# SLOVENSKI PREDSTANDARD

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Microlens arrays - Part 3: Test methods for optical properties other than wavefront aberrations (ISO/DIS 14880-3:2005)



ICS 31.260

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EUROPEAN STANDARD

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# DRAFT
# prEN ISO 14880-3

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English version

## Microlens arrays - Part 3: Test methods for optical properties other than wavefront aberrations (ISO/DIS 14880-3:2005)

Réseau de microlentilles - Partie 3: Méthodes d'essai pour les propriétés optiques autres que les aberrations du front d'onde (ISO/DIS 14880-3:2005)

Mikrolinsenarrays - Teil 3: Prüfverfahren für optische Eigenschaften außer Wellenfront-Aberrationen (ISO/DIS 14880-3:2005)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 123.

If this draft becomes a European Standard, 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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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## Foreword

This document (prEN ISO 14880-3:2005) has been prepared by Technical Committee ISO/TC 172 "Optics and optical instruments" in collaboration with Technical Committee CEN/TC 123 "Lasers and laser-related equipment", the secretariat of which is held by DIN.

This document is currently submitted to the parallel Enquiry.

**Endorsement notice**

The text of ISO 14880-3:2005 has been approved by CEN as prEN ISO 14880-3:2005 without any modifications.

**DRAFT INTERNATIONAL STANDARD** ISO/DIS 14880-3

ISO/TC **172**/SC **9** Secretariat: **DIN**

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# Microlens arrays —

## Part 3: Test methods for optical properties other than wavefront aberrations

*Réseau de microlentilles —*

*Partie 3: Méthodes d'essai pour les propriétés optiques autres que les aberrations du front d'onde*

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**ISO/CEN PARALLEL ENQUIRY**

The CEN Secretary-General has advised the ISO Secretary-General that this ISO/DIS covers a subject of interest to European standardization. **In accordance with the ISO-lead mode of collaboration as defined in the Vienna Agreement, consultation on this ISO/DIS has the same effect for CEN members as would a CEN enquiry on a draft European Standard.** Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.



**In accordance with the provisions of Council Resolution 21/1986 this DIS is circulated in the English language only.**

**Conformément aux dispositions de la Résolution du Conseil 21/1986, ce DIS est distribué en version anglaise seulement.**

**To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.**

**Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.**

# Contents

Page

## 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 14880-3 was prepared by Technical Committee ISO/TC 172, *Optics and photonics*, Subcommittee SC 9, *Electro-optical systems*.

ISO 14880 consists of the following parts, under the general title *Microlens arrays*:

— *Part 1: Vocabulary*

— *Part 2: Test methods for wavefront aberrations*

— *Part 3: Test methods for optical properties other than wavefront aberrations*

— *Part 4: Test methods for geometrical properties*

# Introduction

This standard specifies methods of testing optical properties, other than wavefront aberrations, of microlens arrays. Examples of applications for microlens arrays include three-dimensional displays, coupling optics associated with arrayed light sources and photo-detectors, enhanced optics for liquid crystal displays, and optical parallel processor elements.

The testing of microlenses is in principle similar to testing any other lens. The same parameters need to be measured and the same techniques used. However, in many cases the measurement of very small lenses presents practical problems which make it difficult to use the standard equipment that is available for testing normal size lenses.

The market in microlens arrays has generated a need for agreement on basic terminology and test methods. Standard terminology and clear definitions are needed not only to promote applications but also to encourage scientists and engineers to exchange ideas and new concepts based on common understanding.

Part 3 contributes to the purpose of ISO 14880 which is to improve the compatibility and interchangeability of lens arrays from different suppliers and to enhance development of the technology using microlens arrays.

The measurement of focal length is described in the main body and the use of an alternative technique, interferometry, is described in Annex A.

Measurement of the focal length of an array of microlenses, using a confocal technique, is described in Annex B.

Coupling efficiency and imaging quality are discussed in Annex C.