

STRATEGIC SPORTS LIMITED
LIU HUANG DISTRICT, CHASHAN TOWN, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Description : BICYCLE HELMET FACE SHIELD
Style / Item No. : S-277M FACE SHIELD
Category : 3
Test Performed : BS EN ISO 12312-1:2013+A1:2015
Sample Receiving Date : Mar 01, 2016
Test Performing Date : Mar 01, 2016 to Mar 22, 2016
Test Result(s) : For further details, please refer to the following page(s)

Signed for and on behalf of
Guangzhou Branch,
SGS-CSTC Ltd.

Lell Wu
Approved Signatory



Test Conducted: Based on **BS EN ISO 12312-1:2013+A1:2015** Eye and face protection - Sunglasses and related eyewear Part 1: Sunglasses for general use

Test Results: Details shown as following table

Clause	Test Method/Requirement	Result
4	Construction and materials	
4.1	Construction When tested in accordance with ISO 12311:2013, Clause 6, areas of the sunglass, including the frame and the edges of the filters, if in a rimless or semi-rimless style, that might, during intended use, come into contact with the wearer, shall be smooth and without sharp projections.	Pass
4.2	Filter material and surface quality When tested in accordance with ISO 12311:2013, 6.2, except in a marginal area 5 mm wide, sunglass filters shall have no material or machining defects within an area of 30 mm diameter around the reference point that might impair vision, e.g. bubbles, scratches, inclusions, dull spots, pitting, mould marks, notches, reinforced areas, specks, beads, water specks, pocking, gas inclusions, splintering, cracks, polishing defects or undulations.	Pass
4.3	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. NOTE 1 Reactions may be generated by excessive pressure due to a poor fit on the face, chemical irritation or allergy. Rare or idiosyncratic reactions may occur to any material and may indicate the need for the individual to avoid particular types of frames. NOTE 2 Specific national regulations with regard to restriction of certain chemical substances should be observed, e.g. on nickel release by metal parts in prolonged contact with the skin. See ISO 12870, 4.2.3, for test methods and requirements on this parameter.	N/T
5	Transmittance	
5.1	Test methods Transmittance values shall be determined in accordance with ISO 12311:2013, Clause 7.	



