Definitions.....	1
4 Flexural Strength Test for Bipolar Plate Materials	2
5 Density Test for Bipolar Plate Materials	3
6 Resistance Test for Bipolar Plate Materials	4
7 Corrosion Current Density Test for Bipolar Plate Materials	7
8 Area Utilization Test for Bipolar Plate Components.....	10
9 Thickness Uniformity Test for Bipolar Plate Components	10
10 Groove Depth Uniformity Test for Bipolar Plate Components.....	12
11 Flatness Test for Bipolar Plate Components.....	14
12 Relative Flatness Test for Bipolar Plate Components	15
13 Interfacial Contact Resistance Test for Bipolar Plate Components	16
14 Gas Tightness Test for Bipolar Plate Components.....	16
15 Water Contact Angle Test for Bipolar Plate Components	19
16 Coating Thickness Test for Bipolar Plate Components	19
17 Coating Adhesive Strength Test for Bipolar Plate Components	20
18 Corrosion Current Density Test for Bipolar Plate Components	21
19 Specific Heat Capacity Test for Bipolar Plate Components	22
20 Thermal Conductivity Test for Bipolar Plate Components.....	22
21 Test for Composition and Concentration of Ions Released from Bipolar Plate Components.....	23
22 Applicability of Test Metrics, Test Preparation and Test Report	24
Annex A (Normative) Applicability of Test Metrics	25
Annex B (Informative) Test Preparation	26
Annex C (Informative) Test Report	27
Bibliography	29

Proton Exchange Membrane Fuel Cell

—Part 6: Test Method of Bipolar Plate Properties

1 SCOPE

This document specifies the test methods for bipolar plate materials of proton exchange membrane fuel cell (PEMFC), e.g., flexural strength, density, resistance, and corrosion current density, and the test methods for bipolar plate components, e.g., area utilization, thickness uniformity, groove depth uniformity, flatness, relative flatness, interfacial contact resistance, gas tightness, etc.

This document is applicable to various types of bipolar plate materials and components for the PEMFC.

Note: The bipolar plate materials and bipolar plate components are defined as follows:

- a) Bipolar plate material: the plate whose state is consistent with the finished bipolar plate material;
- b) Bipolar plate component: the finished bipolar plate whose state is as operated.

2 NORMATIVE REFERENCES

The following normative documents contain provisions which, through normative reference in this text, constitute essential provision of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

GB/T 230.2	Metallic materials—Rockwell hardness test—Part 2: Verification and calibration of testing machines and indenters
GB/T 1958	Geometrical Product Specifications (GPS)—Geometrical tolerance—Verification
GB/T 4472-2011	Determination of density and relative density for chemical products
GB/T 13465.2	Test method of impermeable graphite materials—Part 2: Flexure strength
GB/T 19466.4-2016	Plastics—Differential scanning calorimetry (DSC)—Part 4: Determination of specific heat capacity
GB/T 20042.1-2017	Proton Exchange Membrane Fuel Cell - Part 1: Terminology
GB/T 20428-2006	Granite surface plates
GB/T 22588-2008	Determination of thermal diffusivity or thermal conductivity by the flash method
GB/T 28634	Microbeam analysis - Electron probe microanalysis - Quantitative point analysis for bulk specimen using wavelength dispersive X-ray spectroscopy
GB/T 30693-2014	Measurement of water-contact angle of plastic films
GB/T 30707-2014	testing method on adhesion of fine ceramic coatings—Scratching
GB/T 30902	Inorganic chemicals for industrial use—The determination of impurity element—Inductively coupled plasma optical emission spectrometry (ICP—OES)
GB/T 31563-2015	Metallic coatings—Measurement of coating thickness—Scanning electron microscope method
GB/T 34672	Chemical reagent—General rules for the ion chromatography
JJG 508	Verification Regulation of Resistivity Measuring Instruments with Four-Probe Array Method

3 TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions given in GB/T 20042.1-2017 and the following apply.

3.1 corrosion current density

current produced by the damage caused by electrochemical action per unit area of the surface of bipolar plater materials or components at the corrosion potential under the simulated fuel cell service environment

Note 1: the corrosion current density value reflects the corrosion rate of bipolar plate, and is a physical quantity characterizing the corrosion resistance of the bipolar plate materials and components under the simulated fuel cell service environment.

Note 2: the corrosion current density is expressed in $\mu\text{A}/\text{cm}^2$.



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