

## TEST REPORT

Mechanical & Hardgoods Laboratory

Report No. : YA80136/2014

Page : 1 of 6

Date : AUG. 29, 2014

**Shu Gie Industrial Co., Ltd.**

5F-16, No.2 Chenggong Road, Tainan City, Taiwan

**The following merchandise was submitted and identified by the applicant as:**

Product Description: Safety Spectacles  
Style/Item No.: 91532 Clear Lens  
Manufacturer/Vendor: Shu Gie Industrial Co., Ltd.  
Country of Origin: Taiwan

**We have tested the submitted sample(s) as requested and the following results were obtained:**

Test Requested: To comply with clause 5, 6.2.2, 6.2.3, 6.2.4 and 7.1.1 of ANSI/ISEA Z87.1-2010 American National Standard for Occupational and Educational Personal Eye and Face Protection Devices (Clause 5.4 excluded)

Test Method: --See following sheet(s)--

Test Result: --See following sheet(s)--

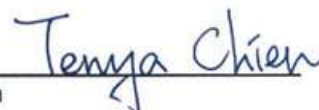
Date of Receipt: AUG. 19, 2014

Testing Period: AUG. 19 ~ 29, 2014

--- See Next Page ---

**Signed for and on behalf of  
SGS Taiwan Ltd.**

Tenya Chien  
Supervisor



Laboratory address:  
61, Kai-Fa Road, Nanzih Export Processing Zone, 81170, Kaohsiung, Taiwan

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## TEST REPORT

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### Test Method and Result

#### Clause

#### 5. General Requirements

#### 5.1 Optical Requirements

#### 5.1.1 Optical Quality

When tested in accordance with Section 9.1, protector lenses shall be free of striate, bubbles, waves and other visible defects which would impair their optical quality.

Results

Pass

#### 5.1.2 Luminous Transmittance

When tested in accordance with Section 9.2, clear lenses shall have a luminous transmission of not less than 85%.

Pass

### Finding

Lens Type	Luminous Transmittance Requirements	Test Value	
		Left Ocular	Right Ocular
Clear Lenses	85% min.	94.49 %	93.86 %

#### 5.1.3 Haze

When tested in accordance with Section 9.3, clear plano lenses shall not exhibit more than 3% haze.

Pass

### Finding

Lens Type	Haze Requirements	Test Value	
		Left Ocular	Right Ocular
Clear Plano Lenses	3% max. - Clear Lenses Only	0.2 %	0.1 %

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### Test Method and Result

#### Clause

5.1.4 Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors

Results

Pass

When tested in accordance with Section 9.4, the tolerance on refractive power, astigmatism and resolving power shall be as indicated in Table 1. When tested in accordance with Section 9.5, the tolerance on prism and prism imbalance shall be as indicated in Table 2.

#### Finding

Test/Property	Requirement	Test Value	
		Left Ocular	Right Ocular
Refractive Power	$\pm 0.06$ D	-0.0316	-0.0330
Astigmatism	$\leq 0.06$ D	0.0521	0.0518
Resolving Power	Pattern 20 min.	Pattern 20	Pattern 20
Prismatic Power	$\leq 0.50$ $\Delta$	0.32 $\Delta$	0.22 $\Delta$
Vertical Prism Imbalance	$\leq 0.25$ $\Delta$	0.00 $\Delta$	
Horizontal Prism Imbalance	$\leq 0.25$ $\Delta$ (Base In) $\leq 0.50$ $\Delta$ (Base Out)	0.35 $\Delta$ (Base Out)	

5.1.5 Refractive Power, Astigmatism, Prism and Prism Imbalance for Prescription Protectors

N/A

5.2 Physical Requirements

Pass

Protectors shall be free from projections, sharp edges or other defects which are likely to cause discomfort or injury during use.

5.2.1 Drop Ball Impact Resistance

Pass

When tested in accordance with Section 9.6, protector lenses shall not fracture when impacted by a 25.4 mm (1 in.) steel ball when dropped from a height of 127 cm (50 in.). Glass welding filter lenses shall be tested and used in conjunction with a safety plate in order to comply with the impact performance criteria.

5.2.2 Protector Acceptance Criteria

Pass

When each type test is conducted as indicated above, a complete device shall fail if any of the following occurs:

- piece fully detached from the inner surface
- fracture
- penetration of the rear surface
- lens not retained

**Remark:** N/A = Not Applicable.

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## TEST REPORT

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### Test Method and Result

#### Clause

#### Results

##### 5.2.3 Ignition

Pass

When tested in accordance with Section 9.7, protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of textiles or elastic bands) shall be tested.

