ANSI ASC Z80.1–2025 What's New?

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The Vision Council
Vice President; Membership, Government Relations & Technical Affairs

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Overview

- What are Optical Industry Standards and why are they Important
- Who is ANSI and what is ASC Z80
- Who are the Members
- What is ANSI
- Contact Lens Standards
  - ***ASC Z80.20-2016 (R2021)*** – Contact Lenses – Standard Terminology, Tolerances Measurements and Physicochemical Properties
  - ***ASC Z80.18-2016 (R2021)*** – *Contact Lens Care Products – Vocabulary, Performance Specifications, and Test Methodology*
- Prescription Spectacle Lenses
  - ***ASC Z80.1-2025*** – *Prescription Ophthalmic Lenses – Recommendations*
  - What's New for 2025?
- Overview of Tolerances
- What other ANSI Standards should you be aware of
- Conclusion

2

What Are Optical Standards & Why Are They Important?

- Optical industry standards set regulations for the industry that **ensure consumer acceptance and confidence, increase efficiency, reduce costs and ensure an open market.**
  - Industry standards impact **98%** of global trade.
- **Quality** and **consistency** of products is crucial for the safety and well-being of customers.
- Dictating safe materials and ensuring the effectiveness of products like lenses and frames **protects customers' eyes.**

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What Are Optical Standards & Why Are They Important?

- Standards are crucial in ensuring that different components of eyewear (like frames and lenses) are **compatible** with each other.
- Meeting industry standards helps consumers **trust** that the eyecare and eyewear they purchase will perform as expected.
- Ensuring that eyecare and eyewear **comply** with local and international regulations is essential for national and global brands.

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What Are Optical Standards & Why Are They Important?

- **Example:**
  - **Sunglasses**
    - Industry standards that set a benchmark for UV protection in sunglasses protect consumers and guarantee that their eyes are adequately shielded from harmful UV radiation. This not only helps build consumer confidence in the products they purchase, but also protects their eye health and safety.

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What Are Optical Standards & Why Are They Important?

- **Example:**
  - **Compatibility for Frames and Lenses**
    - For manufacturers, product standards for various components of eyewear helps ensure compatibility and seamless integration. This is vital for the proper functioning of eyeglasses, enhancing the user experience, and maintaining the quality and safety of the eyewear.

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Who is ANSI and what is ASC Z80?

- Standards organizations do not create standards themselves, but rather **provide a framework for fair standard development** and ensure equity across contributors to standards.
- Standards organizations bring industry experts together and act as a **neutral venue for Standards Development Organizations (SDOs) to collaborate.**
- SDOs exist across all industries, including the optical industries; these organizations manage standards for many industries.
- **The Vision Council** is the accredited SDO for Ophthalmic Optics.

Z80 Accredited Standards Committee for Ophthalmic Optics

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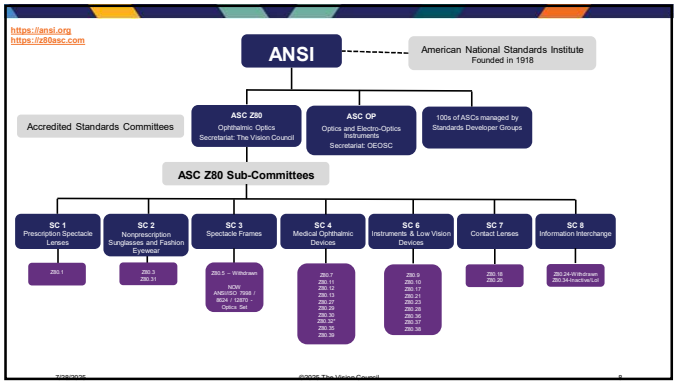

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ASC Z80 Standards – Published & In Development

SC 1
Prescription Spectacle Lenses

Z80.1 - Prescription Ophthalmic Lenses

SC 2
Nonprescription Sunglasses and Fashion Eyewear

Z80.3 - Nonprescription Sunglass and Fashion Eyewear Requirements
Z80.31 - Specifications for Ready-to-Wear Near-Vision Spectacles

SC 3
Spectacle Frames

Z80.5 - Frames – Withdrawn Replaced with the ISO Three Optics Set (ISO7998/8624/12870)

