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INC. LABORATORIES

ACCREDITED
Test Laboratory
Certificate: 1722.01

Client: Thousand Oaks Optical
3997 Airway Ave.
Kingman, AZ 86401
USA

Date: 05 November 2015
Report: T10330-01-1
Issue: 1

Objective:

Contract testing to ISO 12312-2:2015(E) "Eye and face protection — Sunglasses and related eyewear — Part 2: Filters for direct observation of the sun".

Clauses: 4.1 Transmittance-General
4.2 Material and surface quality

Samples:

Black Polymer Film with Reflective Coating

Lot #	Description	Quantity	Sample ID
100215	Plastic Film 8.5" x 11" x 0.002"	1	0A-1

Date(s) submitted: 30 October 2015

Procedures:

Testing protocols in accord with good laboratory practice were employed for all tests.

All tests were conducted in a standard laboratory atmosphere unless otherwise specified.

Two pieces were cut from sample provided and measured.

Assessment Summary:

Date(s) tested: 03 November 2015

ISO 12312-2:2015(E) Requirements	Compliant	Non-Compliant
4 Requirements and associated test methods		
4.1 Transmittance		
4.1.1 General	X	
4.2 Material and surface quality	X	

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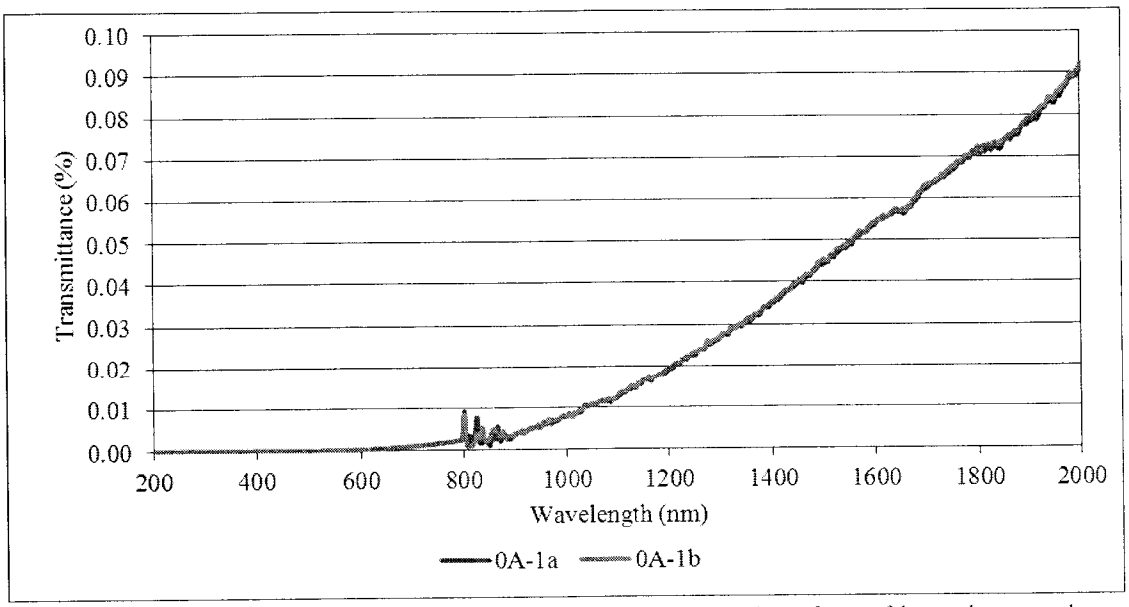
Results:

4.1.1 Transmittance-General

Sample ID:	0A-1a	0A-1b	Requirement
Luminous (τ_V) (%)	0.00021	0.00021	0.000061 to 0.0032
280 to 315nm (τ_{SUVB}) (%)	< 0.0001	< 0.0001	$\leq \tau_V$
315 to 380nm (τ_{SUVA}) (%)	< 0.0001	< 0.0001	$\leq \tau_V$
780 to 2000nm (τ_{SIR}) (%)	0.016	0.017	≤ 3
Pass/Fail:	Pass		



Note: Noise between 800 and 900nm is due to the detector changeover of the instrument and not a feature of the samples measured.

4.2.1 Filter material and surface quality; Result: Pass

Requirement: Except in a marginal area 5 mm wide, filters shall be free from defects likely to impair vision in use, such as bubbles, scratches, inclusions, dull spots, pitting, scouring, pocking, scaling, and undulations. Metal coated filter materials shall not exhibit more than one pinhole defect not greater than 200 μm in average diameter within any 5 mm diameter circular zone.

Estimates of Uncertainties:

ISO 12311:2013(E) Test Method	Estimated Uncertainty
7.1.1 Measurement of spectral transmittance	
0.0032% to 0.000061%	0.98% Relative

Estimated uncertainties have been calculate in accordance with the principles of ISO/IEC Guide 98-3:2008, Uncertainty of measurement-Part 3: Guide to the expression of uncertainty in measurement (GUM:1995).
Estimated uncertainties have a 95% confidence level.
A coverage factor (k) of 2.0 was used.