

American National Standard

*for Ophthalmics –
Ophthalmic Optics –
Specifications for
Ready-to-Wear
Near-Vision Spectacles*



ANSI[®]
Z80.31-2017
Revision of
ANSI Z80.31-2012

American National Standard
for Ophthalmics –

Ophthalmic Optics –
Specifications for
Ready-to-Wear Near-Vision Spectacles

Secretariat
The Vision Council

Approved December 12, 2017
Published February 6, 2018

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CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time.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 -

The Vision Council
Z80 Secretariat
225 Reinekers Lane
Suite 700
Alexandria, VA 22314

Published by

The Vision Council
225 Reinekers Lane
Suite 700
Alexandria, VA 22314

Copyright © 2018 by The Vision Council
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher.

Printed in the United States of America

Contents

	Page
Foreword	iii
1 Scope and Purpose	1
2 Normative References	1
3 Definitions	3
4 Requirements.....	5
4.1 General	5
4.2 Impact resistance.....	5
4.3 Flammability.....	5
4.4 Frame finish	5
4.5 Frame corrosion.....	5
4.6 Frame material safety to health of wearer	6
4.7 Frame deformation and retention of lenses	6
4.8 Cosmetic quality of lenses	6
4.9 Refractive properties.....	6
4.9.1 Refractive power	6
4.9.2 Astigmatic power.....	6
4.9.3 Prismatic power	6
4.9.4 Prismatic power imbalance	6
4.10 Physical properties.....	6
4.10.1 Base curve, center thickness, and warpage	6
4.10.2 Lens segment	7
4.11 Transmittance properties	7
4.12 Resistance to radiation	7
4.13 Labeling of product	7
4.14 Country of origin.....	7
4.15 Identification of the standard.....	7
5 Test Procedures.....	7
5.1 Impact resistance.....	7
5.1.1 Lens or blank only.....	8
5.1.1.1 Lens or blank on tube	8
5.1.1.2 Lens or blank on block.....	8
5.1.1.3 Modification of supports.....	8
5.1.2 Lens in frame	8
5.2 Alternate tests	8
5.3 Ignition test.....	8
5.3.1 Apparatus.....	8
5.3.1.1 Steel rod.....	8
5.3.1.2 Timer.....	8
5.3.2 Procedure	8

	Page
5.4	Corrosion resistance test 9
5.4.1	Apparatus 9
5.4.2	Procedure 9
5.5	Cosmetic quality test..... 9
5.6	Refractive properties tests 9
5.6.1	Refractive, astigmatic, and prismatic powers 9
5.6.2	Prismatic power imbalance 9
5.6.2.1	Plano portions of lenses 9
5.6.2.2	Non-plano portions of lenses 10
5.7	Physical properties tests 10
5.8	Transmittance properties tests 10
5.9	Resistance to radiation test 10
Figures	
1	Lens on tube 11
2	Baseplate 12
3	Lens on block..... 13
4	Recommended system for visually inspecting lens for defects 14
Annex	
A	Bibliography 15

Foreword (This foreword is not part of American National Standard ANSI Z80.31-2017.)

Summary of Changes to ANSI Z80.31 for 2017

This 2017 revision represents the most current consensus of experts in this field. The changes from the 2012 standard are the result of a thorough study by the ANSI Z80.31 committee of the relevance and applicability of its contents.

This revision expands the applicability of this standard to readers with segments and power-variation readers, such as those with progressive-power lenses, as well as readers with tints and those with plano power portions. Refractive and prismatic power properties will need to comply with requirements in ANSI Z80.1 and Z80.3, as applicable. Transmittance properties will need to comply with requirements in ANSI Z80.3, as applicable.

Finally, the procedure for assessment of frame flammability is amended and new requirements for frame durability, such as corrosion, material safety, and deformation, which already exist in other standards, are added.

Summary of original version of ANSI Z80.31

The purchasers and users of ready-to-wear near-vision spectacles need to be assured of certain minimum levels of performance and quality in these products. These are either implicit expectations in the product performance, or safety. The purchaser of the product does not ordinarily have the means to properly assess these characteristics. In order to accomplish these goals, it is necessary to establish commonly accepted definitions, equations, sources, and methodology so that manufacturers can produce products to meet the standard.

