

Test Report

Number: SZHH01966094

Applicant: SHENZHEN TOPWELL OPTICS LIMITED
PLANT 402, NO. 112 HENGPING ROAD, BAOAN
COMMUNITY, YUANSHAN STREET, LONGGANG
DISTRICT, SHENZHEN CITY

Date: Aug 23, 2024

Attn: Ken Xu

Sample Description:

Eight (8) pieces of submitted sample said to be :

Item Name : **Eyewear**
Item No. : **LL001-C1**
Reference No. : LL001-C1, LL001-C2
Manufacturer : Shenzhen Topwell Optics Limited
Country of Origin : China
Date Sample Received : Aug 21, 2024
Testing Period : Aug 21, 2024 ~ Aug 23, 2024



Tests conducted:

As requested by the applicant, refer to attached page(s) for details.



Test Report

Number: SZHH01966094

Conclusion:

Tested Sample
Submitted samples

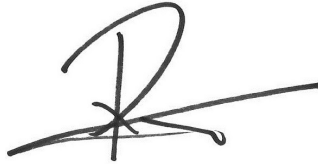
Standard/Test item
EN ISO 12312-1:2013+A1:2015 Eye and face protection –
Sunglasses and related eyewear– Part 1: Sunglasses for
general use
Excluding:
- Clause 5.3.2.2 - Driving in twilight or at night
- Clause 12 - Information and labelling

Resistance to ignition
- As per clause 9 of EN ISO 12312-1:2013+A1:2015

Result
Pass

Pass

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.



Rachel L. Guo
General Manager



Tests Conducted

1 Requirements for Sunglasses (For sample A)

Test standard: EN ISO 12312-1:2013+A1:2015 – Eye and face protection – Sunglasses and related eyewear
Part 1: Sunglasses for general use.

Test method refers EN ISO 12311:2013 Personal protective equipment – test methods for sunglasses and related eyewear.

Number of samples tested: Four (4) pairs of sunglasses

Note:

- (1) The submitted sunglasses were declared by applicant for adult use
- (2) **Physiological compatibility**
Sunglasses shall be designed and manufactured in such a way that when used under the conditions and for the purposes intended, they will not compromise the health (and safety) of the wearer. The risks posed by substances leaking from the device that may come into prolonged contact with the skin shall be reduced by the manufacturer to below any regulatory limit. Special attention shall be given to substances which are allergenic, carcinogenic, mutagenic or toxic to reproduction.
- (3) CE marking is not specified in EN ISO 12312-1:2013+A1:2015 but per Regulation (EU) 2016/425, Article 16 & Article 17, the CE marking shall be affixed visibly, legibly and indelibly to the sunglasses frame. The format of this CE marking was given in Annex II of Regulation (EC) No 765/2008

It was found that the CE marking was provided on the sunglasses frame, but the minimum height of CE marking was less than 5 mm.

Clause	Requirement	Result
4	Construction and materials	
4.1	Construction	P
4.2	Filter material and surface quality	P
4.3	Physiological compatibility	Note (2)
5	Transmittance	
5.2	Transmittance and filter categories	P
5.3	General transmittance requirements	
5.3.1	Uniformity of luminous transmittance	P
5.3.2	Requirements for road use and driving	
5.3.2.1	General requirements	P
5.3.2.1a	Spectral transmittance	P
5.3.2.1b	Detection of signal lights	P
5.3.2.2	Driving in twilight or at night	Remark #1 (i)
5.3.3	Wide angle scattering	P
5.3.4	Additional transmittance requirements for specific filter types	
5.3.4.1	Photochromic filters	NA
5.3.4.2	Polarizing filters	NA



Tests Conducted

5.3.4.3	Gradient filters	P
5.3.5	Claimed transmittance properties	NA (No claim)
6	Refractive power	
6.1	Spherical and astigmatic power	P
6.2	Local variations in refractive power	NA
6.3	Prism imbalance (relative prism error)	P
7	Robustness	
7.1	Minimum robustness of filters	P
7.2	Frame deformation and retention of filters	P
7.3	Impact resistance of the filter, strength level 1 (optional specification)	NA (No claim)
7.4	Increased endurance of sunglasses (optional specification)	NA (No claim)
7.5	Resistance to perspiration (optional specification)	NA (No claim)
7.6	Impact resistance of the filter, strength level 2 or 3 (optional specification)	NA (No claim)
8	Resistance to solar radiation	P
9	Resistance to ignition	P
10	Resistance to abrasion (optional specification)	NA (No claim)
11	Protective requirements	
11.1	Coverage area	P
11.2	Temporal protective requirements	NA
12	Information and labelling	
12.1	Information to be supplied with each pair of sunglasses	Remark #1 & Note (3)
12.2	Additional information	Remark #2

Abbreviation: P = Pass; NA = Not Applicable

Test data:

