



BSI Standards Publication

## Optics and photonics – Microlens arrays

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Part 1: Vocabulary (ISO 14880-1:2019)

## National foreword

This British Standard is the UK implementation of EN ISO 14880-1:2019. It supersedes BS EN ISO 14880-1:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CPW/172, Optics and Photonics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2019

ISBN 978 0 580 97004 7

ICS 01.040.31; 31.260

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2019.

### Amendments/corrigenda issued since publication

Date	Text affected
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EUROPEAN STANDARD

**EN ISO 14880-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2019

ICS 01.040.31; 31.260

Supersedes EN ISO 14880-1:2016

English Version

## Optics and photonics - Microlens arrays - Part 1: Vocabulary (ISO 14880-1:2019)

Optique et photonique - Réseaux de microlentilles  
- Partie 1: Vocabulaire (ISO 14880-1:2019)

Optik und Photonik - Mikrolinsenarrays  
- Teil 1: Begriffe (ISO 14880-1:2019)

This European Standard was approved by CEN on 10 June 2019.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## European foreword

This document (EN ISO 14880-1:2019) has been prepared by Technical Committee ISO/TC 172 "Optics and photonics" in collaboration with Technical Committee CEN/TC 123 "Lasers and photonics" 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of an identical text or by endorsement, at the latest by January 2020, and conflicting national standards shall be withdrawn at the latest by January 2020.

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

This document supersedes EN ISO 14880-1:2016.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Endorsement notice

The text of ISO 14880-1:2019 has been approved by CEN as EN ISO 14880-1:2019 without any modification.

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## 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 172, *Optics and Photonics*, Subcommittee SC 9, *Laser and electro-optical systems*.

This third edition cancels and replaces the second edition (ISO 14880-1:2016), which has been technically revised.

A list of all parts in the ISO 14880 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The expanded market in microlens arrays has generated a need to agree on basic terms and definitions for microlens arrays and systems and this document aims to satisfy that need.

This document aims to improve the compatibility and interchangeability of lens arrays from different suppliers and to enhance the development of technology using microlens arrays.

Microoptics and microlens arrays are found in many modern optical devices<sup>[1]</sup>. They are used as coupling optics for detector arrays, the digital camera being an example of a mass market application. They are used to enhance the optical performance of liquid crystal displays, to couple arrays of light sources and to direct illumination for example in 2D and 3D television, mobile phone and portable computer displays. Microlens arrays are used in wavefront sensors for optical metrology and astronomy, lightfield sensors for three-dimensional photography and microscopy and in optical parallel processor elements.

Multiple arrays of microlenses can be assembled to form optical systems such as optical condensers, controlled diffusers and superlenses<sup>[2][3]</sup>. Furthermore, arrays of microoptical elements such as micro-prisms and micro-mirrors are used<sup>[4][5]</sup>. Examples of some of these applications are described in [Annexes A](#) to [E](#).

# Optics and photonics — Microlens arrays —

## Part 1: Vocabulary

### 1 Scope

This document defines terms for microlens arrays. It applies to arrays of very small lenses formed inside or on one or more surfaces of a common substrate. This document also applies to systems of microlens arrays.

### 2 Normative references

There are no normative references in this document.

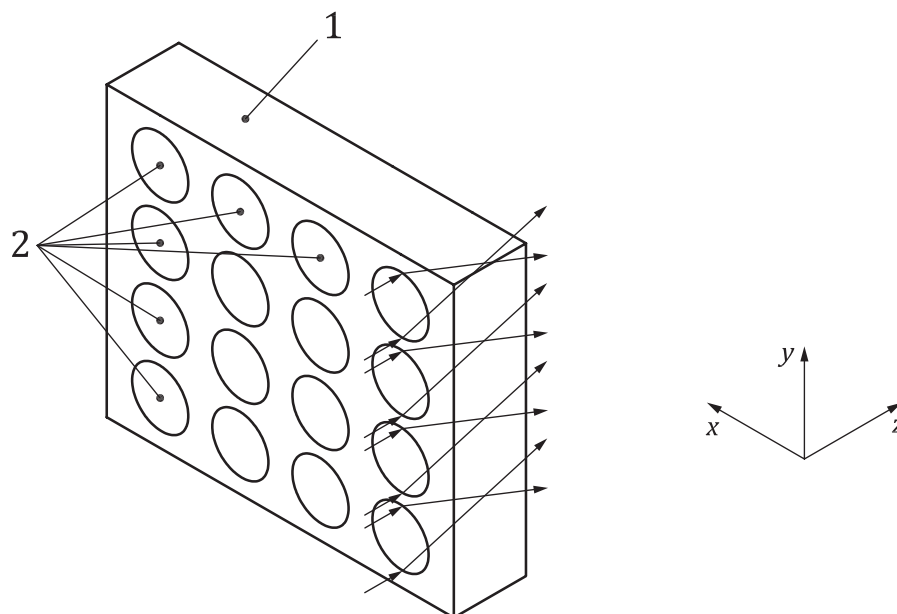
### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

NOTE 1 The coordinate system used for the description of the microlenses can be found in [Figure 1](#). The description of the coordinate system and its application can be found in [Clause 4](#).



#### Key

- 1 substrate
- 2 microlenses

**Figure 1 — Microlens array with Cartesian coordinate system**