



INTERNATIONAL SAFETY STANDARDS REFERENCE GUIDE FOR EYEWEAR



Sunglasses have been around for a long time, but until recently they were mostly a fashion accessory; to make you look more appealing. Protecting your eyes from the sun was almost an afterthought. Companies can remove these risks by submitting their products for specialized tests against key factors. Testing for UV protection, scratch and impact resistance, fit and nickel release will ensure eyewear meets industry standards and fulfills consumer expectations.

During the summer season, outdoor activities generally increases your eyes' exposure to the sun. Without proper protection, this over-exposure can cause certain levels of damage to the eye's lens and retina, decreasing visual sharpness and increasing the risk of cataract formation.

Technological advances have allowed designers and manufacturers to creatively produce different types of frames and lenses of different styles and purposes. However, they must ensure that their products comply with all regulations that individual governing bodies had imposed and monitored strictly.



WHY CHOOSE SGS

SGS is the world's leading inspection, verification, testing and certification company. SGS is recognized as the global benchmark for quality and integrity. With more than 94,000 employees, SGS operates a network of over 2,600 offices and laboratories around the world.

SGS-CSTC Standards Technical Services Co., Ltd. Was founded in 1991 as a joint venture between SGS Group and China Standard Technology Development Corp., under the State Administration of Quality Technical Supervision. SGS Hong Kong was found in 1959. Together, SGS boats over 78 branches and 150 laboratories with over 15,000 professionals in mainland China and Hong Kong.

Our capabilities are competently embodied in servicing the supply chains of various sectors such as agricultural, minerals, petrochemicals, industrial, consumer products, automotive and life science. For years, SGS has geared up its innovation efforts and collateral resources in the areas of environmental protection, alternative energy, energy efficiency and low carbon initiatives. The testing, inspection and certification services we provide help local and overseas business, governments and institutions develop sustainable solutions that balance People, Planet and Profit.

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SUMMARY OF INTERNATIONAL EYEWEAR SAFETY REQUIREMENTS

FOR ADULT OR CHILD SUNGLASSES				
Region	MANDATORY		VOLUNTARY	
	Physical Requirements	Chemical Requirements	Physical Requirements	Chemical Requirements
Europe	Harmonized standard of PPE Regulation (EU) 2016/425 EN ISO 12312-1	Release of Nickel (EN16128)	Nil	Nil
		Cadmium Content (EN1122)		
		Total Lead Content		
		Organotin		
		Phthalates		
		Short Chain Chlorinated Paraffin (SCCP) Content		
		8 Polycyclic Aromatic Hydrocarbons (PAHs)		
		Substances of very high concern (SVHCs)		
		Decabromodiphenyl Ether (Deca-BDE)		
		Heavy Metals in Packaging Material (Directive 94/62/EC)		
US	Lens Impact Resistance (Drop Ball Test) 21 CFR 801.410 for Lens only CPSC Physical and Mechanical Test (for Child)	Phthalates (California)	ANSI Z80.3	Release of Nickel (EN16128)
		Lead, Cadmium, Mercury and Chromium VI Toxics in Packaging Clearing House (TPCH)		Cadmium Content
		Total Lead Content (for Child only) (CPSIA and California)		Total Lead Content
Australia	Consumer Goods (Sunglasses and Fashion Spectacles) Safety Standard 2017	Phthalates (DEHP Content) (for Child only)	AS/NZS 1067.1	Release of Nickel (EN16128)
Canada / Mexico	Nil	Cellulose Nitrate CCPSA (S.C. 2010 c.21) Schedule 2 Item 2	ANSI Z80.3	Release of Nickel (EN16128)
China	QB/T 2457 GB 10810.3	Nil	Nil	Nil
Korea	Safety Standard Conformity for Household Products Annex 7 / General Application Safety Standards of Children's Products Cl.3.1.3.2	Release of Nickel	KS G ISO 12312-1	Nil
		Cadmium Content (for Child only)		
		Total Lead Content (for Child only)		
		Phthalates (for Child only)		
		Soluble Heavy Metals (for Child only)		
		Asbestos (for Child only)		