5.2 Transmittance and filter categories

Note: Per clause 5.3.4.3 all gradient filters shall meet the transmittance requirements within a 10mm radius circle around the reference point, three Measuring Points were chosen testing:

- (I) = The Reference Point
- (II) =10mm above the Reference Point
- (III) =10mm below the Reference Point

Range	MP	Left ocular (%)	Right ocular (%)	Filter category
380 - 780nm (τ_v)	I	49.29	52.27	1
	II	42.82	45.11	
	III	59.06	61.08	

Range	MP	Maximum transmittance (%)		Limit (%)	
		Left ocular	Right ocular	Left	Right



Tests Conducted

280-315nm (τ_{SUVB})	I	0.03	0.04	$\leq 0.05\tau_v$ (2.46)	$\leq 0.05\tau_v$ (2.61)
	II	0.04	0.07	$\leq 0.05\tau_v$ (2.14)	$\leq 0.05\tau_v$ (2.26)
	III	0.04	0.03	$\leq 0.05\tau_v$ (2.95)	$\leq 0.05\tau_v$ (3.05)
315-380nm (τ_{SUVA})	I	0.02	0.03	$\leq \tau_v$ (49.29)	$\leq \tau_v$ (52.27)
	II	0.04	0.07	$\leq \tau_v$ (42.82)	$\leq \tau_v$ (45.11)
	III	0.04	0.04	$\leq \tau_v$ (59.06)	$\leq \tau_v$ (61.08)

Requirement: (Table 1)

Consumer label	Technical label	Requirements		
Descriptive label	Filter category	Ultraviolet spectral range		Visible spectral range
		Maximum value of solar UV-B transmittance τ_{SUVB} 280 nm to 315 nm	Maximum value of solar UV-A transmittance τ_{SUVA} 315 nm to 380 nm	Range of luminous transmittance (τ_v) 380 nm to 780 nm
Light tint sunglasses	0	$0.05\tau_v$	τ_v	$\tau_v > 80\%$
	1	$0.05\tau_v$	τ_v	$43\% < \tau_v \leq 80\%$
General purpose sunglasses	2	1.0% absolute or $0.05\tau_v$, whichever is greater	$0.5\tau_v$	$18\% < \tau_v \leq 43\%$
	3	1.0% absolute	$0.5\tau_v$	$8\% < \tau_v \leq 18\%$
Very dark special purpose sunglasses	4	1.0% absolute	1.0% absolute or $0.25\tau_v$, whichever is greater	$3\% < \tau_v \leq 8\%$

5.3.1 Uniformity of luminous transmittance

Uniformity	Left ocular	Right ocular	Limit (%)
% variation within filter [relative to higher value]	1.62	6.35	≤ 10
% difference between filters [relative to lighter filter]	5.70		≤ 15



5.3.2.1a Spectral transmittance

Range	MP	Minimum transmittance (%)		Limit (%)	
		Left ocular	Right ocular	Left ocular	Right ocular
475 - 650nm	I	43.50	46.76	$\geq 0.2\tau_v$ (9.86)	$\geq 0.2\tau_v$ (10.45)
	II	36.43	38.51	$\geq 0.2\tau_v$ (8.56)	$\geq 0.2\tau_v$ (9.02)
	III	54.26	56.50	$\geq 0.2\tau_v$ (11.81)	$\geq 0.2\tau_v$ (12.22)

5.3.2.1b Detection of signal lights

Signal light	MP	Relative visual attenuation quotient, Q		Limit
		Left ocular	Right ocular	
Red	I	1.21	1.20	≥ 0.80
	II	1.27	1.26	
	III	1.15	1.14	
Yellow	I	1.07	1.07	≥ 0.60
	II	1.08	1.08	
	III	1.05	1.05	
Blue	I	0.95	0.95	≥ 0.60
	II	0.96	0.96	
	III	0.95	0.95	
Green	I	0.95	0.95	≥ 0.60
	II	0.93	0.93	
	III	0.96	0.97	

5.3.3 Wide angle scattering

Wide angle scattering (%)	Left ocular	Right ocular	Requirement
	1.53	0.64	≤ 3

6.1 Optical power of oculars mounted in spectacles

Optical power	Left ocular	Right ocular	Limit
Spherical power (m^{-1})	-0.02	0.00	± 0.12
Astigmatic power (m^{-1})	0.01	0.02	≤ 0.12
Difference of spherical power between left and right filters (m^{-1})	0.02		≤ 0.18



Tests Conducted

6.3 Prism imbalance (relative prism error)

Prismatic power difference (cm/m)			Limit (cm/m)
Horizontal	Base out	0.116	≤ 1.00
	Base in	--	≤ 0.25
Vertical		0.008	≤ 0.25

7.1 Minimum robustness of filters

Assessment	Result
Filter fracture	Not found
Filter deformation	Not found

7.2 Frame deformation and retention of filters

Assessment	Result
Frame fracture or crack at any point	Not found
Frame deformation (%)	0.39 Requirement: ≤2
Filter displace from the frame	Not found

