



Regulatory Compliance

ANSI Eyewear Markings

Brought To You by MCR Safety | Apr 10, 2024

ANSI/ISEA Z87.1-2020, the sixth revision of the voluntary eye and face protection standard, establishes performance criteria and testing requirements for devices used to protect the eyes and face from hazards that can potentially cause eye injuries. These devices include safety goggles and glasses, face shields, welding helmets worn by workers, and other eye and face protection devices used in various settings. Examples include manufacturing plants, processing facilities, utilities and transportation operations, university and research laboratories, and other occupational settings where hazards are present.

The standard sets criteria around the physical requirements, high level of impact resistance, coverage area, and permanent markings designating safety glasses as meeting the standard. It is a guide that aids the manufacturer, consumer, and the public in knowing that the product meets or exceeds specific qualities of safety.

			<h2>Testing Validation</h2>	
<h3>ANSI/ISEA Z87.1-2020 Impact Testing</h3>			<h3>CSA Z94.3-2020 Impact Testing</h3>	
Lens Marking of * or Z87+			Temple Marking: CSA logo Z94.3	
<u>High Mass Impact</u> 500 Gram Pointed Weight dropped from at least 4 feet Pass or Fail Result No break or fracture may occur of the frame or lens			<u>High Mass Impact</u> Not required	
<u>High-Velocity Impact</u> 4mm steel ball shot 45.7 meters/sec Pass or Fail Result No break or fracture may occur			<u>High-Velocity Impact</u> 6mm steel ball shot 50.5 meters/sec Pass or fail result Limited fracture allowed	
			<u>Side Coverage</u> Increased side coverage of the eye	



Military Ballistic

MIL-PRF-3103

Ballistic Velocity Impact

- .15 caliber 5.8 grain Cylindrical Projectile = 195 meters per second

- Pass or Fail Result

- No break or fracture may occur



443 MPH
712 KM/H



UV Light

ANSI/ISEA Z87.1-2020

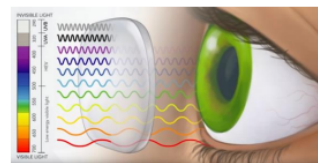
All Polycarbonate lens options block out 99.9% UV light regardless of the color of lens

U6 Marking on all Lenses

Table 8. Transmittance Requirements for Ultraviolet Filter Lenses		
Scale	Maximum Effective Far-Ultraviolet Average Transmittance %	Maximum Near Ultra-Violet Average Transmittance %
U2	0.1	3.7
U2.5	0.1	2.3
U3	0.07	1.4
U4	0.04	0.5
U5	0.02	0.2
U6	0.01	0.1



Typically, the human eye can detect wavelengths from 380 to 700 nanometers (sunlight)



All Polycarbonate Lens Manufactured by MCR Safety block 99.9% of UV Light ranging from 200-385nm

320 nm to 400 nm UVA (or "near UV")

Useful for printing, curing, lithography, sensing and medical applications

290 nm to 320 nm UVB

Useful for curing, tanning and medical applications

200 nm to 290 nm UVC

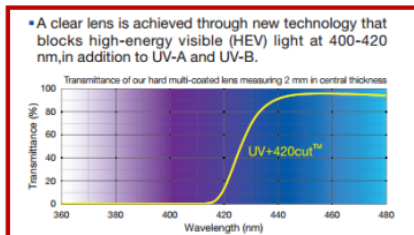
Useful for disinfection and sensing – Germicidal Cabinets

100 nm to 200 nm Far UV or vacuum UV

These wavelengths only propagate in a vacuum



UV 420 Protection

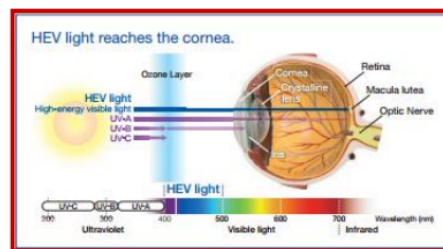
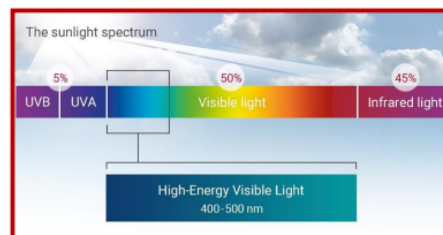


Standard Polycarbonate Safety Glasses block up to 385nm.

UV420 protects against UVA, B, C, and HEV light up to 410 nm at 99.9%

• UV and HEV light cut rate

	Wavelength	Percentage	
		2 mm nonprescription	1.2 mm nonprescription
Cut rate	380-500 nm	42.2	39.1
	400 nm	99.9	99.9
	410 nm	99.9	99.7
	420 nm	86.1	70.5
	430 nm	30.1	20.2
ISO12312-1	380-500 nm	24.3	—



Research shows that blocking UV and HEV light is critical to protecting eyes from cataracts and age-related macular degeneration.

Download a PDF of this infographic here to learn about ANSI Z87.1-2020, which establishes performance criteria and testing requirements for devices used to protect the eyes and face from hazards that can potentially cause eye injuries.

Browse MCR Safety's line of eye and face protection on MSCDirect.com.

www.mscdirect.com/betterMRO

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