SC 4
Medical Ophthalmic Devices

Z80.7 - Intraocular Lenses
Z80.11 - Laser Systems for Corneal Reshaping
Z80.12 - Multifocal Intraocular Lenses
Z80.13 - Phakic Intraocular Lenses
Z80.14 - Ophthalmic Viscosurgical Devices
Z80.27 - Implantable Glaucoma Devices
Z80.29 - Accommodative Intraocular Lenses
Z80.30 - Toric Intraocular Lenses
Z80.32 - Methodology for Representation of Optically-Induced Phenomena*
Z80.35 - Extended Depth of Focus Intraocular Lenses
Z80.39 - Non-Accommodative, Static, Full Visual Range Intraocular Lenses

SC 6
Instruments & Low Vision Devices

Z80.9 - Low Vision Devices
Z80.10 -Tonometers
Z80.17- Focimeters
Z80.21 – Instruments – General-Purpose Visual Acuity Charts
Z80.23 - Corneal Topography and Tomography Systems - Standard Terminology, Requirements
Z80.28 - Methods of Reporting Optical Aberrations of Eyes
Z80.36 - Light Hazard Protection for Ophthalmic Instruments
Z80.37 - Slit-lamp Microscopes
Z80.38 - Light Hazard from Operation Microscopes Used in Ocular Surgery

SC 7
Contact Lenses

Z80.18 - Contact Lens Care Products – Vocabulary, Performance Specifications, and Test Methodology
Z80.20 - Contact Lenses – Standard Terminology, Tolerances, Measurements and *Physicochemical Properties

SC 8
Information Interchange

Z80.34 - Information Interchange Billing and Billing Reimbursement

Draft or Inactive Standards
*Pins put in place (2009) but no work has been initiated

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Representation & Voting

ASC Z80
(Accredited Standards Committee)
Ophthalmic Optics
The Vision Council: Secretariat
Michael C. Vitale: VP
Michele Stolberg: Administrator

ASC Z80 Meetings are public. Anyone can attend/participate in an ASC Z80 Meeting.

The ASC Z80 Steering Committee members include the Z80 Committee Chair, Vice Chair, Secretary, Secretariat, Subcommittee Chairs and the U.S. Sub TAG Leader to ISO TC172/SC7 as well as legal counsel.

ASC Z80 members include organizations of manufacturers, ophthalmologists, optometrists, opticians, ophthalmic laboratories, interest groups, federal agencies that purchase ophthalmic materials, and individual members, companies and experts.

Chair	Vice Chair	Secretary	Secretariat
Dr. Carl Tubbs, MD American Academy of Ophthalmology	**Lauren Bianchi, ABO** Marchon Eyewear Inc.	**Dr. Karl Citek, OD, Ph.D.** SC2 Chair American Optometric Association	**Michael C. Vitale, ABOM** The Vision Council
Richard Whitney SC1 Chair Carl Zeiss Vision, Inc.	**Daniel Lahousse** SC3 Chair FGX International	**Dr. Raj Suryakumar** SC4 Chair Alcon Research Ltd.	**Daniel Mattsson-Boze** SC6 Chair Carl Zeiss Meditec, Inc.
Gregory A. Williby, Ph.D. SC7 Chair Johnson & Johnson Vision	**Michael Vitale, ABOM** SC8 Chair The Vision Council	**Michael Vitale, ABOM** U.S. ISO TC 172/SC7 Leader	**Rick Van Arnam, Esq.** Legal Counsel Barnes / Richardson

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Representation & Voting

Members

Advanced Medical Technology Association (P)	American Academy of Ophthalmology (U)	American Academy of Optometry (U)
American Glaucoma Society (U)	American Optometric Association (U)	American Society of Cataract and Refractive Surgery (U)
Contact Lens Institute (P)	Contact Lens Manufacturers Association (P)	Cornea Society (U)
Department of Veterans Affairs (G)	Food & Drug Administration CDRH/Division (G)	Johnson & Johnson Vision (I)
Medical Device Manufacturers Association (P)	National Association of Retail Optical Companies (U)	Optical Laboratory Association (L)
Opticians Association of America (U)	Ralph Stone (I)	Sunglass Association of America (P)
The Vision Council (P)	US Sub-Leader to ISO TC 172/SC7 (I)	

Classifications & Member Organization Representation

(**P**) Nationwide organizations of manufacturers – 6
(**L**) Nationwide organizations of ophthalmic laboratories – 1
(**G**) Federal agencies that are purchasers of ophthalmic materials – 2
(**U**) Nationwide purchasers and users of products covered by ASC Z80 standards – 8
(**GI**) Nationwide scientific, public, and general interest groups – 0
(**I**) Individual members, companies, and experts - 3

The ASC Z80 printable directory of voting members can be viewed here.
Please contact the ASC Z80 administrator at asc80@thevisioncouncil.org with any questions regarding the directory and to request copies of the subcommittee rosters.

