AMERICAN NATIONAL STANDARD

for Ophthalmics –
Focimeters

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Z80.17-2001

American National Standard
for Ophthalmics –

Focimeters

Secretariat

Optical Laboratories Association

Approved December 11, 2001

American National Standards Institute, Inc.

American National Standard

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Foreword (This foreword is not part of American National Standard ANSI Z80.17-2001.)

ANSI Z80.17-2001 was developed by a group of experts under the direction of the ANSI Instrument subcommittee chair David S. Loshin, O.D., Ph.D. This standard defines the requirement for devices that measure the sphere and cylindrical vertex power, prismatic power and axis for spectacle and contact lenses. Accuracy requirements for tolerances or deviation of readings are also defined.

This American National Standard is in harmony with the ISO 5898 Standard: Optics and Optical Instruments: Focimeters. However, this American National Standard has two major differences. First, since in the United States there is only one reference wavelength (helium d-line or 587.5618 nm), this standard eliminates the option of two reference wavelengths and only the helium d-line is allowable. Second, there is a significant improvement in defining the manufacture of test lenses for focimeters as found in Annex A. Also in Annex A is a method for determining back surface power and error tolerances as well as an example of a calculation for the expected error.

Suggestions for improvement of this standard will be welcome. They should be sent to the Optical Laboratories Association, P.O. Box 200, Merrifield, VA 22116-2000.

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 it approved this standard, the Z80 Committee had the following members:

Thomas White, M.D., Chairman
F. Dow Smith, Ph.D., Vice-Chairman
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Daniel Torgersen, Secretariat

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The subcommittee on Opthalmic Instruments, which developed this standard, had the following members:

David S. Loshin, O.D., Ph.D., Chairman

John J. Alpar
Charles E. Campbell
Robert Landry
Robert Rosenberg
Daniel Torgersen
Tom White

American National Standard for Ophthalmics –

Focimeters

1 Scope

This standard specifies requirements for continuously indicating and digitally rounding focimeters with which the vertex powers and prismatic powers of spherical and astigmatic lenses, including lenses mounted in frames, can be measured and with which lenses can be oriented and marked.

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*

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1 adjusting rail: Movable rail or bar used as the reference axis for spectacles during measurement, which is aligned perpendicularly to the optical axis of the focimeter and parallel to the axis direction of 0° to 180°. This is also called the lens table or frame rest.

NOTE - The focimeter measures the vertex power relative to the surface placed against the lens support.

3.2 astigmatic power lens: Lens bringing a paraxial pencil of parallel rays to two separate line foci mutually at right angles and hence, unlike a spherical lens, having two principal powers.

One of these powers may be zero, with the corresponding focal line at infinity. Lenses referred to as toric lenses, sphero-cylindrical lenses and cylinder lenses are all astigmatic lenses.

3.3 centration error of the instrument: Residual prismatic error of the instrument with no lens in place.

3.4 cylindrical test lens: Lenses with cylindrical faces that are used to calibrate the axis marker and axis indicator with respect to the adjustment orientation of the rail. These lenses are usually specially designed and marked.

3.5 focimeter: An instrument that is used to measure vertex powers and prismatic effects of spectacle and contact lenses, to orient and mark uncut lenses, and to verify the correct mounting of lenses in spectacle frames.

3.5.1 continuously indicating focimeter: Focimeter with a continuous scale.