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IRISH STANDARD

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ADVANCED TECHNICAL CERAMICS - METHODS OF TEST FOR CERAMIC COATINGS - PART 5: DETERMINATION OF POROSITY

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EUROPEAN PRESTANDARD

PRÉNORME EUROPÉENNE

EUROPÄISCHE VORNORM

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English version

Advanced technical ceramics - Methods of test for ceramic coatings - Part 5: Determination of porosity

Céramiques techniques avancées - Méthode d'essai pour revêtements céramiques - Partie 5: Détermination de la porosité

Hochleistungskeramik - Verfahren zur Prufung keramischer Schichten - Teil 5: Bestimmung der Porositat

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Foreword

This European pre-standard has been prepared by CEN/TC184 'Advanced technical ceramics'.

ENV 1071 has five Parts:

Part 1 : Determination of coating thickness by contact probe profilometer
Part 2 : Determination of coating thickness by cap grinding method
Part 3 : Determination of adhesion by a scratch test
Part 4 : Determination of chemical composition
Part 5 : Determination of porosity

CEN/TC 184 approved this European pre-standard according to resolution 1 taken during its eighth meeting held in London, United Kindom, on 1993-06-10.

In accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to announce this European pre-standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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1 Scope

This Part of ENV 1071 describes a method of test for characterization of micropores of ceramic coatings by means of metallographical examination. The method is applicable to thin ceramic coatings, such as produced by means of chemical and/or physical vapour deposition methods and related techniques.

> NOTE : Coatings of this type are usually applied to protect the substrate from the environment and provide a surface having other beneficial properties, such as wear resistance, corrosion protection, special electrical and/or magnetic properties and decorative appearance.

Porosity is detrimental to the intended functioning of these coatings in that it provides openings through which the substrate may be corroded, leading to spalling of the coating.

2 Normative references

This European pre-Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 45001 : General criteria for the operation of testing laboratories

3 Definitions

For the purposes of this Part of ENV 1071, the following definitions apply:

3.1 Pores: volumetric spacings of various sizes in the material which are free from solid or liquid material.

3.2 Closed pores: pores which appear as isolated or clustered voids in the material and have no connection to the surface.

3.3 Open pores: pores which appear as isolated or clustered voids in the material and have no connection to the surface.

3.4 Micropores: closed or open pores which show dimensions only detectable at microscopic scales.

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