##### 5.2.4 Corrosion Resistance of Metal Components

Pass

When tested in accordance with Section 9.8, metal components used in protectors shall be corrosion resistant to the degree that the function of the protector shall not be impaired by the corrosion. Lenses and electrical components are excluded from these requirements.

##### 5.2.5 Minimum Coverage Area

Pass

The eyewire and lens shall cover in plane view an area of not less than 40 mm (1.57 in.) in width and 33 mm (1.30 in.) in height (elliptical) in front of each eye, centered on the geometrical center of the lens.

Frames designed for small head sizes shall cover in plane view an area of not less than 34 mm (1.34 in.) in width and 28 mm (1.10 in.) in height (elliptical), centered on the geometrical center of the lens.

Frames designed for small head sizes shall be tested on the 54 mm (2.13 in.) PD headform and are permitted to have an eye size, including eyewire thickness, as small as 34 x 28mm (1.34 x 1.10 in.). Frames that are tested using the small headform shall be marked on the frame with the letter "H."

##### 5.3 Minimum Lens Thickness

N/A

The minimum lens thickness for specified protectors shall be those indicated in Table 3.

**Note.** For spectacle, plano, impact rated protector: No minimum thickness requirement.

##### 5.4 Marking Requirements

Excluded

##### 5.5 Other Requirements

N/A

##### 5.6 Replaceable Lenses

N/A

##### 5.7 Aftermarket Components

N/A

**Remark:** N/A = Not Applicable.

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## TEST REPORT

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### Test Method and Result

#### Clause

#### 6.2.2 High Mass Impact

When tested in accordance with Section 9.11, the complete device shall be capable of resisting an impact from a pointed projectile weighing 500g(17.6oz.) dropped from a height of 127cm(50.0in.).

Results

Pass

#### 6.2.3 High Velocity Impact

When tested in accordance with Section 9.12, the complete device shall be capable of resisting an impact from a 6.35 mm (0.25 in) diameter steel ball traveling at the velocity as 45.72 m/s. No contact with the eye of the headform is permitted as a result of impact.

Pass

### Finding

Determined	Remark	Result
6 out of 6 Passed	No contact with the eye of the head form and no piece shall be detached from the inner surface and the lens shall be retained in the frame and shall not fracture.	Pass

#### 6.2.4 Penetration Test (lenses only)

When tested in accordance with Section 9.13, lenses for all complete devices shall be capable of resisting penetration by a weighted needle with a total weight of 44.2 gm (1.56 oz.) dropped from a height of 127 cm (50.0 in.).

Pass

#### 7.1.1 Optional Transmittance Attributes

Refer to Table 7. Transmittance requirements for Ultraviolet Filters.

U6

### Finding

Scale U6	Maximum Effective Far-Ultra-Violet Average Transmittance	Maximum Near Ultra-Violet Average Transmittance %
Transmittance requirements	0.01 %	0.1 %
Result	0.00 %	0.04 %

#### 7.1.1 Optional Transmittance Attributes

Refer to Table 9. Transmittance requirements for Visible Light Filters

See Note\*

**Note\*:** Transmittance for visible light of tested sample didn't meet any scale requirements of Table 9

### Remark:

1. The samples are complete devices claimed by applicant.
2. 18 samples were provided by applicant and sample was randomly selected by SGS to be assessed.

--- See Next Page ---



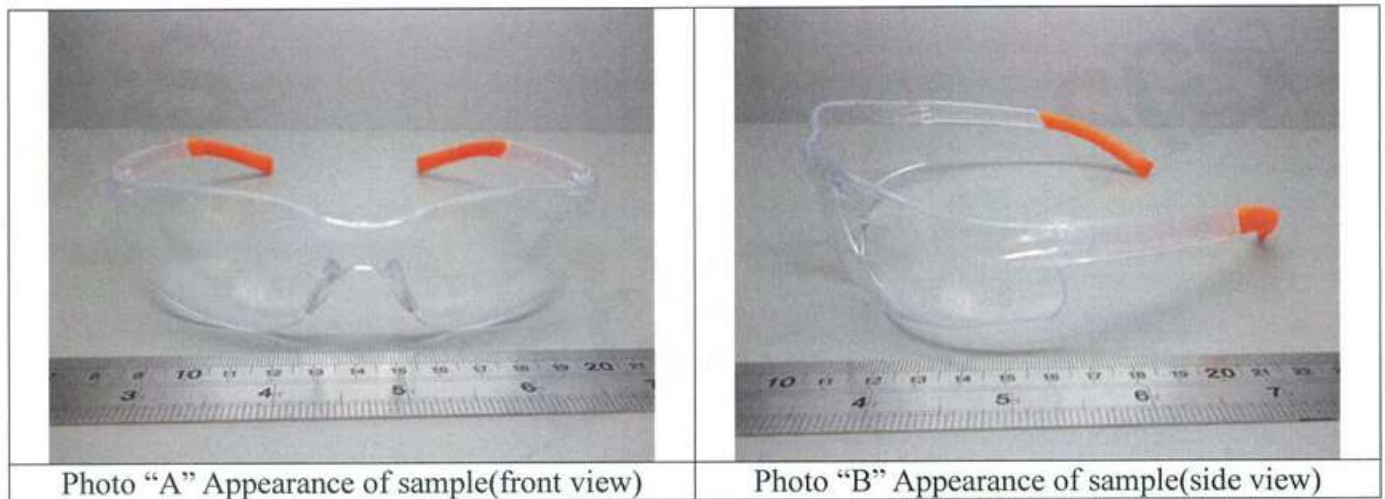
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### – Picture(s) –



