
Kovinske in druge anorganske prevleke - Preskusne metode za ciklično segrevanje termičnih prevlek pri dvigovanju temperature (ISO 13123:2011)

Metallic and other inorganic coatings - Test method of cyclic heating for thermal-barrier coatings under temperature gradient (ISO 13123:2011)

Metallische und andere anorganische Überzüge - Prüfverfahren für Wärmedämmschichten unter Temperaturwechselbeanspruchung bei gleichzeitiger Temperaturerhöhung (ISO 13123:2011)

Revêtements métalliques et autres revêtements inorganiques - Méthode d'essai de cyclage thermique de systèmes barrière thermique sous gradient de température (ISO 13123:2011)

Ta slovenski standard je istoveten z: EN ISO 13123:2011

ICS:

25.220.20 Površinska obdelava Surface treatment

SIST EN ISO 13123:2012

en,fr

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 13123:2012](#)

[https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-
eb09779ceace/sist-en-iso-13123-2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 13123

December 2011

ICS 25.220.20

English Version

Metallic and other inorganic coatings - Test method of cyclic heating for thermal-barrier coatings under temperature gradient (ISO 13123:2011)

Revêtements métalliques et autres revêtements inorganiques - Méthode d'essai de cyclage thermique de systèmes barrière thermique sous gradient de température (ISO 13123:2011)

Metallische und andere anorganische Überzüge - Prüfverfahren für Wärmedämmschichten unter Temperaturwechselbeanspruchung bei gleichzeitigem Temperaturgradienten (ISO 13123:2011)

This European Standard was approved by CEN on 14 December 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....3

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST EN ISO 13123:2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

[https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-
eb09779ceace/sist-en-iso-13123-2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

Foreword

This document (EN ISO 13123:2011) has been prepared by Technical Committee ISO/TC 107 "Metallic and other inorganic coatings" in collaboration with Technical Committee CEN/TC 240 "Thermal spraying and thermally sprayed coatings" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice
iTeh STANDARD PREVIEW
(standards.iteh.ai)

The text of ISO 13123:2011 has been approved by CEN as a EN ISO 13123:2011 without any modification.

[SIST EN ISO 13123:2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)
[https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-
eb09779ceace/sist-en-iso-13123-2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 13123:2012](#)

[https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-
eb09779ceace/sist-en-iso-13123-2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

INTERNATIONAL
STANDARD

ISO
13123

First edition
2011-12-15

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

*Revêtements métalliques et autres revêtements inorganiques —
Méthode d'essai de cyclage thermique de systèmes barrière thermique
sous gradient de température*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 13123:2012

[https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-
eb09779ceace/sist-en-iso-13123-2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)



Reference number
ISO 13123:2011(E)

© ISO 2011

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 13123:2012

<https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Test piece	2
6 Test method	3
6.1 Test equipment	3
6.1.1 General	3
6.1.2 Test block	5
6.1.3 Heating unit	6
6.1.4 Cooling unit	6
6.1.5 Controller	6
6.1.6 Measuring instruments and sensor	6
6.1.7 Chamber	7
6.2 Testing	7
6.2.1 General	7
6.2.2 Procedure	7
6.3 Calculation	8
6.4 Evaluation	9
6.4.1 General	9
6.4.2 Evaluating the thermal-barrier performance	9
6.4.3 Cyclic heat resistance	10
7 Test report	10
Annex A (informative) Calculation of temperature at the bottom side of the top coat	13

ISO 13123:2011(E)**Foreword**

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13123 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 13123:2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

[https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-
eb09779ceace/sist-en-iso-13123-2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

Introduction

Thermal-barrier coatings (TBCs) are refractory coatings which provide thermal insulation for turbine blades and vanes, as well as for combustion chamber liners in power generation, aviation gas turbines and rocket combustors. They allow operation at substantially higher surface temperatures than is possible with bare metal, and thus TBCs have been used to extend the life of components that suffer from severe heat load cyclically during operation.

Conventional isothermal test methods are not suitable for evaluating the TBC under high heat load with a large temperature-gradient condition. Standardization of a cyclic heating test method for determination of their thermal-barrier performance and cyclic heat resistance under a temperature gradient field is required.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN ISO 13123:2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)

[https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-
eb09779ceace/sist-en-iso-13123-2012](https://standards.iteh.ai/catalog/standards/sist/fc54cd3d-e49b-45ba-9def-eb09779ceace/sist-en-iso-13123-2012)