Clause	Test Method/Requirement	Result																																																
5.2	<p>Transmittance and filter categories</p> <p>Depending upon their luminous transmittance at their reference point, sunglass filters for general use shall be attributed to one of five filter categories. Unless the filter is one of the following, category 0 shall not be claimed:</p> <ul style="list-style-type: none"> — a filter for which specific protection against any part of the solar spectrum is claimed; — a photochromic filter in its faded state. <p>The range of the luminous transmittance of these five categories is given by the values in Table 1. An overlap of the transmittance values shall be not more than $\pm 2\%$ (absolute) between the categories 0, 1, 2 and 3. There is no overlap in transmittance values between categories 3 and 4.</p> <p>The maximum deviation for declared luminous transmittance value shall be $\pm 3\%$ absolute for the transmittance values falling in categories 0 to 3 and $\pm 30\%$ relative to the stated value for the transmittance values falling in category 4.</p> <p>When describing the transmittance properties of photochromic filters, two categories for transmittance values are generally used. These two values correspond to the faded state and to the darkened state of the filter.</p> <p>In the case of gradient filters, the transmittance value at the reference point shall be used to characterize the luminous transmittance and the category of the filter.</p> <p>For gradient filters, the overlap in luminous transmittance allowed between categories shall be double that for uniformly tinted filters.</p> <p>Table 1 also specifies the UV requirements for sunglass filters for general use and, when the filters are claimed by the manufacturer to protect against IR radiation, the IR requirements.</p> <p style="text-align: center;">Table 1 — Transmittance for sunglass filters for general use</p> <table border="1" data-bbox="300 1223 1246 1803"> <thead> <tr> <th data-bbox="300 1223 443 1272">Consumer label</th> <th data-bbox="443 1223 555 1272">Technical label</th> <th colspan="4" data-bbox="555 1223 1246 1272">Requirements</th> </tr> <tr> <th data-bbox="300 1272 443 1541">Descriptive label</th> <th data-bbox="443 1272 555 1541">Filter category</th> <th colspan="2" data-bbox="555 1272 884 1317">Ultraviolet spectral range</th> <th data-bbox="884 1272 1102 1317">Visible spectral range</th> <th data-bbox="1102 1272 1246 1350">Enhanced infrared absorption^a</th> </tr> <tr> <td></td> <td></td> <th data-bbox="555 1350 735 1541">Maximum value of solar UV-B transmittance τ_{SUVB} 280 nm to 315 nm</th> <th data-bbox="735 1350 884 1541">Maximum value of solar UV-A transmittance τ_{SUVA} 315 nm to 380 nm</th> <th data-bbox="884 1350 1102 1541">Range of luminous transmittance τ_V 380 nm to 780 nm</th> <th data-bbox="1102 1350 1246 1541">Maximum value of solar IR transmittance τ_{SIR} 780 nm to 2 000 nm</th> </tr> </thead> <tbody> <tr> <td data-bbox="300 1541 443 1603">Light tint sunglasses</td> <td data-bbox="443 1541 555 1574">0</td> <td data-bbox="555 1541 735 1574">0,05 τ_V</td> <td data-bbox="735 1541 884 1574">τ_V</td> <td data-bbox="884 1541 1102 1574">$\tau_V > 80\%$</td> <td data-bbox="1102 1541 1246 1574">τ_V</td> </tr> <tr> <td></td> <td data-bbox="443 1574 555 1603">1</td> <td data-bbox="555 1574 735 1603">0,05 τ_V</td> <td data-bbox="735 1574 884 1603">τ_V</td> <td data-bbox="884 1574 1102 1603">43 % < τ_V ≤ 80 %</td> <td data-bbox="1102 1574 1246 1603">τ_V</td> </tr> <tr> <td data-bbox="300 1603 443 1709">General purpose sunglasses</td> <td data-bbox="443 1603 555 1677">2</td> <td data-bbox="555 1603 735 1677">1,0 % absolute or 0,05 τ_V, whichever is greater</td> <td data-bbox="735 1603 884 1677">0,5 τ_V</td> <td data-bbox="884 1603 1102 1677">18 % < τ_V ≤ 43 %</td> <td data-bbox="1102 1603 1246 1677">τ_V</td> </tr> <tr> <td></td> <td data-bbox="443 1677 555 1709">3</td> <td data-bbox="555 1677 735 1709">1,0 % absolute</td> <td data-bbox="735 1677 884 1709">0,5 τ_V</td> <td data-bbox="884 1677 1102 1709">8 % < τ_V ≤ 18 %</td> <td data-bbox="1102 1677 1246 1709">τ_V</td> </tr> <tr> <td data-bbox="300 1709 443 1803">Very dark special purpose sunglasses</td> <td data-bbox="443 1709 555 1803">4</td> <td data-bbox="555 1709 735 1803">1,0 % absolute</td> <td data-bbox="735 1709 884 1803">1,0 % absolute or 0,25 τ_V, whichever is greater</td> <td data-bbox="884 1709 1102 1803">3 % < τ_V ≤ 8 %</td> <td data-bbox="1102 1709 1246 1803">τ_V</td> </tr> </tbody> </table> <p data-bbox="300 1803 1246 1854">NOTE The upper limit of UV-A at 380 nm coincides with that taken in ophthalmic optics and in ISO 20473, <i>Optics and photonics — Spectral bands</i>.</p> <p data-bbox="300 1854 1246 1883">^a Only applicable to sunglass filters recommended by the manufacturer as a protection against infrared radiation.</p>	Consumer label	Technical label	Requirements				Descriptive label	Filter category	Ultraviolet spectral range		Visible spectral range	Enhanced infrared absorption ^a			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	Maximum value of solar IR transmittance τ_{SIR} 780 nm to 2 000 nm	Light tint sunglasses	0	0,05 τ_V	τ_V	$\tau_V > 80\%$	τ_V		1	0,05 τ_V	τ_V	43 % < τ_V ≤ 80 %	τ_V	General purpose sunglasses	2	1,0 % absolute or 0,05 τ_V , whichever is greater	0,5 τ_V	18 % < τ_V ≤ 43 %	τ_V		3	1,0 % absolute	0,5 τ_V	8 % < τ_V ≤ 18 %	τ_V	Very dark special purpose sunglasses	4	1,0 % absolute	1,0 % absolute or 0,25 τ_V , whichever is greater	3 % < τ_V ≤ 8 %	τ_V	Pass See annex 1
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Clause	Test Method/Requirement	Result
5.3	General transmittance requirements	
5.3.1	<p>Uniformity of luminous transmittance The relative difference in the luminous transmittance value between any two points of the filter within a circle 40 mm in diameter around the reference point or to the edge of the filter less the marginal zone 5 mm wide, whichever is less, shall not be greater than 10 % (relative to the higher value), except for category 4 where it shall not be greater than 20 %.</p> <p>The geometric or boxed centre takes the place of the reference point if this is not known.</p> <p>In the case of mounted gradient filters, this requirement shall be limited to sections parallel to the line connecting the two reference points.</p> <p>For mounted filters, the relative difference between the luminous transmittance value of the filters at the reference point for the right and left eyes shall not exceed 15 % (relative to the lighter filter).</p> <p>Changes of luminous transmittance that are caused by thickness variations due to the design of the filter are permitted. For verification, the test method in ISO 12311:2013, Annex L shall be used.</p>	<p>Pass See annex 2</p>
5.3.2	Requirements for road use and driving	
5.3.2.1	<p>General Filters suitable for road use and driving shall be of categories 0, 1, 2 or 3 and shall additionally meet the following three requirements.</p>	Pass
5.3.2.2	<p>Spectral transmittance For wavelengths between 475 nm and 650 nm, the spectral transmittance of filters suitable for road use and driving shall be not less than 0,2 τ_v.</p>	<p>Pass See annex 3</p>
5.3.2.3	<p>Detection of signal lights The relative visual attenuation quotient Q of filters of categories 0, 1, 2 and 3 suitable for road use and driving shall be not less than 0,80 for red signal light, not less than 0,60 for yellow, green and blue signal lights. The relative spectral distribution of radiation emitted by incandescent signal lights shall apply in accordance with ISO 12311:2013, 7.8.</p>	<p>Pass See annex 4</p>
5.3.2.4	<p>Driving in twilight or at night Sunglass filters with a luminous transmittance of less than 75 % shall not be used for road use and driving in twilight or at night. In the case of photochromic sunglass filters, this requirement applies when tested in accordance with ISO 12311:2013, 7.11.</p>	N/A
5.3.3	<p>Wide angle scattering When tested in accordance with ISO 12311:2013, 7.9, at the reference point, the wide angle scattering of the filters in the condition as supplied by the manufacturer shall not exceed the value of 3 %.</p>	<p>Pass See annex 5</p>
5.3.4	Additional transmittance requirements for specific filter types	
5.3.4.1	<p>Photochromic filters The categories of the photochromic filter shall be determined by its luminous transmittance in its faded state τ_{v0} and its luminous transmittance in its darkened state τ_{v1} achieved after 15 min irradiation according to ISO 12311:2013, 7.11. In both states, the requirements specified in 5.2 and 5.3.2 shall be met. For photochromic filters, τ_{v0}/τ_{v1} shall be $\geq 1,25$.</p>	N/A