--- End of Report ---

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## TEST REPORT

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Date : AUG. 29, 2014

**Shu Gie Industrial Co., Ltd.**

5F-16, No.2 Chenggong Road, Tainan City, Taiwan

**The following merchandise was submitted and identified by the applicant as:**

Product Description: Safety Spectacles  
Style/Item No.: 91532 Smoke Lens  
Manufacturer/Vendor: Shu Gie Industrial Co., Ltd.  
Country of Origin: Taiwan

**We have tested the submitted sample(s) as requested and the following results were obtained:**

Test Requested: To comply with clause 5, 6.2.2, 6.2.3, 6.2.4 and 7.1.1 of ANSI/ISEA Z87.1-2010 American National Standard for Occupational and Educational Personal Eye and Face Protection Devices (Clause 5.4 excluded)

Test Method: --See following sheet(s)--

Test Result: --See following sheet(s)--

Date of Receipt: AUG. 19, 2014

Testing Period: AUG. 19 ~ 29, 2014

--- See Next Page ---

**Signed for and on behalf of  
SGS Taiwan Ltd.**

Tenya Chien  
Supervisor

Laboratory address:  
61, Kai-Fa Road, Nanzih Export Processing Zone, 81170, Kaohsiung, Taiwan

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### Test Method and Result

#### Clause

5. General Requirements

5.1 Optical Requirements

5.1.1 Optical Quality

When tested in accordance with Section 9.1, protector lenses shall be free of striate, bubbles, waves and other visible defects which would impair their optical quality.

5.1.2 Luminous Transmittance

Test sample is not clear lens. Refer to clause 7.1.2 Clear and Filter Lenses.

Results

Pass

Tinted

### Finding

Lens Type	Luminous Transmittance Requirements	*Ratio [R] of measured Luminous Transmittance Requirements	Test Value		
Tinted	8% min./85% max.	$0.90 \leq R \leq 1.10$	Left Ocular	Right Ocular	R
			12.07%	12.06%	1.00

5.1.3 Haze

N/A

5.1.4 Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors

Pass

When tested in accordance with Section 9.4, the tolerance on refractive power, astigmatism and resolving power shall be as indicated in Table 1. When tested in accordance with Section 9.5, the tolerance on prism and prism imbalance shall be as indicated in Table 2.

### Finding

Test/Property	Requirement	Test Value	
		Left Ocular	Right Ocular
Refractive Power	$\pm 0.06$ D	-0.0277	-0.0272
Astigmatism	$\leq 0.06$ D	0.0517	0.0495
Resolving Power	Pattern 20 min.	Pattern 20	Pattern 20
Prismatic Power	$\leq 0.50$ Δ	0.32Δ	0.30Δ
Vertical Prism Imbalance	$\leq 0.25$ Δ	0.05Δ	
Horizontal Prism Imbalance	$\leq 0.25$ Δ (Base In) $\leq 0.50$ Δ (Base Out)	0.25Δ (Base Out)	

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### Test Method and Result

#### Clause

#### Results

5.1.5 Refractive Power, Astigmatism, Prism and Prism Imbalance for Prescription Protectors

N/A

#### 5.2 Physical Requirements

Pass

Protectors shall be free from projections, sharp edges or other defects which are likely to cause discomfort or injury during use.

##### 5.2.1 Drop Ball Impact Resistance

Pass

When tested in accordance with Section 9.6, protector lenses shall not fracture when impacted by a 25.4 mm (1 in.) steel ball when dropped from a height of 127 cm (50 in.). Glass welding filter lenses shall be tested and used in conjunction with a safety plate in order to comply with the impact performance criteria.

