AMERICAN NATIONAL STANDARD

for Ophthalmics –
Prescription Ophthalmic Lenses– Recomendations

ANSI Z80.1-2005

OLA®

ANSI®
Z80.1-2005
(Revision of
ANSI Z80.1-1999)

American National Standard
for Ophthalmics –

Prescription Ophthalmic Lenses – Recommendations

Secretariat

Optical Laboratories Association

Approved December 19, 2005

American National Standards Institute, Inc.

American National Standard

Approval of an American National Standard requires review by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgement of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made towards their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Developed by

The Accredited Committee Z80 for Ophthalmic Standards -

Optical Laboratories Association
Z80 Secretariat
11096 Lee Highway
A101
Fairfax, VA 22030-5039

Published by

Optical Laboratories Association
11096 Lee Highway
A101
Fairfax, VA 22030-5039

Printed in the United States of America

Contents

Foreword (This foreword is not part of American National Standard ANSI Z80.1-2005.)

The Z80 Standards Committee for Ophthalmic Lenses was organized in 1956. Three separate standards were drafted, two relating to the manufacture of lenses and one to the fabrication of ophthalmic lenses into prescription eyewear. A standard relating mainly to lenses, but containing additional tolerances for a mounted pair, was issued in 1964. The tolerances were based largely upon an analysis of measured parameters in typical single-vision, mass-produced lenses assembled into conservatively styled and sized mountings. The standard represented the state-of-the-art for such lenses and a set of quality goals for lenses surfaced in the ophthalmic laboratory on an individual basis.

At the beginning of 1970, the Standards Committee Z80 was reorganized with the Optical Society of America, its former sponsor, serving as Secretariat. In 1972, the committee's scope was broadened to include lenses other than prescription glass ophthalmic lenses in recognition of the importance of plastic ophthalmic materials and the increased use of sunglasses and fashion eyewear. In the 1972 revision, certain tolerances for plastic and heat-treated lenses were relaxed in response to Federally mandated impact-resistant requirements for all ophthalmic lenses.

The 1979 revision reflected a shift in utilization from mass-produced lenses to a basic dependence upon custom-processed lenses at the laboratory level. It was an attempt to define the state-of-the-art in the manufacturing laboratory by recognizing the fact that, while individual tolerances may be reliably met, it is often not possible to achieve all requirements simultaneously. The Standard expressed desirable technical concepts that provide a framework for safety and effectiveness. The title was changed from a "requirement" to a "recommendation" to reflect the committee's intent.

In 1982, the Optical Laboratories Association assumed the responsibilities of the Secretariat. In 1985, the Z80 Committee became an Accredited Standards Committee.

The 1995 revision attempted to write the Z80.1 standard to be consistent with ISO standards. It was subsequently found that applying the ISO power tolerance method to custom fabricated eyewear resulted in unacceptably high rejection rates.

This 2005 revision corrects the change in power tolerancing methodology and brings the tolerance in line with the current "state-of-the-art." The difference in refractive power tolerance between progressive addition lenses and single-vision and multifocal lenses reflects the fact that the tolerance on base curve for progressive addition lenses in ISO standards is looser than the tolerance on single-vision and standard multifocals. The tolerance for cylinder axis uses as its basis the amount of axis error that would be needed to result in an error of 0.12 D, (the tolerance for cylinder refractive power). Additionally, the clause on the lens measurement method has been rewritten to include automatic focimeters and better describe the method for measuring prism.

The standard remains a recommendation. Therefore, it is the specific intent of the Z80 Committee that this standard not be used as a regulatory instrument.

This standard contains five informative annexes, which are not considered part of the standard.

Suggestions for improvement of this standard will be welcome. They should be sent to the Optical Laboratories Association, 11096 Lee Highway, A101, Fairfax, VA 22030-5039, USA.

This standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Ophthalmics, 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 C. White, M.D., Chairman
Quido Cappelli, Vice-Chairman
Robert Rosenberg, O.D., Secretary

Organization Represented	*Name of Representative*
AR Council	Nick Mileti
	Lee K. Anderson (Alt.)
	John W. Quinn (Alt.)
Advance Medical Technologies Association	Douglas J. Fortunato
	Carolyn Jones (Alt.)
	Glenn Davies (Alt.)
	Stanley J. Rogaski (Alt.)
American Academy of Optometry	David S. Loshin
American Academy of Ophthalmology	Thomas C. White
	Gerhard Cibis (Alt.)
	Paul F. Vinger (Alt.)
American Ceramic Society	Yvonne Gleek
	Herbert Hoover (Alt.)
American Optometric Association	Donald G. Pitts
	William J. Benjamin (Alt.)
	Robert Rosenberg (Alt.)
	Jeffrey Weaver (Alt.)
American Society of Cataract and Refractive Surgery	Stephen Klyce
	Jack T. Holladay (Alt.)
	Stephen H. Johnson (Alt.)
Contact Lens Institute	Ed Schilling
Contact Lens Manufacturers Association	Quido Cappelli
Food & Drug Administration	David Whipple
	Donald Calogero (Alt.)
	Robert Landry (Alt.)
National Association of Optometrists & Opticians	Arthur Newman
National Academy of Opticianry	Diane L. Finisecy
Optical Laboratories Association	Daniel Torgersen
	Henry A. Hart (Alt.)
	Susie Lesher (Alt.)
	Jonathan Schwartz (Alt.)
Optical Society of America	Richard A. Phillips
Opticians Association of America	Kathie St. Clair
	Tina M. Schott (Alt.)
Prevent Blindness	Christine Bradley
	Jeff Todd (Alt.)
Sunglass Association of America	Kenneth L. Frederick
	Thomas Loomis (Alt.)
	James Pritts (Alt.)
	Rick Van Arnam (Alt.)
US Leader to ISO TC 172/SC7	Charles E. Campbell
Veterans Administration	John Townsend
	Sharon R. Atkin (Alt.)
Vision Council of America	Kenneth O. Wood
	Steve Drake (Alt.)
	Darryl Meister (Alt.)
	Greg Chavez (Alt.)
	Dick Whitney (Alt.)

The Subcommittee on Prescription Ophthalmic Lenses, which developed this standard, had the following members at the time of approval:

Daniel Torgersen, Chair

Dean Bancroft
William Brown
Steven Drake
Kenneth Frederick
Herbert Hoover
Susie Lesher
Darryl Meister
Nick Mileti
Arthur Newman
Dale Pfriem
Donald Pitts
Neil Roche
Robert Rosenberg
Richard Phillips
Jonathan Schwartz
Richard Waido
Richard Whitney
Kenneth Wood
John Young

American National Standard
for Ophthalmics –

Prescription Ophthalmic Lenses – Recommendations

1 Scope and Purpose

1.1 Scope

This standard applies to the processing of all prescription ophthalmic spectacle lenses in edged or assembled form. It is a processing guideline for optical laboratories applicable to prescription eyewear prior to transfer for dispensing, and for the dispenser prior to the delivery of the finished eyewear to the patient. Relevant optical specifications and tolerances of this standard should apply also to uncut lenses supplied by an optical laboratory to be used in filling a specific prescription.

This standard does not apply to products covered by *American National Standard for Ophthalmics – Nonprescription Sunglasses and Fashion Eyewear - Requirements*, ANSI Z80.3-2001.

1.2 Purpose

This standard reflects the shift in utilization from mass-produced lenses to a basic dependence upon custom-processed lenses at the laboratory level. It does not represent tolerances that describe the state-of-the-art of the ophthalmic laboratory, but provides quality goals for new pristine lenses prepared to individual prescription. The individual performance parameters listed in this standard can be achieved reliably. However, it is difficult to meet all of the requirements simultaneously in any given lens or mounted pair. The fact that, under rigorous application of this standard, a significant number of spectacles (approximately 25%, based upon industry data) will not achieve all parameters simultaneously, must be accepted as a reflection of the state-of-the-art (see Annex E – *Optical Index*). As such, this standard expresses desirable technical concepts that provide a frame of reference for safety and effectiveness and is not designed as a regulatory instrument.