FOR ADULT OR CHILD OPTICAL FRAME				
Region	MANDATORY		VOLUNTARY	
	Physical Requirements	Chemical Requirements	Physical Requirements	Chemical Requirements
Europe	Harmonized standard under Medical Device Directive (93/42/EEC) EN ISO 12870	Release of Nickel (EN16128)	Nil	Nil
		Cadmium Content (EN1122)		
		Total Lead Content		
		Organotin		
		Phthalates		
		Short Chain Chlorinated Paraffin (SCCP) Content		
		8 Polycyclic Aromatic Hydrocarbons (PAHs)		
		Substances of very high concern (SVHCs)		
		Decabromodiphenyl Ether (Deca-BDE)		
US	Lens Impact Resistance (Drop Ball Test) 21 CFR 801.410 for Lens only CPSC Physical and Mechanical Test (for Child)	Phthalates (California)	ANSI Z80.5	Release of Nickel (EN16128)
		Lead, Cadmium, Mercury and Chromium VI Toxics in Packaging Clearing House (TPCH)		Cadmium Content
		Total Lead Content (for Child only) (CPSIA and California)		Total Lead Content
AUS	Nil	Phthalates (DEHP Content) (for Child only)	AS/NZS ISO 12870	Release of Nickel (EN16128)
Canada / Mexico	Nil	Cellulose Nitrate CCPSA (S.C. 2010 c.21) Schedule 2 Item 2	ANSI Z80.5	Release of Nickel (EN16128)
China	GB/T 14214	Nil	Nil	Nil
Korea	Safety Standard Conformity for Household Products Annex 8 / General Application Safety Standards of Children's Products Cl.3.1.3.2	Release of Nickel	KS G ISO 12870	Nil
		Cadmium Content (for Child only)		
		Total Lead Content (for Child only)		
		Phthalates (for Child only)		
		Soluble Heavy Metals (for Child only)		
		Asbestos (for Child only)		

FOR READING GLASSES				
Region	MANDATORY		VOLUNTARY	
	Physical Requirements	Chemical Requirements	Physical Requirements	Chemical Requirements
Europe	Harmonized standard under Medical Device Directive (93/42/EEC) EN 14139	Release of Nickel (EN16128)	Nil	Nil
		Cadmium Content (EN1122)		
		Total Lead Content		
		Organotin		
		Phthalates		
		Short Chain Chlorinated Paraffin (SCCP) Content		
		8 Polycyclic Aromatic Hydrocarbons (PAHs)		
		Substances of very high concern (SVHCs)		
		Decabromodiphenyl Ether (Deca-BDE)		
		Heavy Metals in Packaging Material (Directive 94/62/EC)		
US	Lens Impact Resistance (Drop Ball Test) 21 CFR 801.410 for Lens only	Phthalates (California)	ANSI Z80.31	Release of Nickel (EN16128)
		Lead, Cadmium, Mercury and Chromium VI Toxics in Packaging Clearing House (TPCH)		Cadmium Content
				Total Lead Content
AUS	Nil	Nil	AS/NZS ISO 16034	Release of Nickel (EN16128)
China	GB 13511-1	Nil	Nil	Nil

RECALL CASES

RISK TYPE

DAMAGE TO SIGHT



INSUFFICIENT PROTECTION FROM UV LIGHT

The transmission of UV light is too high. Consequently, the sunglasses do not protect the eyes sufficiently from the harmful effects of UV light. [1], [2]

RISK TYPE

INJURIES



INCORRECT INFORMATION OF FILTER CATEGORY

The sunglasses have a category 4 protection filter, but the labeling indicates category 3. Given that they do not have the warning 'Not suitable for driving motor vehicles or road use', which is required for category 4 sunglasses, consumers may use them while driving. This could affect the user's vision and might lead to a road accident. [3], [4]

RISK TYPE

CHEMICAL



VIOLET THE REACH REGULATION

The product poses a chemical risk because the frame releases 2.1 µg/cm2/week of nickel while the left temple releases 0.56 µg/cm2/week, exceeding the limit value of 0.5 µg/cm²/week. [5]