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Clause	Test Method/Requirement	Result
5.3.4.2	<p>Polarizing filters If the filters in the sunglasses are claimed to be polarizing, when tested in accordance with ISO 12311:2013, 7.10.1, the filters shall be fitted in the frame so that their planes of transmission do not deviate from the vertical, or from the specified direction if different from the vertical, by more than $\pm 5^\circ$. Additionally, any misalignment between the planes of transmission of the left and right filters shall not be greater than 6°. In the case of clip-ons, the misalignment shall be tested in the position assumed to be taken when mounted on the sunglasses. When tested in accordance with ISO 12311:2013, 7.10.2, the polarization efficiency shall be $> 78\%$ for filter categories 2, 3, 4 and $> 60\%$ for filter category 1. Filters of category 0 do not have any useful polarizing effect.</p> <p>NOTE These values are equivalent to ratios of the transmittance values parallel and perpendicular to the plane of transmission of approximately 8:1 and 4:1 respectively.</p>	N/A
5.3.4.3	Gradient filters	
5.3.4.3.1	<p>General Gradient filters shall meet the transmittance requirements within a 10 mm radius circle, around the reference point. Uniformity of transmission is subject to the requirements of 5.3.1.</p>	N/A
5.3.4.3.2	<p>Determination of the filter category The filter category of gradient filters shall be determined by the luminous transmittance value at the reference point. The filter category determined at the reference point shall be used to define whether the filters are suitable for road use and driving according to 5.3.2.</p>	N/A
5.3.5	Claimed transmittance properties For reference, see Annex A.	
5.3.5.1	Blue-light absorption/transmittance	
5.3.5.1.1	<p>Blue-light absorption In the case where it is claimed that a filter has $x\%$ blue-light absorption, the solar blue-light transmittance, τ_{sb}, of the filter shall not exceed $(100,5-x)\%$.</p>	N/A
5.3.5.1.2	<p>Blue-light transmittance In the case where it is claimed that a filter has less than $x\%$ blue-light transmittance, the solar blue-light transmittance, τ_{sb}, of the filter shall not exceed $(x + 0,5)\%$.</p>	N/A
5.3.5.2	UV absorption/transmittance	
5.3.5.2.1	<p>General Requirements for the transmittance of filters for sunglasses in UV-A and UV-B shall be as given in Table 1. In cases where it is claimed that a product reaches a certain percentage of UV absorption or UV transmittance, the relevant requirement(s) below shall apply.</p>	N/A
5.3.5.2.2	<p>Solar UV absorption In the case where it is claimed that a filter has $x\%$ UV absorption, the solar UV transmittance of the filter τ_{SUV} shall not exceed $(100,5-x)\%$.</p>	N/A
5.3.5.2.3	<p>Solar UV transmittance In the case where it is claimed that a filter has less than $x\%$ UV transmittance, the solar UV transmittance of the filter τ_{SUV} shall not exceed $(x + 0,5)\%$.</p>	N/A
5.3.5.2.4	Solar UV-A absorption	N/A



