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

GB/T 42261-2022

**Metallic and other inorganic coatings - Test method of cyclic
heating for thermal-barrier coatings under temperature gradient**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules for Standardization Documents" drafting.

This document is equivalent to ISO 13123.2011 "Thermal cycle test method for thermal barrier coatings under temperature gradient of metal and other inorganic coatings" Law".

Please note that some contents of this document may involve patents. The issuing agency of this document assumes no responsibility for identifying patents.

1 Scope

This document describes the methods used to evaluate combustors, rotor blades and stator blades of gas turbines for thermal power plants, aero-engines and rocket engines.

Thermal cycle test method for thermal barrier coating thermal insulation performance and thermal cycle resistance performance of thermal end components.

This document is applicable to thermal power plant gas turbines, aeroengines and rocket

engine combustors, moving blades and stationary blades and other hot end components

Thermal cycling test of thermal barrier coatings.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document.

GB/T 16839.1-2018 Thermocouple Part 1. Electromotive force specification and tolerance (IEC 60584-2.2013, IDT)

Note. IEC 60584-1.1995 and IEC 60584-2.1982 have been revised to IEC 60584-2.2013, and the quoted content of GB/T 16839.1-2018 is the same as

There is no technical difference in the referenced content of IEC 60584-1.1995 and IEC 60584-2.1982.

Note. GB/T 6462-2005 Microscopic method for measuring the thickness of metal and oxide coatings (ISO 1463.2003, IDT)

ISO 2063 Thermally sprayed metals and other inorganic coatings of zinc, aluminum and their alloys (Thermalspraying-Metalicand

Note. GB/T 9793-2012 Thermally sprayed metals and other inorganic coatings zinc, aluminum and their alloys (ISO 2063.2005, IDT)

ISO 2178 Magnetic method for measuring the thickness of non-magnetic coating coatings on magnetic substrates (Non-magnetic coating son

Note. GB/T 4956-2003 Magnetic method for measuring the thickness of non-magnetic coatings on magnetic substrates (ISO 2178.1982, IDT)

ISO 14917 thermal spraying terms, classification (Thermalspraying-Terminology, classification)

Note. GB/T 18719-2002 Terminology and classification of thermal spraying (ISO 14917.1999, MOD)

ISO 80000-1 Dimensions and units Part 1. General (Qualitiesandunits-Part 1. General)

IEC 60584-3.2021 Thermocouples Part 3. Tolerance and identification systems for extension and compensating cables

Note. There is no technical difference between the referenced content of IEC 60584-3.2021 and the referenced content of IEC 60584-3.2007.

3 Terms and Definitions

The terms and definitions defined in ISO 2063, ISO 14917 and the following apply to this document.

3.1

temperature gradient temperature gradient

The temperature change per unit thickness caused by the heating and cooling of the thermal barrier coating sample surface.