##### 5.2.2 Protector Acceptance Criteria

Pass

When each type test is conducted as indicated above, a complete device shall fail if any of the following occurs:

- piece fully detached from the inner surface
- fracture
- penetration of the rear surface
- lens not retained

##### 5.2.3 Ignition

Pass

When tested in accordance with Section 9.7, protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of textiles or elastic bands) shall be tested.

##### 5.2.4 Corrosion Resistance of Metal Components

Pass

When tested in accordance with Section 9.8, metal components used in protectors shall be corrosion resistant to the degree that the function of the protector shall not be impaired by the corrosion. Lenses and electrical components are excluded from these requirements.

**Remark:** N/A = Not Applicable.

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### Test Method and Result

#### Clause

#### Results

#### 5.2.5 Minimum Coverage Area

Pass

The eyewire and lens shall cover in plane view an area of not less than 40 mm (1.57 in.) in width and 33 mm (1.30 in.) in height (elliptical) in front of each eye, centered on the geometrical center of the lens.

Frames designed for small head sizes shall cover in plane view an area of not less than 34 mm (1.34 in.) in width and 28 mm (1.10 in.) in height (elliptical), centered on the geometrical center of the lens.

Frames designed for small head sizes shall be tested on the 54 mm (2.13 in.) PD headform and are permitted to have an eye size, including eyewire thickness, as small as 34 x 28mm (1.34 x 1.10 in.).

Frames that are tested using the small headform shall be marked on the frame with the letter "H."

#### 5.3 Minimum Lens Thickness

N/A

The minimum lens thickness for specified protectors shall be those indicated in Table 3.

**Note.** For spectacle, plano, impact rated protector: No minimum thickness requirement.

#### 5.4 Marking Requirements

Excluded

#### 5.5 Other Requirements

N/A

#### 5.6 Replaceable Lenses

N/A

#### 5.7 Aftermarket Components

N/A

**Remark:** N/A = Not Applicable.

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### Test Method and Result

#### Clause

#### 6.2.2 High Mass Impact

When tested in accordance with Section 9.11, the complete device shall be capable of resisting an impact from a pointed projectile weighing 500g(17.6oz.) dropped from a height of 127cm(50.0in.).

Results

Pass

#### 6.2.3 High Velocity Impact

When tested in accordance with Section 9.12, the complete device shall be capable of resisting an impact from a 6.35 mm (0.25 in) diameter steel ball traveling at the velocity as 45.72 m/s. No contact with the eye of the headform is permitted as a result of impact.

Pass

### Finding

Determined	Remark	Result
6 out of 6 Passed	No contact with the eye of the head form and no piece shall be detached from the inner surface and the lens shall be retained in the frame and shall not fracture.	Pass

#### 6.2.4 Penetration Test (lenses only)

When tested in accordance with Section 9.13, lenses for all complete devices shall be capable of resisting penetration by a weighted needle with a total weight of 44.2 gm (1.56 oz.) dropped from a height of 127 cm (50.0 in.).

Pass

#### 7.1.1 Optional Transmittance Attributes

Refer to Table 7. Transmittance requirements for Ultraviolet Filters.

U6

### Finding

Scale U6	Maximum Effective Far-Ultra-Violet Average Transmittance	Maximum Near Ultra-Violet Average Transmittance %
Transmittance requirements	0.01 %	0.1 %
Result	0.00 %	0.00 %