Clause	Test Method/Requirement	Result						
	In the case where it is claimed that a filter has $x\%$ UV-A absorption, the solar UV-A transmittance of the filter $rSUVA$ shall not exceed $(100,5 - x)\%$.							
5.3.5.2.5	Solar UV-A transmittance In the case where it is claimed that a filter has less than $x\%$ UV-A transmittance, the solar UV-A transmittance of the filter $rSUVA$ shall not exceed $(x + 0,5)\%$.	N/A						
5.3.5.2.6	Solar UV-B absorption In the case where it is claimed that a filter has $x\%$ UV-B absorption, the solar UV-B transmittance of the filter $rSUVB$ shall not exceed $(100,5 - x)\%$.	N/A						
5.3.5.2.7	Solar UV-B transmittance In the case where it is claimed that a filter has less than $x\%$ UV-B transmittance, the solar UV-B transmittance of the filter $rSUVB$ shall not exceed $(x + 0,5)\%$.	N/A						
5.3.5.3	Antireflective coated sunglasses In the case where sunglasses are claimed to be antireflective coated, the luminous reflectance ρ_v of the filter as measured from the eye-side of the filter shall be less than $2,5\%$.	N/A						
5.3.5.4	Enhanced infrared absorption Sunglass filters for which enhanced infrared absorption is claimed shall meet the requirements as given in column 6 of Table 1.	N/A						
6	Refractive power							
6.1	<p>Spherical and astigmatic power The requirements apply in the "as-worn" position and the sunglass shall be tested according to ISO 12311:2013, 8.1. The spherical power and astigmatic power shall not exceed the tolerances given in Table 2, where D_1 and D_2 are the powers in the two principal meridians of the sunglass filter.</p> <p style="text-align: center;">Table 2 — Spherical and astigmatic power</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Spherical power</th> <th>Astigmatic power</th> </tr> </thead> <tbody> <tr> <td>Mean value of the optical power values (D_1, D_2) in the two principal meridians. $(D_1+D_2)/2$ dioptres</td> <td>Absolute difference between the optical power values (D_1, D_2) in the two principal meridians. $D_1 - D_2$ dioptres</td> </tr> <tr> <td style="text-align: center;">$\pm 0,12$</td> <td style="text-align: center;">$\leq 0,12$</td> </tr> </tbody> </table> <p>The difference between the spherical powers of the right and the left filters in the mounted state shall not exceed $0,18$ dioptres.</p>	Spherical power	Astigmatic power	Mean value of the optical power values (D_1, D_2) in the two principal meridians. $(D_1+D_2)/2$ dioptres	Absolute difference between the optical power values (D_1, D_2) in the two principal meridians. $ D_1 - D_2 $ dioptres	$\pm 0,12$	$\leq 0,12$	Pass See annex 6
Spherical power	Astigmatic power							
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$\pm 0,12$	$\leq 0,12$							
6.2	Local variations in refractive power If during the measurements using the telescope a doubling or other aberration of the image is observed then the filters shall be tested at the reference point according to ISO 12311:2013, 8.3. The local values shall comply with the limit listed in Table 2. The measurement shall be made with a 5 mm aperture within a 20 mm circle centred on the reference point.	N/A						
6.3	Prism imbalance (relative prism error) The complete sunglass shall be tested in the "as-worn" position according to ISO 12311:2013, 8.2. For adults' sunglasses, use the diaphragm LB2 with $X_b = (32,0 \pm 0,2)$ mm For children's sunglasses, use the diaphragm LB2 with $X_b = (27,0 \pm 0,2)$ mm Alternatively, a diaphragm with a different X_b may be used if specified by the manufacturer.	Pass See annex 6						