Background

This American National Standard specifies impact-resistant characteristics; cosmetic, refractive properties of lenses; and the flammability of frames and lenses. Cosmetic, refractive, and frame properties specified herein are intended as guidelines, and therefore they are subject to revision since there is a need to study further the validity of these property specifications as related to actual normal use requirements.

The Z80.31 working group is under the subcommittee SC2 of Z80, which also reviews Z80.3, Nonprescription Sunglass and Fashion Eyewear Requirements, and was organized in December 1970 and had its first meeting on January 7, 1971. The current Chair of the committee is Dr. Karl Citek, O.D., Ph.D. The committee usually meets formally twice per calendar year, and the members review material by email, phone, or fax throughout the year. Working groups may be formed to investigate specific projects, and a working group for ready-to-wear near-vision spectacles was formed and developed this standard, Z80.31-2017.

This standard contains one annex, which is informative and is not part of this standard. 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 Standards, 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, ASC Z80 Committee had the following members:

Thomas C. White, M.D., Chairman
 Neil Roche, Vice-Chairman
 William J. Benjamin, O.D., Secretary
 Michael C. Vitale, Secretariat

<i>Organization Represented</i>	<i>Name of Representative</i>
Advanced Medical Technology Association	Michael Pflieger
American Academy of Ophthalmology	Thomas C. White
American Academy of Optometry	David S. Loshin
American Ceramic Society	Lyle Rubin
American Glaucoma Society	Steven Gedde
American Optometric Association	Karl Citek
American Society of Cataract and Refractive Surgery	Stephen Klyce
Contact Lens Institute	Stan Rogaski
Contact Lens Manufacturers Association	Martin Dalsing
Cornea Society	Michael Belin
Department of Veterans Affairs	John Townsend
Food & Drug Administration CDRH/Division.....	Don Calogero
Independent.....	Ralph Stone
Johnson & Johnson Vision	Kendra Hileman
National Association of Optometrists & Opticians	Nick Mileti
Optical Laboratory Association	Steve Sutherland
Opticians Association of America	Tom Hicks
Sunglass Association of America	Tibor Gross
The Vision Council.....	Michael Vitale
U.S. ISO TC 172/SC7.....	Michael Vitale

The Subcommittee on Nonprescription Eyewear, which developed this standard, received input and contributions for this revision from the following members:

Dr. Karl Citek, O.D., Ph.D, Chair
 Rick Albright
 Nick Brown
 Carl Buckholt
 Keith Cross
 Alfredo Duenez
 Jeff Endres
 Tom Hicks
 Nick Mileti
 Dale Pfriem
 Neil Roché
 Lyle Rubin
 Daniel Simonetta
 Rick Tinson
 Michael Vitale
 Richard Whitney
 Greg Williams

American National Standard
for Ophthalmics –

Ophthalmic Optics – Specifications for Ready-to-Wear Near-Vision Spectacles

1 Scope and Purpose

1.1 Scope

This Standard specifies the minimum requirements for complete ready-to-wear near-vision spectacles with positive power available directly to the public without the prescription of a licensed professional.

1.2 Purpose

The purpose of this standard is to establish requirements for ready-to-wear near-vision spectacles, commonly called “readers,” and for the flammability and durability of frames and lenses. This standard does not address the safety performance requirements for occupational safety eyewear as defined within ANSI Z87.1 nor for sports eyewear as defined within ASTM F08.57 Committee standards.

Requirements for physical and refractive properties, except prismatic power imbalance, are based on test methods and procedures described in ANSI Z80.1.

Prismatic power properties and transmittance requirements in ANSI Z80.3 shall apply.

2 Normative References

The following standards contain provisions that, through reference in this text, constitute provisions of this American National Standard. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to apply the most recent editions of the standards indicated below.

ANSI Z80.1, *Recommendation for prescription ophthalmic lenses*¹

ANSI Z80.17, *Focimeters*¹

ANSI Z80.3, *Nonprescription sunglass and fashion eyewear requirements*¹

ANSI Z80.5, *Requirements for ophthalmic frames*¹

ANSI Z87.1, *Occupational and educational eye and face protection devices*¹

ANSI/ASQC Z1.4, *Sampling procedures and tables for inspection by attributes*¹

¹ Available from the American National Standards Institute, 25 West 43rd Street, New York, NY 10036
(Website: webstore.ansi.org)