8 Resistance to radiation

(a) Relative change in the luminous transmittance after irradiation

Left ocular (%)	0.10	Requirement ± 3% for category 0 ± 5% for category 1 ± 8% for category 2 ± 10% for categories 3 & 4
Right ocular (%)	0.67	

(b) Wide angle scattering after irradiation

Left ocular (%)	Right ocular (%)	Requirement (%)
1.08	1.30	≤ 3

(c) UV transmittance after irradiation process

Range	MP	Maximum transmittance (%)		Limit (%)	
		Left ocular	Right ocular	Left	Right
280-315nm (τ_{SUVB})	I	0.03	0.04	≤ 0.05 τ_v (2.47)	≤ 0.05 τ_v (2.63)
	II	0.03	0.04	≤ 0.05 τ_v (2.14)	≤ 0.05 τ_v (2.28)
	III	0.03	0.04	≤ 0.05 τ_v (2.94)	≤ 0.05 τ_v (3.04)
315-380nm (τ_{SUVA})	I	0.03	0.03	≤ τ_v (49.34)	≤ τ_v (52.62)
	II	0.04	0.04	≤ τ_v (42.71)	≤ τ_v (45.56)
	III	0.04	0.04	≤ τ_v (58.72)	≤ τ_v (60.83)

After the solar radiation process, the submitted sample also met the requirement for the ultraviolet spectral range for τ_v as given by Table 1 of the standard.



Tests Conducted

Remarks:

#1 - The manufacturer shall provide information for the user with each pair of sunglasses. This information shall be in the form of markings on the frame or separate information on labels, packaging, etc., that accompanies the sunglasses at the point of sale.

- a) Identification of model.
- b) Name and address of the manufacturer.
- c) Reference to this part of ISO 12312.
- d) Type of filter, if photochromic and/or polarizing.
- e) Number of the filter category (in both the faded and darkened states for photochromic filters) marked preferably on the frame or on the filter.
- f) Description of the filter category in the form of a symbol and/or verbal description and explanation of these symbols. The minimum height of the symbols shall be 5 mm.
- g) Restrictions of use, which shall include at least the following:
 - 1) Not for direct observation of the sun;
 - 2) Not for protection against artificial light sources e.g. solaria;
 - 3) Not for use as eye protection against mechanical impact hazards (for products not satisfying the requirements of 7.3 or 7.6);
 - 4) Any other restrictions deemed appropriate to be communicated by the manufacturer, e.g. increased or decreased transmittance of photochromic glasses due to high or low temperatures or to low light conditions.
- h) When the filter does not meet the necessary requirements for driving and for filter category 4, the following warning: "Not suitable for driving and road use" in the form of either of the symbols shown in figure 2 of EN ISO 12312-1:2013+A1:2015 and/or in writing. The minimum height of the symbol shall be 5 mm.
- i) When the filter has a luminous transmittance of less than 75% and higher than 8%, the following warning:
 - "Not suitable for driving in twilight or at night" or
 - "Not suitable for driving at night or under condition of dull light"The same warning applies to photochromic filters for which the luminous transmittance in the faded conditions is less than 75%.
- j) If relevant, instructions for care and cleaning if the wrong use of cleaning products might damage the sunglasses and a list of damaging products not suitable for cleaning.

#2 - The following information shall be available from the manufacturer on request.

- a) An explanation of the trademarks that are not universally recognized or foreseen by the users of this part of ISO 12312.
- b) The position of the reference point when different from the one defined in this part of ISO 12312.
- c) The country of origin (e.g. "made in").
- d) The nominal value of luminous transmittance.
- e) Transmission requirements applicable to this product.
- f) Polarization efficiency in cases of polarizing filters.
- g) The base material of filters and frame.



Tests Conducted

2 Requirements for Sunglasses (Partial test upon request for sample B)

Test standard: EN ISO 12312-1:2013+A1:2015 – Eye and face protection – Sunglasses and related eyewear - Part 1: Sunglasses for general use.

Test method refers EN ISO 12311:2013 Personal protective equipment – test methods for sunglasses and related eyewear.

Number of samples tested: One (1) pair of sunglasses.

Clause	Requirement	Result
9	Resistance to ignition	P

Abbreviation: P = Pass

End of report

The statements of conformity reported have considered the decision rule agreed, namely that Intertek have taken account of measurement uncertainty as calculated by Intertek, and applied according to ILAC-G8/09:2019-(Non-binary acceptance based on guard band $w = U$) except designation from the customer, regulation or test specification. This decision rule only applies to the numeric test results. Full details of our agreed decision rules and the associated risk can be viewed: <https://www.intertek.com.cn/diypage/upload/SZ-AP15-HLS-QA.pdf>.

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