COMMON FAILURE

	REQUIREMENTS	POSSIBLE ROOT CAUSE
UNIFORMITY OF GRADIENT SUNGLASSES	The relative difference in the luminous transmittance value between any two points of the filter within the sections parallel to the line connecting the two reference points shall not be greater than 10% (For filter category 0, 1, 2 and 3)	The color change within the full size of the gradient-tinted filter is not in vertical direction
WIDE-ANGLE SCATTERING (HAZE VALUE)	The wide-angle scattering of the filters in the condition as supplied by the manufacturer shall not exceed the value of 3 %.	Poor quality of lens surface/ finishing, i.e. surface roughness
COVERAGE AREA	Adult sunglasses: The sunglasses shall cover two ellipses with a horizontal diameter of 40 mm and a vertical diameter of 28 mm, the centres of which are separated by 64 mm Children sunglasses: The sunglasses shall cover two ellipses with a horizontal diameter of 34 mm and a vertical diameter of 24 mm, the centres of which are separated by 54 mm	The insufficient size of sunglasses' filters

BLUE LIGHT VS UV LIGHT

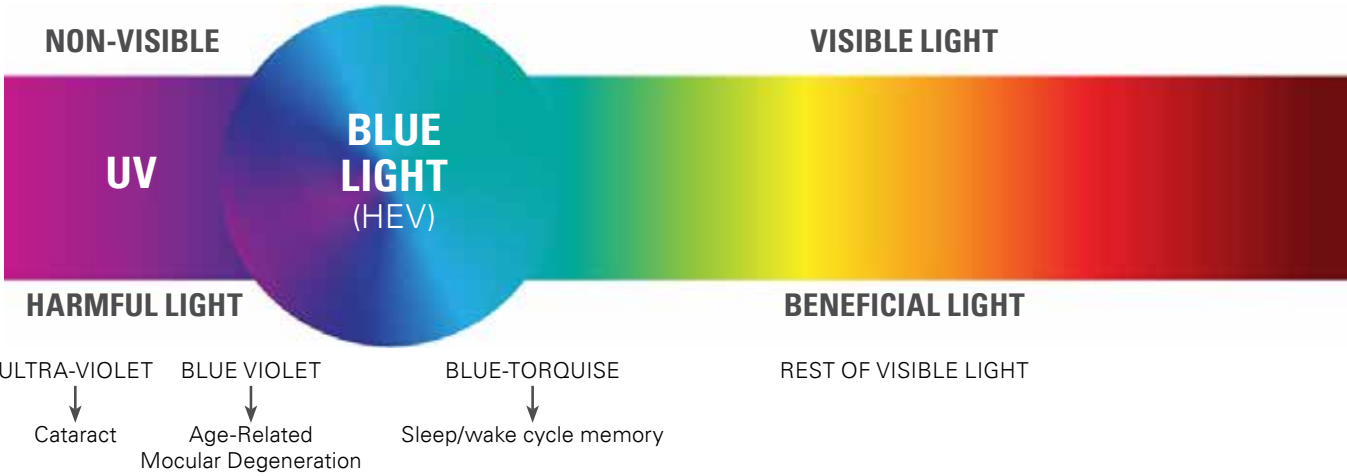
We call the light at a wavelength range of 380nm-780nm that human eyes can see as visible light. According to most international or national standards, blue light is in the wavelength range between 400nm and 500nm.

Blue light, also called High Energy Visible (HEV) light has the highest sensitivity to the retina and the most robust penetration in visible light. In theory, blue light may cause damage to specific eye tissues. However, we should be aware of the following facts:

1. The eye itself can block some blue light, and the retina also contains antioxidants to help filter blue light.
2. Although people associate blue light with computers and mobile phones, the largest source of blue light is sunlight. Other sources include fluorescent lights and LED lights. The blue light exposure on the screen is much less than sun exposure.
3. American Ophthalmic Association, an authoritative organization, said that blue light could be exposed to computers, televisions, mobile phones and tablets, but there is currently no scientific evidence that blue light from digital devices can cause eye damage.

Blue light is not necessarily harmful to the eyes, but ultraviolet (UV) light, ranging from 280nm-380nm (some standards use 280nm-400nm), will necessarily hurt our eyes. Because UV light has higher energy and is invisible light, it is easy to be ignored. Even if the sky is cloudy, there is still much ultraviolet light. The risk of developing macular degeneration can also cause early cataracts.

