



AOSafety® MinimlzeR® Lenses

The first 'thin film technology' safety eyewear designed to protect against "flash burn".

Beyond The Standard™

The AOSafety MinimlzeR lens was created to meet a specific industrial need. Most manufacturing facilities that do electric arc welding in less than optimum environmental lighting conditions are in need of a safety spectacle lens that will provide protection from accidental "welders flash burn" and allow more visible light transmission than a typical green shaded safety lens.

Normally, arc welders will wear a safety spectacle with shaded lenses under their welding helmet/filter to protect them from accidental "welders flash burn" when the helmet/filter is lifted. The shade of the lenses in these safety spectacles would typically be in the range of shade 1.7 to 3.0, but more typically would be a shade 2.0 or 2.5. When it becomes necessary for the welder to lift his/her welding helmet, the use of these typical shaded lenses provides protection from a neighboring arc strike but limits visual acuity thus creating possible secondary hazards like tripping, falling, walking into stationary objects, electrical shock, etc.

Additionally, welder helpers and other personnel (e.g. supervisors, engineers, etc.) working in and around the immediate welding site, typically wear the same spectacles/lenses and thus would encounter the same secondary hazards.

Gas Welding

Although the MinimlzeR lens is an excellent lens to be worn by an arc welder under the helmet or by an arc welder helper, **IT ISN'T DESIGNED TO BE WORN AS PRIMARY EYE PROTECTION IN GAS WELDING, GAS BRAZING, GAS CUTTING OR SIMILAR PROCEDURES.** These procedures produce a greater exposure/dose of infrared energy to the worker's eyes than that of an arc welding operation. Normally, the gas welder is at arm's length to the heat source (the flame and the heated metal) for relatively long periods of time.

Furnace Viewing

Viewing a furnace (molten metal, glass melting, etc.) for any significant length of time is in many ways similar to gas welding. Most furnace viewing procedures often involve looking into a heated oven/furnace at temperatures in excess of 1200°F multiple times per hour for a short duration or just a few times per hour/day but for a long duration. Regardless, the exposure/dose of infrared energy to the eye can be substantial; thus, infrared eye protection should be used.

Often these furnaces/ovens are located in a dark work environment. **Shaded lenses meeting the Table 1 requirements of ANSI Z87.1 should be used in these situations as long as the acuity of the worker is not compromised such that the darkness of the lenses produce a secondary hazard(s).**

However, if serious secondary hazards can be eliminated through the use of clear or MinimlzeR lenses, then the MinimlzeR lens should be the lens of choice. **It is far better to have 65% infrared attenuation using the MinimlzeR lens than only approximately 15% attenuation using a typical clear polycarbonate lens.**

It is a well-known fact that the primary optical hazard of a typical arc welding operation is the ultraviolet radiation that can cause photokeratitis (commonly called "welders flash burn"). **"Welders flash burn" is a serious and painful injury to the cornea of the**

eye. The bright visible and infrared radiations are considerably less hazardous. Evidence of this is found in the following Table, which presents optical spectrum specification for clear and shaded lenses 1.7 through 5.0 from Table 1 of ANSI Z87.1. It also shows the relative positioning of the MinimlzeR lens, ranked by luminous transmittance.



Shade Number	Luminous Transmittance			Maximum Effective Far Ultraviolet Average Transmittance (%)	Maximum Infrared Average Transmittance (%)
	Maximum %	Nominal %	Minimum %		
Clear	100		85	---	---
MinimIzeR®	---	54	50	0.0004	*25
1.7	55	50.1	43	0.1	20
2.0	43	37.3	29	0.1	15
2.5	29	22.8	18	0.1	12
3.0	18	13.9	8.5	0.07	9
4.0	8.5	5.18	3.16	0.04	5
5.0	3.16	1.93	1.18	0.02	2.5

*Typical transmittance data from an AOSafety Lexa® safety spectacle with MinimIzeR lens.

Observing the above table, the following conclusions can be easily derived:

- The MinimIzeR lens provides greater visual acuity than the shade 2.0 or 2.5 lens that welders or other personnel in the welding area typically wear, and thus will provide significantly greater visual acuity in a darker working environment.
- The MinimIzeR lens offers significantly more ultraviolet protection than either the shade 2.0 or 2.5 lens depicted in the table thus providing equal or better protection from “welders flash burn”.
- *Although the MinimIzeR lens offers less protection in the infrared spectrum by 10% to 13% as compared to the shade 2.0 or 2.5 lens, it isn't of concern. A welder's eyes are not significantly exposed to infrared radiation unless he/she is actively welding and at that time they should have their welding helmet/filter in place over their eyes. Plus, the infrared radiation dose (intensity-time function) is small during the time when the welding helmet/filter is lifted.

If workers are wearing a Lexa MinimIzeR spectacle, they can change their eye gear into dust goggles with Dust GoggleGear® for Lexa by simply snapping the GoggleGear adapter onto the eyewear!

- High visible transmittance of 50%
- Reduces infrared radiation by a minimum of 65%
- Absorbs 99.9% of UV light
- Refined, sleek Duralite® polycarbonate lens designed to fit the contours of the face
- DX™ Anti-fog hard coat guards against fogging, scratching, static and chemical attack
- Custom Imprinting Available
- Meets ANSI Z87.1 and CSA-Z94.3 Standards

ANSI Z87.1 Lens Types

The MinimIzeR lens meets all the applicable requirements of ANSI Z87.1 and consequently is qualified to carry the manufacturer's mark, “AOS+”. As per ANSI Z87.1 there are three lens types, “Clear”, “Filter” or “Special Purpose”. The MinimIzeR lens is a “Special Purpose” lens and being such is not assigned a shade number designation. Rather, it is assigned a designation “S” meaning “Special Purpose”. Only lenses that meet all the transmittance requirements of Table 1 of the Z87.1 standard are to be marked with a shade number designation.

Product Codes	Description
15250-00000	Lexa MinimIzeR, Medium, Black Temples, DX Lens
15150-00000	Lexa MinimIzeR, Large, Black Temples, DX Lens
12180-00000	QX™ 2000 Black Adjustable Temples, MinimIzeR Lens
12289-00000	Maxim™ Black Adjustable Temples, MinimIzeR Lens
13288-00000	Maxim Sport Silver/Blue Frame, MinimIzeR Lens
Replacement Lenses	
15251-00000	Lexa MinimIzeR, Medium
15151-00000	Lexa MinimIzeR, Large
12222-00000	QX 2000 MinimIzeR
12295-00000	Maxim & Maxim Sport MinimIzeR
Lexa Dust GoggleGear Adapter	
16600-00000	GoggleGear Adapter, Medium, Standard Bridge
16605-00000	GoggleGear Adapter, Medium Hi-Set Bridge
16601-00000	GoggleGear Adapter, Large, Standard Bridge
16606-00000	GoggleGear Adapter, Large, Hi-Set Bridge