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Clause	Test Method/Requirement	Result									
	<p>The prismatic power difference shall not exceed the values in Table 3.</p> <p style="text-align: center;">Table 3 — Prism imbalance</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Horizontal</th> <th>Vertical</th> </tr> <tr> <th>Base out prism dioptres</th> <th>Base in prism dioptres</th> <th>prism dioptres</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1,00</td> <td style="text-align: center;">0,25</td> <td style="text-align: center;">0,25</td> </tr> </tbody> </table>	Horizontal		Vertical	Base out prism dioptres	Base in prism dioptres	prism dioptres	1,00	0,25	0,25	
Horizontal		Vertical									
Base out prism dioptres	Base in prism dioptres	prism dioptres									
1,00	0,25	0,25									
7	Robustness										
7.1	<p>Minimum robustness of filters For complete sunglasses, including the filter portion of those where the sunglass frame and filter are integral parts of each other, when tested as specified in ISO 12311:2013, 9.1, none of the following defects shall appear.</p> <p>a) Filter fracture. A filter is considered to have fractured when — it cracks through its entire thickness and across a complete diameter into two or more separate pieces, or — a person with a visual acuity of at least 1,0 (6/6 or 20/20) can see, when viewing without magnification but wearing the appropriate correction, if any, for near vision, either a piece of material that has become detached from the filter surface or a corresponding surface defect.</p> <p>b) Filter deformation. A filter is considered to have been deformed if a mark appears on the white paper on the opposite side to that contacted by the ball. For clip-ons neither a) nor b) are applied.</p>	Pass									
7.2	<p>Frame deformation and retention of filters When tested in accordance with ISO 12311:2013, 9.6, the frame fitted with filters shall not:</p> <p>a) fracture or crack at any point; b) be permanently deformed from its original configuration by more than 2 % of the distance, c, between the boxed centres of the sunglass frame, that is the residual deformation x shall not exceed 0,02c (see Figure 18 in ISO 12311:2013); c) neither filter shall be displaced from the frame.</p>	N/A									
7.3	<p>Impact resistance of the filter, strength level 1 (optional specification) When tested in accordance with ISO 12311:2013, 9.3, the filter shall not fracture. A filter is considered to have fractured when — it cracks through its entire thickness and across a complete diameter into two or more separate pieces, or — a person with a visual acuity of at least 1,0 (6/6 or 20/20) can see, when viewing without magnification but wearing the appropriate correction, if any, for near vision, either a piece of material that has become detached from the filter surface or a corresponding surface defect, or — the test ball passes through the filter.</p> <p>This requirement also applies to the filter portions of complete sunglasses where the frame and the filters are integral parts of each other. If this requirement is met, testing according to 7.1 (minimum robustness) is not necessary.</p>	N/A									
7.4	<p>Increased endurance of sunglasses (optional specification) When an increased endurance is claimed, a complete sunglass is tested according to</p>	N/A									