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TVC's Role in ANSI

- ANSI's subcommittee for the ophthalmic industry is:
  - Z80 Accredited Standards Committee for Ophthalmic Optics.
- The Vision Council is the **Secretariat of the ASC Z80 Ophthalmic Optics**, which oversees 25 U.S. ophthalmic standards.
- TVC Members and Non-Members are eligible to participate in the standards revision process. Our members consistently rank the standards work we do in the **top two areas of importance.**

Z80 Accredited Standards Committee for Ophthalmic Optics

☐	Standards for Prescription Lenses
☐	Standards for Ophthalmic Frames
☐	Standards for Sunglasses and Readers
☐	Standards for Contact Lenses
☐	Standards for Ophthalmic Equipment and Medical Devices

Source

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TVC's Role in ANSI

- ASC Z80 members include manufacturers, ophthalmologists, optometrists, opticians, ophthalmic labs, and federal agencies .
- As the US TAG Leader to ISO TC172/SC7 – Ophthalmic Optics, TVC Vice President Michael Vitale **facilitates and maintains open communication between the US standards setting process and the International Standards setting process.**
- Michael Vitale **ensures that technical experts from the US are either leading or actively participating** in all SC7 standards development and that the US position on those standards are communicated effectively.

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TVC's Role in ASTM

- The American Standard Testing Methods (ASTM) organization holds the **F08.57 Eye Safety for Sports** subcommittee.
- TVC Vice President Michael Vitale is the Vice Chair of the F08.57 subcommittee and **ensures that eyewear for sports related activities have the technical expertise from the ophthalmic community and manufacturers.**

ASTM INTERNATIONAL

12,500+ Global ASTM Standards

30,000+ Volunteer Members

140+ Participating Countries

125 Years of Operation

Source

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TVC's Role in ISEA

- The International Safety Equipment Association (ISEA) upholds many standards applicable to **occupational health and safety**, including the Z87 committee for occupational and educational eye protection devices.
- TVC Vice President Michael Vitale serves as the chair of the Z87 committee.
  - ISEA/Z87 has 2 standards under its umbrella
    - Z87.1 – Occupational and Educational Personal Eye and Face Protection Devices
    - Z87.62 – Educational Eye and Face Protection Devices for Preventing Exposures Caused by Sprays or Spurts of Blood or Body Fluids

Source

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Contact Lens Standards

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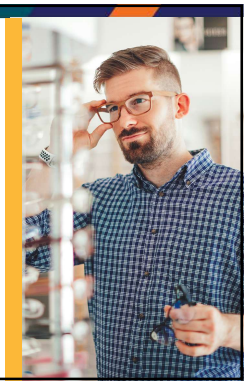
ASC Z80.18-2016 (R2021)

- ANSI ASC Z80.18-2016 (R2021) – *Contact Lens Care Products – Vocabulary, Performance Specifications, and Test Methodology*
- *Scope*
  - This American National Standard applies to contact lens care products (CLCP) which are marketed for use with hard (PMMA), rigid gas permeable (RGP), enhanced oxygen permeable materials, and soft hydrophilic contact lenses. These products are intended for use in the care of contact lenses: e.g., rinsing, storing, disinfection, conditioning, neutralization, cleaning, hydration, and/or for alleviating discomfort of lens wear and improving lens tolerance by physical means.
  - This standard provides test methodology to be used in developing performance specifications of CLCP by function and where appropriate provides acceptable performance specifications for specific products. It also addresses general requirements for CLCP based upon physical state of the marketed product (solutions, granules, and tablets), the packaging configuration (including conventional plastic container, aerosol container, form-fill-seal, or blister pack), and mode of use (unit dose or multi-dose).
- The Vision Council recommends all parties that have an interest in the field of contact lenses purchase a copy of Z80.18 from the ANSI webstore. https://webstore.ansi.org



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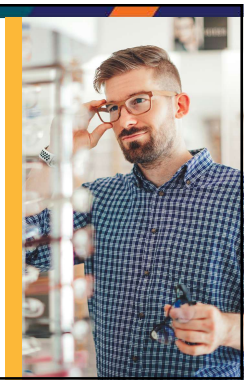
ASC Z80.20-2016 (R2021)

