ICS 11.040.70 SLOVENSKÁ TECHNICKÁ NORMA Apríl 2017

STN	**Očná optika. Displeje prístrojov na meranie zrakovej ostrosti. Tlačené, premietané a elektronické (ISO 10938: 2016).**	**STN EN ISO 10938** 19 5036

Ophthalmic optics - Chart displays for visual acuity measurement - Printed, projected and electronic (ISO 10938:2016)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/17

Obsahuje: EN ISO 10938:2016, ISO 10938:2016

Oznámením tejto normy sa ruší
STN EN ISO 10938 (19 5036) z mája 2001

124550

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 10938

October 2016

ICS 11.040.70

Supersedes EN ISO 10938:1998

English Version

Ophthalmic optics - Chart displays for visual acuity measurement - Printed, projected and electronic (ISO 10938:2016)

Optique ophtalmique - Dispositifs d'affichage de tableaux d'optotypes destinés au mesurage de l'acuité visuelle - Tableaux d'optotypes imprimés, projetés et affichés par des moyens électroniques (ISO 10938:2016)

Augenoptik - Anzeigetafeln für die Sehprüfung - Gedruckt, projiziert und elektronisch (ISO 10938:2016)

This European Standard was approved by CEN on 12 September 2016.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

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

Ref. No. EN ISO 10938:2016 E

Contents

Page

European foreword

This document (EN ISO 10938:2016) has been prepared by Technical Committee ISO/TC 172 “Optics and photonics” in collaboration with Technical Committee CEN/TC 170 “Ophthalmic optics” 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 April 2017, and conflicting national standards shall be withdrawn at the latest by April 2017.

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.

This document supersedes EN ISO 10938:1998.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 10938:2016 has been approved by CEN as EN ISO 10938:2016 without any modification.

INTERNATIONAL STANDARD

ISO 10938

Second edition
2016-10-01

Ophthalmic optics — Chart displays for visual acuity measurement — Printed, projected and electronic

Optique ophtalmique — Dispositifs d'affichage de tableaux d'optotypes destinés au mesurage de l'acuité visuelle — Tableaux d'optotypes imprimés, projetés et affichés par des moyens électroniques

Reference number
ISO 10938:2016(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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.

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).

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).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 172, *Optics and photonics*, Subcommittee SC 7, *Ophthalmic optics and instruments*.

This second edition cancels and replaces the first edition (ISO 10938:1998), which has been technically revised.

Introduction

The purpose of this International Standard is to provide for standardization of certain characteristics of displays of optotypes used for measurement of visual acuity in general clinical practice. These characteristics include size specification, luminance, contrast, and resolution of the optotypes. It applies to displays intended for measurement of visual acuity over a limited, but clinically useful, range of acuities.

The principles of standardized visual acuity measurement, including the arrangement of optotypes on the display, are presented in standards adopted by the National Academy of Sciences in the United States of America and the Consilium Ophthalmologicum Universal as referenced in the Bibliography. This International Standard is not intended to address these principles, but they are included in an annex in ISO 8596.

Due to practical design considerations and physical limitations of most general-purpose clinical visual acuity measurement systems, the chart design features specified in the reference standards can usually be met for only a limited range of acuity presentations. Other chart display designs are often required for special clinic visual acuity measurements, such as for low-vision patients or for research purposes.

INTERNATIONAL STANDARD **ISO 10938:2016(E)**

Ophthalmic optics — Chart displays for visual acuity measurement — Printed, projected and electronic

1 Scope

This International Standard applies to displays of optotypes generated by chart projectors and all other visual acuity measurement systems that use recognition of high-contrast optotypes and that are designed for general use, including optotypes printed on media (either opaque or intended for transillumination), those generated electronically, and those produced by optical projection.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8596, *Ophthalmic optics — Visual acuity testing — Standard optotype and its presentation*

ISO 15004-1, *Ophthalmic instruments — Fundamental requirements and test methods — Part 1: General requirements applicable to all ophthalmic instruments*