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Clause	Test Method/Requirement	Result
	<p>ISO 12311:2013, 9.7. The sunglass shall not:</p> <p>a) fracture at any point;</p> <p>b) be permanently deformed (the sunglass is considered to be permanently deformed if the original distance between the sides at the measuring points have changed by more than 5 mm after 500 cycles);</p> <p>c) except for sunglasses with frames fitted with sprung joints, require more than light finger pressure to open and close the sides;</p> <p>d) for sunglasses with frames that are not fitted with sprung joints, have a side that closes under its own weight at any point in the opening/closing cycle, or for sides fitted with a sprung joint, the side shall still support its weight in the open position (i.e. opened to the fullest natural extent without activating the spring mechanism).</p>	
7.5	<p>Resistance to perspiration (optional specification)</p> <p>When the sunglass is tested in accordance with ISO 12311:2013, 9.10, there shall be:</p> <p>a) no spotting or colour change (excluding a loss of gloss to the surface) anywhere on the frame, excluding joints and screws, after testing for 8 h, and</p> <p>b) no corrosion, surface degradation or separation of any coating layer on the parts liable to come into prolonged contact with the skin during wear, i.e. the insides of the sides, bottom and lower parts of the rim and the inside of the bridge, after testing for a total of 24 h.</p> <p>Such defects shall be visible under the inspection conditions described in ISO 12311:2013, 6.2.</p> <p>If the sunglass frame is made from natural materials and the manufacturer recommends a cream or wax for its maintenance, then before testing, the frame(s) shall be prepared with this cream or wax according to the manufacturer's instructions. At the end of the test when the frame is checked for colour change or surface degradation, if the frame fails this requirement, use the cream or wax and wait for one day before checking again for colour change or surface degradation. If the frame has recovered its original appearance, the sunglass frame is considered to have passed the test while if the frame remains discoloured, the frame is considered to have failed the test.</p>	N/A
7.6	<p>Impact resistance of the filter, strength level 2 or 3 (optional specification)</p> <p>If an increased level of impact resistance strength is claimed, when tested as specified in ISO 12311:2013, 9.4 or 9.5, the filter shall not fracture.</p> <p>A filter is considered to have fractured when:</p> <ul style="list-style-type: none"> — it cracks through its entire thickness and across a complete diameter into two or more separate pieces, or — a person with a visual acuity of at least 1,0 (6/6 or 20/20) can see, when viewing without magnification but wearing the appropriate correction, if any, for near vision, either a piece of material that has become detached from the filter surface or a corresponding surface defect, or — if applicable, the test ball passes through the filter (applicable to 7.3 and 7.5, but not 7.1). <p>NOTE The maximum level of impact strength that can be claimed is 3.</p> <p>This requirement also applies to the filter portions of complete sunglasses where the frame and the filters are integral parts of each other.</p>	N/A
8	<p>Resistance to solar radiation</p> <p>Following irradiation as specified in ISO 12311:2013, 9.8, the relative change in the</p>	Pass See annex 7 &

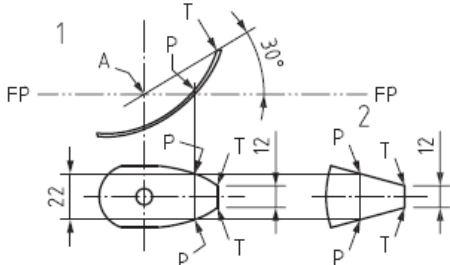


Clause	Test Method/Requirement	Result												
	<p>luminous transmittance of the filters referred to the initial τ_V (for photochromic filters, in the faded state when according to the method described in ISO 12311:2013) shall be less than or equal to the values shown in Table 4.</p> <p style="text-align: center;">Table 4 — Relative change in the luminous transmittance</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Filter category</th> <th>Relative change in the luminous transmittance $\Delta\tau_V/\tau_V = (\tau_V' - \tau_V)/\tau_V$</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>±3 %</td> </tr> <tr> <td>1</td> <td>±5 %</td> </tr> <tr> <td>2</td> <td>±8 %</td> </tr> <tr> <td>3</td> <td>±10 %</td> </tr> <tr> <td>4</td> <td>±10 %</td> </tr> </tbody> </table> <p>NOTE τ_V' is the luminous transmittance after irradiation.</p> <p>In addition, the following shall be met: a) the wide angle scattering shall not exceed the value of 3 %; b) for photochromic filters, τ_0/τ_1 shall be $\geq 1,25$; c) the UV requirements for the initial τ_V shall continue to be satisfied; d) all claimed transmittance requirements shall be met.</p>	Filter category	Relative change in the luminous transmittance $\Delta\tau_V/\tau_V = (\tau_V' - \tau_V)/\tau_V$	0	±3 %	1	±5 %	2	±8 %	3	±10 %	4	±10 %	8
Filter category	Relative change in the luminous transmittance $\Delta\tau_V/\tau_V = (\tau_V' - \tau_V)/\tau_V$													
0	±3 %													
1	±5 %													
2	±8 %													
3	±10 %													
4	±10 %													
9	<p>Resistance to ignition When sunglasses are tested in accordance with ISO 12311:2013, 9.9, they shall not ignite or continue to glow after withdrawal of the test rod.</p>	Pass												
10	<p>Resistance to abrasion (optional specification) Filters or filter surfaces that are claimed to provide a basic level of abrasion resistance shall meet the requirements of ISO 8980-5. A filter that is claimed to be abrasion resistant shall meet the requirement on both surfaces. If only one surface is claimed to be abrasion resistant, it shall be specified on the information that is supplied with the product. The surface form of the filter is restricted for testing; however, test results are applicable to claims for filters and filter surfaces with identical properties other than the surface radius. NOTE This part of ISO 12312 does not attempt to define the properties of filter surfaces with abrasion resistance superior to the basic level.</p>	N/A												
11	<p>Protective requirements</p>													
11.1	<p>Coverage area 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 and symmetrically placed on either side of the centre of the bridge of the frame, i.e. its vertical symmetry axis. For sunglasses intended to be worn by children, 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 and symmetrically placed on either side of the centre of the bridge of the frame. A different inter-pupillary distance may be used if specified by the manufacturer.</p>	Pass												
11.2	<p>Temporal protective requirements Very dark special purpose sunglasses (filter category 4) shall provide temporal shielding such that the ultraviolet and visible transmittances of the sunglass filter, frame and side are not greater than their values at the visual point at the following</p>	N/A												