- ANSI ASC Z80.20-2016 (R2021) – Contact Lenses – Standard Terminology, Tolerances Measurements and Physicochemical Properties
- Scope
  - This American National Standard applies to contact lenses worn over the front surface of the eye in contact with the precular tear film. The standard covers rigid intracorneal and haptic (scleral) contact lenses, as well as soft paralimbal contact lenses.
  - Table 1 provides a high-level list of materials used for both rigid and soft contact lenses.
- The Vision Council recommends all parties that have an interest in the field of contact lenses purchase a copy of Z80.20 from the ANSI webstore. https://webstore.ansi.org



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ASC Z80.20-2016 (R2021)

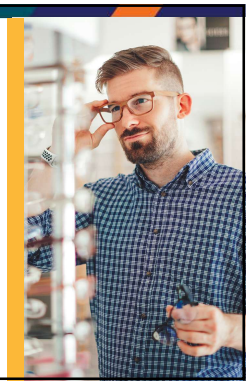
- Excerpt from Table 3 – Tolerances

Table 3 – Tolerances for Corneal and Corneo-scleral Contact Lenses

Parameter	Non-Hydrogel (<10%) PMMA, CAB	Non-Hydrogel (<10%) RGP	Non-Hydrogel (<10%) Flexible [1]	Hydrogels 10 – 69%	Hydrogels > 70%
Base Curve / EPC / BCE (± mm)	0.025	0.050	0.100	0.200	**0.250**
Label Back Vertex Power (± D) [2]					
0.00 < $\|F'_1\|$ ≤ 5.00 D	0.12	0.12	0.25	0.25	**0.25**
5.00 < $\|F'_1\|$ ≤ 10.00 D	0.18	0.18	0.25	0.25	**0.25**
10.00 < $\|F'_1\|$ ≤ 15.00 D	0.25	0.25	0.50	0.50	**0.50**
15.00 < $\|F'_1\|$ ≤ 20.00 D	0.37	0.37	0.50	0.50	**0.50**
$\|F'_1\|$ > 20.00D	0.50	0.50	0.50	1.00	**1.00**
Cylinder Power (± D) [3,4,5]					
0.00 < $\|F'_2\|$ ≤ 2.00 D	0.25	0.25	0.25	0.25	**0.25**
2.00 < $\|F'_2\|$ ≤ 4.00 D	0.37	0.37	0.37	0.37	**0.37**
$\|F'_2\|$ > 4.00 D	0.50	0.50	0.50	0.50	**0.50**
Cylinder Axis (± °)					
0.00 < $\|F'_2\|$ ≤ 1.50 D	5	5	8	8	**8**
$\|F'_2\|$ > 1.50 D	5	5	5	5	**5**
Overall Diameter (± mm)	0.10	0.10	0.20	0.20	**0.25**
Center Thickness (± mm of t_c)					
≤ 0.10 mm	0.02	0.02	0.02	**0.010 mm + 10%**	
> 0.10 mm	0.02	0.02	0.02	**0.015 mm + 5%**	

NOTES: 1. For example, silicone elastomer
2. Ar is the difference between the radii of the two principal meridians
3. The effects of base curve radius error and spherical refractive power are additive for rigid lenses. The effective error must not exceed 0.25 D.
4. F'_2 is the difference between the label back vertex power of the two principal meridians
5. Spherocylinder powers must be transformed to meridional powers and the tolerance applied to each meridional power.

* These tolerances are tentative until capable measurement methods are specified.



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Prescription Spectacle Lenses

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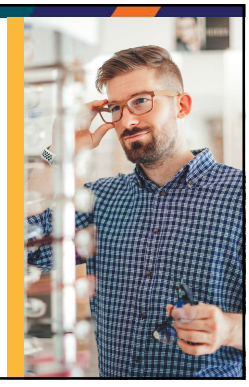
ASC Z80.1-2025

- ANSI Accredited Standards Committee (ASC) ASC Z80.1-2025, Prescription Ophthalmic Lenses – Recommendations
  - This standard applies to all prescription dress ophthalmic spectacle lenses in edged or assembled form. It is a guideline for entities that fabricate, assemble or process dress eyewear or lens components
  - Relevant optical and physical specifications and tolerances of this standard also apply to uncut lenses
- The Vision Council recommends that all parties that have an interest in the field of prescription ophthalmic optics purchase a copy of Z80.1 from the ANSI webstore by searching at https://webstore.ansi.org