People, especially children, should wear sunglasses that block UV light for outdoor activities to protect their eyes. However, it should be noted that even if the lenses of sunglasses are dark, they are not equivalent to blocking UV light. Consumers should pay attention to the glasses or sunglasses that are stated to block UV light, which transparent or light-colored lenses can also block UV light effectively.



Q & A

LUMINOUS VS. UV TRANSMITTANCE – THE DARKER THE BETTER?

Darker sunglasses reduce the amount of visible (luminous) light that pass through the lenses when compared with lighter tints. However, they don't necessarily provide greater protection from invisible UV rays.

As for very dark sunglasses, they are not suitable for road use and driving.

WHICH COLOUR OF SUNGLASS LENSES IS THE BEST?

Lens colour is a personal choice and doesn't affect how well the lenses protect your eyes from UV light. As long as it can effectively block ultraviolet rays, it can protect the eyes but pay attention to whether it is comfortable upon wearing and whether it is suitable for the activities you are engaged in. Brown is the most common because they distort the least colour perception and provide the brightest vision on cloudy days. Yellow or orange lenses are the most popular for activities / sports during the snowy season as it increases the contrast in haze, foggy or low-light condition for a sharper image.

SGS INDEPENDENTLY CHECKED MARK

MAKE A MARKETING DIFFERENCE WITH VERIFIED QUALITY & WIN THE HEARTS OF QUALITY-MINDED CONSUMERS

Are you trying to showcase your commitment to product quality to a target group of consumers who never compromises on this?

But even these most discerning consumers would find it challenging to see what is behind a product, asking question such as:

- How does it get tested?
- Does it function well?
- Is it durable and reliable?
- Does it live up to its claims?

Quality-driven consumers want to buy products that are set apart from others thus and use this information to help them make informed purchasing decisions.

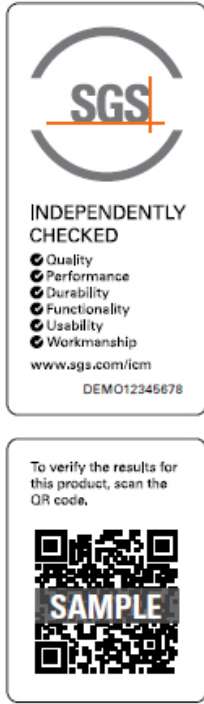
SGS's Independently Checked Mark is Hong Kong's first-ever ready-to-scan, product based tailored program which empowers retailers and brand owners and gives them a chance to deliver extra confidence to their consumers, with a primary focus on transparency, clarity and

multiple categories. Now, by putting our IC Mark direct on your product package, you can demonstrate your products' prowess in:

- Duality
- Performance
- Durability
- Functionality
- Usability
- Workmanship

To qualify to add the IC Mark to your product, submit it to our technical teams for due diligence. Successful applicants can display it enabling consumers to easily check out test information and results right on the spot with a quick scan of the QR code embedded within the mark.

Empower your consumers. When they are juggling a choice between similar products on the shelf, you can give them reassurance of quality through a quick QR code scan at the point of sale. Put your brand and product in pole position.



QR CODE SERVICE

USE "QR SCANNING" TO SEE YOUR PROMISES!

VISUAL REQUESTS

- Consumer, to purchase safe products
- Too many products to choose from
 - Too many product quality problems

- Sales channels, to provide safe choices
- Imported products should be diverse and safe
 - Appealing visual presentation of products is a must. Products should have high quality as well

- Brands, to sell safe products
- To produce safe products
 - To promote safe products

QR CODE SERVICE SAMPLE



- QR Code Service could be applied to textile products, hard goods, 3C and some food products, of which related testing standards are already in use and listed in SGS product category list.
- To finally get a SGS QR Code requires: 1) the manufacturing factory successfully pass the SGS QA audit, 2) the particular product samples are selected and tested by SGS, 3) the sample successfully passes full test at SGS.
- Please note that the above QR Code Service sample is only for your reference which does not represent the final service outcome. For more details please contact us directly.