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	<p>locations (see Figure 1):</p> <p>a) in the line of intersection of the frontal plane (tangent to the apex of the cornea) with the inner surface of the sunglass structure, to elevations of 11 mm above and below the horizontal plane through the reference point; and</p> <p>b) in a vertical line in the inner structure of the sunglass that is 30° back from the frontal plane and relative to the apex of the cornea, and to elevations of 6 mm above and below the horizontal plane through the reference point.</p> <p style="text-align: right;">Dimensions in millimetres</p> 	
12	Information and labelling	
12.1	<p>Information to be supplied with each pair of sunglasses.</p> <p>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. Where pictograms are used, an explanation of the significance of these pictograms shall also be available.</p> <p>The use information shall contain following items:</p> <p>a. Identification of model.</p> <p>b. Name and address of the manufacturer.</p> <p>c. Reference to this part of ISO 12312.</p> <p>d. Type of filter, if photochromic and/or polarizing.</p> <p>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.</p> <p>f. Description of the filter category in the form of a symbol and/or verbal description as given in below table 5. (Minimum height of the symbols shall be 5mm)</p>	<p>--</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>



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Clause	Test Method/Requirement	Result																						
	<p style="text-align: center;">Table 5 — Description of filter categories and assigned symbols</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Filter category</th> <th style="width: 30%;">Description</th> <th style="width: 30%;">Usage</th> <th style="width: 30%;">Symbol</th> </tr> </thead> <tbody> <tr> <td>0</td> <td rowspan="2">Light tint sunglasses</td> <td>Very limited reduction of sunglare</td> <td> IEC 60417-5955</td> </tr> <tr> <td>1</td> <td>Limited protection against sunglare</td> <td> ISO 7000-2948</td> </tr> <tr> <td>2</td> <td rowspan="2">General purpose sunglasses</td> <td>Good protection against sunglare</td> <td> ISO 7000-2949</td> </tr> <tr> <td>3</td> <td>High protection against sunglare</td> <td> ISO 7000-2950</td> </tr> <tr> <td>4</td> <td>Very dark special purpose sunglasses, very high sunglare reduction</td> <td>Very high protection against extreme sunglare, e.g. at sea, over snowfields, on high mountains or in desert</td> <td> ISO 7000-2951</td> </tr> </tbody> </table> <p style="font-size: small;">NOTE: The wording and/or the pictograms may be used.</p>	Filter category	Description	Usage	Symbol	0	Light tint sunglasses	Very limited reduction of sunglare	 IEC 60417-5955	1	Limited protection against sunglare	 ISO 7000-2948	2	General purpose sunglasses	Good protection against sunglare	 ISO 7000-2949	3	High protection against sunglare	 ISO 7000-2950	4	Very dark special purpose sunglasses, very high sunglare reduction	Very high protection against extreme sunglare, e.g. at sea, over snowfields, on high mountains or in desert	 ISO 7000-2951	
Filter category	Description	Usage	Symbol																					
0	Light tint sunglasses	Very limited reduction of sunglare	 IEC 60417-5955																					
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2	General purpose sunglasses	Good protection against sunglare	 ISO 7000-2949																					
3		High protection against sunglare	 ISO 7000-2950																					
4	Very dark special purpose sunglasses, very high sunglare reduction	Very high protection against extreme sunglare, e.g. at sea, over snowfields, on high mountains or in desert	 ISO 7000-2951																					
12.1	<p>a) g. Restrictions of use, which shall include at least the following:</p> <ul style="list-style-type: none"> - not for direct observation of the sun; - not for protection against artificial light sources, e.g. solaria; - not for use as eye protection against mechanical impact hazards (for products not satisfying the requirements of 7.3 or 7.5); - any other restrictions deemed appropriate by the manufacturer, eg. increased or decreased transmittance of photochromic glasses due to high or low temperatures or to low light conditions.; 	Pass																						
	<p>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 the symbols shown in figure 2 and/or in writing was provided. The minimum height of the symbol shall be 5 mm.</p> <div style="text-align: center;">  ISO 7000-2952A  ISO 7000-2952B </div> <p style="text-align: center; font-size: small;">Figure 2 — Symbol: “Not suitable for driving and road use”</p>	Pass																						
12.1	<p>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” should be provided. The same warning applies to photochromic filters for which the luminous transmittance in faded conditions is less than 75%.</p>	Pass																						
12.1	<p>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.</p>	Pass																						



