American National Standard

for Ophthalmics –

Methods for Reporting Optical Aberrations of Eyes

ANSI Z80.28-2022

Approved American National Standard

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for Ophthalmics –

Methods for Reporting Optical Aberrations of Eyes

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The Vision Council

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Foreword (This foreword is not part of American National Standard ANSI Z80.28-2022.)

This American National Standard addresses the communication of aberrations of the eye. With the dramatic increase in applications associated with aberrations, it is important to have uniform methods for reporting data so that it is understandable across applications.

ANSI Z80.28-2022 was adapted by a group of experts within the ANSI Instruments and Low Vision Devices Subcommittee under the chair of Charles E. Campbell. It is a performance standard.

The major changes to the standard made in this revision are:

(1) The addition of Annex D (Informative), Determination of refraction from Zernike polynomial coefficients. This annex informs the reader on a method to convert measured Zernike polynomial 2nd order coefficients to the sphere power, cylinder power and cylinder axis needed to correct the refractive error of the eye using corrective means available to a clinician, such as spectacle lenses or contact lenses. The annex also gives guidance to manufacturers of refractive systems that use infrared radiation sources to measure the refractive error of eye on the amount of dioptric correction to apply to measured power values to account for change in the index of refraction of the eye due to the change from visible to infrared wavelength.

(2) The method given in clause B.1 of Annex B for converting Zernike polynomial coefficient sets to account for differing aperture sizes has been simplified.

(3) Wavefront variance is defined in new clause 5.4.

Suggestions for improvement of this standard will be welcome. They should be sent to the Vision Council, 225 Reinekers Lane, Suite 700, Alexandria, VA 22314.

This standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Ophthalmic Optics, Z80. Committee approval of this standard does not necessarily imply that all committee members voted for its approval. At the time of approval of this standard, the Z80 Committee consisted of the following members:

Carl Tubbs, MD, Chair
Nick Mileti, Vice-Chair
Karl Citek, OD, PhD, Secretary
Michael Vitale, Secretariat

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American National Standard
for Ophthalmics –

Methods for Reporting Optical Aberrations of Eyes

1. Scope

This standard specifies standardized methods for reporting the optical aberrations of eyes.

2. Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ISO 8429: 1986, *Optics and Optical Instruments – Ophthalmology – Graduated Dial Scale*