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Who uses Z80.1?
• Labs
• Determine if lenses are within tolerance
• ECPs
• Determine if lenses are within tolerance
• Equipment manufacturers
• Inspection equipment, production equipment
• Lens manufacturers
• Ensure lens compliance for power/marking/etc.
• Contract Managers
• Insurance companies, large buyers, etc. typically specify ANSI Z80.1 compliance as the acceptance standard
• International standards committees
• Ensure that international and national standards don't conflict

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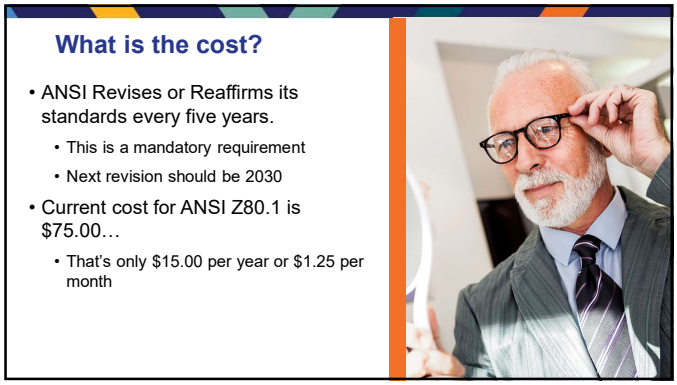
What is the cost?
• ANSI Revises or Reaffirms its standards every five years.
• This is a mandatory requirement
• Next revision should be 2030
• Current cost for ANSI Z80.1 is $75.00…
• That's only $15.00 per year or $1.25 per month

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What's New for 2025?
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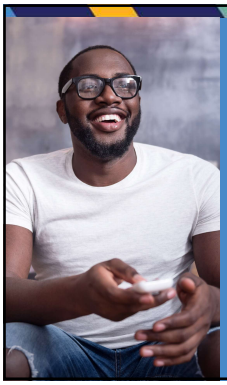

Section 5.1.1.1

- **Single Vision and Multifocal Lenses, and Power Variation Lenses with a Single Reference Point**
  - Made a distinction for lenses which have 1 vs. 2 verification points.
  - Non-traditional Single Vision lenses are being sold as such, resulting in market confusion. This distinction permits categorizing and tolerancing lenses. The Power Variation lens category includes Progressives but also designs which are treated as single vision if they have one verification point, regardless of design.

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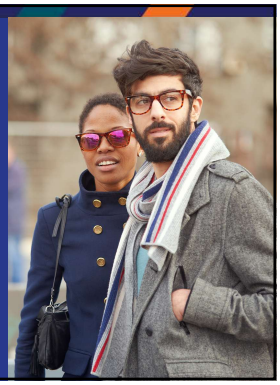
Section 5.1.4

- **Section 5.1.4 (Table 5)**
  - Provided a practical prism tolerance to be applied to low power, high prism prescriptions. This table is new to this revision.

Nominal Value of Prescribed Prismatic Power	≤ 6 Δ	> 6 Δ
Tolerance on Prescribed Prismatic Power	± 0.33 Δ	± 0.5 Δ



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Section 5.1.7

- **5.1.7 Localized errors**
  - Revised the description of Localized errors to exclude design variations and are meant to apply to processing/fabrication errors.
    - Power fluctuations and aberrations due to lens design are permissible. Power errors or aberrations due to processing that are detected by visual inspection and caused by waves, warping, or internal defects are permissible if examination with a focimeter shows no measurable or gross distortion or blur of the focimeter target element.

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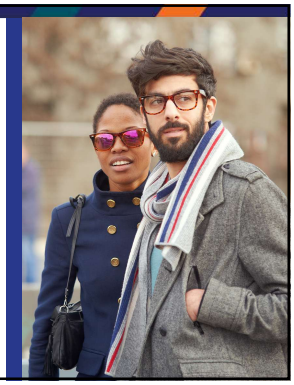
Section 7.2.2

- **Claims for Transmittance Attenuation for Wavelengths Longer than 380nm**
  - Revised Transmittance attenuation tolerance for wavelength claim at <380nm to reflect measurement capabilities. The 2020 Standard tolerance was replaced to mirror ISO 8080 (as yet unpublished); studies deemed this change to be more practical. Section 8.14 (Measurement of Spectral Transmittance) was also added to improve consistency and accuracy of claim.