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12.2	Additional information.	
	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.	

Model: S-277M Face Shield

Category: 3

Annex 1: Transmittance test result:

Sample No.		Ultraviolet spectral range		Visible spectral range	Assessment
		Maximum value of solar UV-B transmittance	Maximum value of solar UV-A transmittance	Range of luminous transmittance	
		280nm to 315nm	315nm to 380nm	380nm to 780nm	
1	Left	0.343%	1.525%	9.591%	Pass
	Right	0.343%	1.576%	9.566%	Pass

Annex 2: Uniformity of luminous transmittance test result:

Sample No.	Luminous transmittance (%)			Assessment
	Relative difference between maximum and minimum values (Left ocular)	Relative difference between maximum and minimum values (Right ocular)	Relative Difference between left and right oculars	
1	7.71%	5.55%	8.69%	Pass



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Annex 3: Spectral transmittance in the range 475nm to 650nm tests result:

Sample No.		Spectral transmittance (≥0.2μ)		Result
1	Left	≥0.2μ		Pass
	Right	≥0.2μ		Pass

Annex 4: Detection of signal lights tests result:

Sample No.		Red signal light (Q≥0.80)	Yellow signal light (Q≥0.60)	Green signal light (Q≥0.60)	Blue signal light (Q≥0.60)	Result
1	Left	0.90	0.92	1.06	1.11	Pass
	Right	0.88	0.92	1.06	1.10	Pass

Annex 5: Wide angle scattering tests result:

Sample No.	The wide angle scattering of the filter	Assessment
1	1.3%	Pass

Annex 6: Refractive power test result:

Sample No.	Spherical power (m ⁻¹) (D ₁ +D ₂)/2		Astigmatic power (m ⁻¹) ID ₁ -D ₂ I		Prismatic power (cm/m)			Assessment
	Left	Right	Left	Right	Horizontal		Vertical	
					Base out	Base in		
2	-0.078	-0.027	0.084	0.012	0.04	---	0.02	Pass

Annex 7: Resistance to solar radiation test result (Transmittance):

Sample No.	Ultraviolet spectral range		Visible spectral range	Relative Difference luminous transmittance between before and after Resistance to solar radiation	Assessment	
	Maximum value of solar UV-B transmittance	Maximum value of solar UV-A transmittance	Range of luminous transmittance			
	280nm to 315nm	315nm to 380nm	380nm to 780nm			
1	Left	0.350%	1.486%	9.398%	-2.01%	Pass
	Right	0.343%	1.590%	9.435%	-1.37%	Pass



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Annex 8: Resistance to solar radiation tests result (Wide angle scattering):

Sample No.	The wide angle scattering of the filter	Assessment
1	1.4%	Pass

Remark:

1. Pass means the test sample met the requirement of the test item.
2. N/A means not applicable.
N/T means not tested as per client's request.
3. Clause 12.2 will be provided by the manufacturer when on request

Sample photos:





<p>Side view</p>	
<p>Back view</p>	



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<p>Top view</p>	
<p>Bottom view</p>	

End of Report