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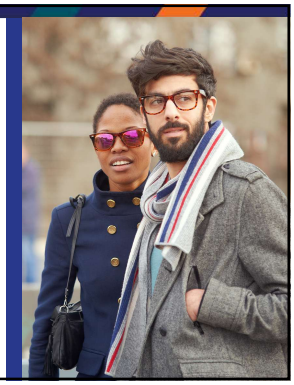
Annex D

- **Annex D – Optical and Mechanical Tolerances Summary**
  - This table is replicated by The Vision Council and published to members without charge. Given many users only see this, verbiage at the beginning was added to help direct and suggest purchase. of the full standard



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Z80.1-2025
Tolerance Overview

The Vision Council has created a Quick Reference Guide for use by its members.

Contact your lab for a copy.

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Verification Power

Verification Power (a.k.a. "As-worn", Compensated or Corrected Dioptric Power)

- Power that is manufactured, different from the ordered dioptric power, when the manufacturer has adjusted the ordered power to correct the lens for a change in vertex distance or the specified position of wear. This can include a change to the cylinder axis, and possibly also changes to the prismatic effect.
- The lab will typically supply the compensated powers (also known as "Verification Power") on the paperwork that accompanies the job.
- Some examples of common lab management systems and how they show compensation or verification powers.

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Verification power - DVI

DVI shows the verification power next to the ordered power on the workticket.

	SPHERE		CYL		AXIS		DIST	NEAR	PRISM (I/O)	PRISM (U/D)	
R	-2.50	-2.34	-0.25	-0.35	100	92	30.5	28.0			0.06 @ 72
L	-3.25	-3.22	-1.00	-0.85	180	177	33.5	31.0			0.06 @ 106

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Verification power – optifacts, omics, etc.

Rx Universe includes Optifacts, OMICS, and VisionStar.

Verification power is shown under Special Instructions.

Some invoices also include a separate page on verification

	SPHERE	CYL	AXIS	HOR.	VERT.	DIST.	NEAR	TOTAL
R	+1.75	-0.25	18			29.5		
L	+1.75	-0.25	156			28.8		

	STYLE / SEG. SIZE	BASE	ADD	COLOR	MATERIAL	HEIGHT	DROP	O.C. LOC.
R	PU	6.28	2.75	CLR	P			26.0
L	PU	6.28	2.75	CLR	P			26.0

RX ONLY

SPECIAL INSTRUCTIONS

CB: VX X DESIGN
Dist Sph Cyl Ax Add
R: 1.75 -0.22 18 2.42
L: 1.79 -0.22 156 2.44
Dist Prism OX
R: 1.27 270
L: 1.27 270
PROGRESSIVE
VARILUX GX
UNCUT

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Verification power - Innovations

Innovations (CC Systems) has a separate section for the verification power.

	Sphere	Cylinder	Axis	Prism	Base	Far PD	Near PD	Add
Right	4.50	-1.00	148	0.00	0.00	34.40	34.40	2.50
Left	3.50	-1.75	58	0.00	0.00	34.40	34.40	2.50

Verification Power

Right SPH	Right CYL	Right AX		Left SPH	Left CYL	Left AX
4.48	-1.10	149	Dp	3.47	-1.69	57
4.60	-1.08	149	Fp	3.58	-1.71	57
6.42	-0.82	159	Np	5.42	-1.36	60
0.43	LDPRVM	Total Prism amount		LDPRVM	0.43	
271.02	LDPRVA	Prism angle		LDPRVA	269.34	

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Z80.1-2025 – Tolerances

Refractive Power (Single Vision, Multifocals, and Power Variation Lenses with a single reference point)

Note: Convert to minus cylinder form before applying tolerances

1. **Tolerance on Distance Refractive Power (Single Vision, Multifocal and Power Variation Lenses with a single reference point)**

Sphere Meridian power	Tolerance on Sphere Meridian Power	Cylinder ≥ 0.00 D ≤ - 2.00 D	Cylinder > - 2.00 D ≤ - 4.50 D	Cylinder > - 4.50 D
From - 6.50 D to + 6.50 D	± 0.13 D	± 0.13 D	± 0.15 D	± 4%
Stronger than ± 6.50 D	± 2%	± 0.13 D	± 0.15 D	± 4%

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Z80.1-2025 – Tolerances

Refractive Power (Power Variation Lenses with more than one reference point)

2. **Tolerance on Distance Refractive Power (Power Variation Lenses "Progressive Addition Lenses" with more than one reference point)**

Sphere Meridian power	Tolerance on Sphere Meridian Power	Cylinder ≥ 0.00 D ≤ - 2.00 D	Cylinder > - 2.00 D ≤ - 3.50 D	Cylinder > - 3.50 D
From -8.00 D to + 8.00 D	± 0.16 D	± 0.16 D	± 0.18 D	± 5%
Stronger than ± 8.00 D	± 2%	± 0.16 D	± 0.18 D	± 5%

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Z80.1-2025 – Tolerances

3. **Tolerance on Direction of Cylinder Axis**

Nominal Value of Cylinder Power	< -0.12 D	≥ - 0.12 D ≤ - 0.25 D	> - 0.25 D ≤ - 0.50 D	> - 0.50 D ≤ - 0.75 D	> - 0.75 D ≤ - 1.50 D	> - 1.50 D
Tolerance on Axis	Not defined	± 14°	± 7°	± 5°	± 3°	± 2°

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Z80.1-2025 – Tolerances

A Note About Cylinder Axis Tolerance

- In 2005, ANSI Z80.1 relaxed the cylinder axis tolerance from +-7 to +-14 degrees on 0.25 cyl, and from +-5 degrees to +-7 degrees on 0.50 cyl
- Studies by Fry (1979) and Meister (2004) showed that these tolerances would be consistent with the goal of inducing less than 0.13D of effective cylinder power error
- The study conducted in 2004 confirmed that there would be an 18% reduction in cylinder axis spoilage by aligning the tolerances based on the visual significance of the actual cylinder power on the wearer

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Z80.1-2025 – Tolerances

Cylinder Axis Error

Cylinder power	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
Axis Error @ 0.13D	15.1	7.5	5.0	3.7	3.0	2.5	2.1	1.9	1.7	1.5	1.4	1.2
ANSI Z80.1 - 1999 Tolerance	7.0	5.0	5.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0
ANSI Z80.1 - 2010 Tolerance	14.0	7.0	5.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0

- As shown above, the tolerances at lower cylinders are in line with the visual goal of creating less than 0.13 diopters of cylinder power error

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Z80.1-2025 – Tolerances

Addition Power Tolerance

4. Tolerance on Addition Power for Multifocal and Power Variation (e.g., Progressive Power) Lenses

Nominal Value of Addition Power	≤ 4.00 D	> 4.00 D
Tolerance on Addition Power	± 0.12 D	± 0.18 D

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Z80.1-2020 – Tolerances

Prism Reference Point Location and Prismatic Power

5. Tolerance on Prism Reference Point Location and Prismatic Power

The prismatic power measured at the prism reference point shall not exceed 0.33Δ or the prism reference point shall not be more than 1.0 mm away from its specified position in any direction.

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Z80.1-2025 – Tolerances

Prescribed Prismatic Power

5. Tolerance on Prescribed Prismatic Power

Nominal Value of Prescribed Prismatic Power	≤ 6 Δ	> 6 Δ
Tolerance on Prescribed Prismatic Power	± 0.33 Δ	± 0.5 Δ

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Z80.1-2025 – Tolerances

Prismatic Imbalance (mounted)

6. Tolerance on Prismatic Imbalance (mounted)

Single Vision And Multifocal Lenses	**Vertical**	**Vertical**	**Horizontal**	**Horizontal**
	0.00 to ≤ ±3.375 D	> ± 3.375 D	0.00 to ≤ ± 2.75 D	> ± 2.75 D
Tolerance	≤ 0.33 Δ	≤ 1.0 MM difference in height of PRPs	≤ 0.67 Δ	≤ ± 2.5 MM from specified distance interpupillary distance
Progressive Addition Lenses	**Vertical**	**Vertical**	**Horizontal**	**Horizontal**
	0.00 to ≤ ±3.375 D	> ± 3.375 D	0.00 to ≤ ±3.75 D	> ± 3.75 D
Tolerance	≤ 0.33 Δ	≤ 1.0 MM difference in height of PRPs	≤ 0.67 Δ	≤ 1.0 MM from specified monocular interpupillary distance

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Z80.1-2025 – Tolerances

Prism Reference Point Location and Prismatic Power

Tolerance on Prism Reference Point Location and Prismatic Power

The prismatic power measured at the prism reference point shall not exceed 0.33Δ or the prism reference point shall not be more than 1.0 mm away from its specified position in any direction.

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Z80.1-2025 – Tolerances

Base Curve Tolerance

When specified, the base curve shall be supplied within ± 0.75 D.

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Z80.1-2025 – Tolerances

Center Thickness Tolerance

The center thickness shall be measured at the prism reference point of the convex surface. It shall not deviate from the nominal value by more than ± 0.3 mm.

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Z80.1-2025 – Tolerances

Segment Size & Tilt Tolerance for Multifocals

The segment dimensions (width, depth, and intermediate depth) shall not deviate from the nominal value by more than ± 0.5 mm. The difference between the segment dimensions (width, depth, and intermediate depth) in the mounted pair shall not exceed 0.5 mm unless specified.

The segment tilt for each lens shall be within ± 2° as measured from the 180°.

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Z80.1-2025 – Tolerances

Segment Vertical Location, Tilt and Fitting Cross Vertical Location

Multifocals: the segment height for each lens shall be within ± 1.0 mm. The difference between the segment height in the mounted pair shall not exceed 1.0 mm.

Progressives: the fitting cross height for each lens shall be within ± 1.0 mm. The difference between the fitting cross height in the mounted pair shall not exceed 1.0 mm.

The horizontal axis tilt for each lens shall be within ± 2° using the permanent horizontal reference markings.

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Z80.1-2025 – Tolerances

Segment Horizontal Location and Fitting Cross Horizontal Location

Multifocal lenses: the distance between geometric centers of the segments in the mounted pair shall be within ± 2.5 mm of the specified near interpupillary distance. The inset in both lenses shall appear symmetrical and balanced unless monocular insets are specified.

Progressive addition lenses: the near reference point is set by the lens design. The fitting cross location in progressive lenses shall be within ± 1.0 mm of the specified monocular interpupillary distance for that lens.

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Z80.1-2025 – Tolerances

Localized Errors

Localized power errors or aberrations caused by waves, warpage or internal defects, which are detected by visual inspection, are permissible if no measurable or gross focimeter target element distortion or blur is found when the localized area is examined with a focimeter. Areas outside a 30-mm diameter from the distance reference point, or within 6 mm from the edge, need not be tested for local power errors or aberrations. Progressive addition lenses are exempt from this requirement.

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Z80.1-2025 – Tolerances

Prescription Impact-resistant Dress Eyewear Lenses

All lenses must conform to the impact resistance requirements of Title 21, Code of Federal Regulations, 801.410 (CFR 801.410).

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Z80.1-2020 – Tolerances

Axis of Polarization

If there is a marking on the spectacle lens indicating the intended direction of horizontal orientation of polarization, then the actual plan of transmittance shall be at 90° ± 3° from this marking.

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A note about Transmittance

- Section 7 covers topics associated with transmittance, or how much light gets through the lens
- You should be familiar with issues such as traffic light recognition and other requirements for using lenses for driving
  - The standard references ANSI Z80.3 for non-prescription sunglasses which has detailed testing requirements
  - Requirements include color recognition and total visible light transmittance
  - If lenses are not appropriate for use in driving, they should be labeled as such when delivered to the user

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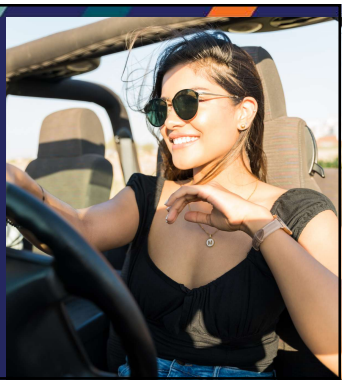

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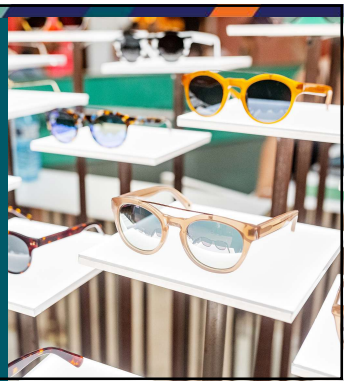
Final Note!

- Nothing in this presentation should be construed as legal advice.
- If you have a specific “Request for Interpretation”, I can help you submit that to the ASC Z80 Committee for review.



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THANK YOU

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