--- See Next Page ---

## TEST REPORT

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### Test Metho and Result

#### Clause

7.1.1 Optional Transmittance Attributes

Refer to Table 9. Transmittance requirements for Visible Light Filters

### Results

L3

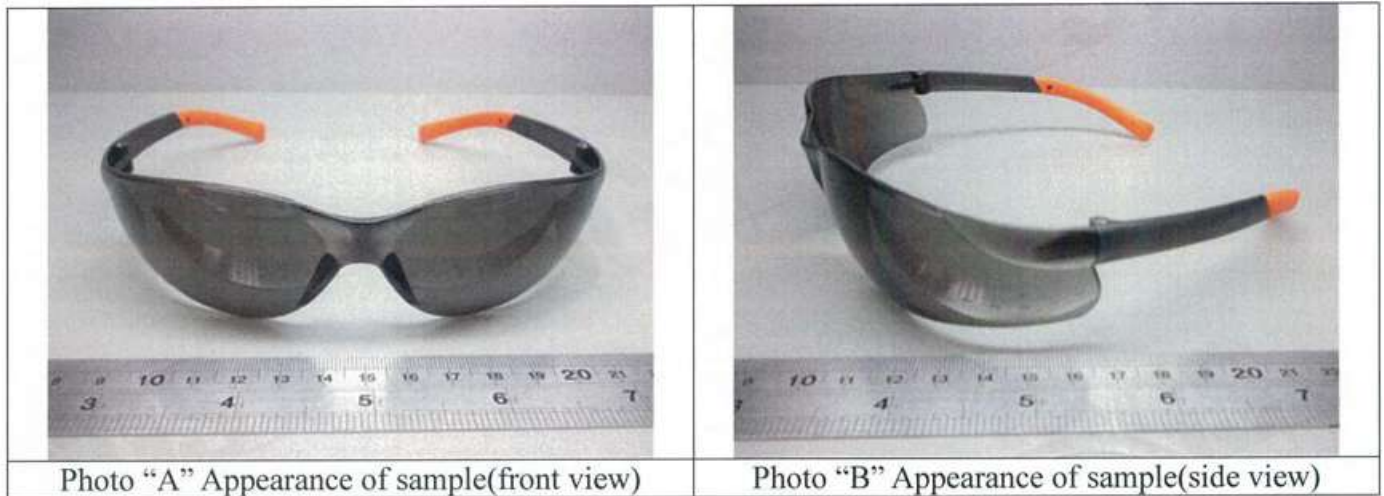
### Finding

Scale L3	Transmittance requirements for Visible Light Filters $\tau_v$	
	Maximum (%)	Minimum (%)
Requirement	18 %	8.5 %
Test Value	12.07 %	

### Remark:

1. The samples are complete devices claimed by applicant.
2. 18 samples were provided by applicant and sample was randomly selected by SGS to be assessed.

### – Picture(s) –



--- End of Report ---



## TEST REPORT

Mechanical & Hardgoods Laboratory

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Date : AUG. 29, 2014

**Shu Gie Industrial Co., Ltd.**

5F-16, No.2 Chenggong Road, Tainan City, Taiwan

**The following merchandise was submitted and identified by the applicant as:**

Product Description: Safety Spectacles  
Style/Item No.: 91532 Yellow Lens  
Manufacturer/Vendor: Shu Gie Industrial Co., Ltd.  
Country of Origin: Taiwan

**We have tested the submitted sample(s) as requested and the following results were obtained:**

Test Requested: To comply with clause 5, 6.2.2, 6.2.3, 6.2.4 and 7.1.1 of ANSI/ISEA Z87.1-2010 American National Standard for Occupational and Educational Personal Eye and Face Protection Devices (Clause 5.4 excluded)

Test Method: --See following sheet(s)--

Test Result: --See following sheet(s)--

Date of Receipt: AUG. 19, 2014

Testing Period: AUG. 19 ~ 29, 2014

--- See Next Page ---

**Signed for and on behalf of  
SGS Taiwan Ltd.**

*Tenya Chien*

Tenya Chien  
Supervisor

Laboratory address:  
61, Kai-Fa Road, Nanzih Export Processing Zone, 81170, Kaohsiung, Taiwan

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## TEST REPORT

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### Test Method and Result

#### Clause

#### 5. General Requirements

#### 5.1 Optical Requirements

#### 5.1.1 Optical Quality

When tested in accordance with Section 9.1, protector lenses shall be free of striate, bubbles, waves and other visible defects which would impair their optical quality.

Results

Pass

#### 5.1.2 Luminous Transmittance

When tested in accordance with Section 9.2, clear lenses shall have a luminous transmission of not less than 85%.

Pass

### Finding

Lens Type	Luminous Transmittance Requirements	Test Value	
		Left Ocular	Right Ocular
Clear Lenses	85% min.	87.94 %	87.59 %

#### 5.1.3 Haze

When tested in accordance with Section 9.3, clear plano lenses shall not exhibit more than 3% haze.

Pass

### Finding

Lens Type	Haze Requirements	Test Value	
		Left Ocular	Right Ocular
Clear Plano Lenses	3% max. - Clear Lenses Only	0.3 %	0.1 %

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## TEST REPORT

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### Test Method and Result

#### Clause

5.1.4 Refractive Power, Astigmatism, Resolving Power, Prism and Prism Imbalance for Plano Protectors

Results

Pass

When tested in accordance with Section 9.4, the tolerance on refractive power, astigmatism and resolving power shall be as indicated in Table 1. When tested in accordance with Section 9.5, the tolerance on prism and prism imbalance shall be as indicated in Table 2.

#### Finding

Test/Property	Requirement	Test Value	
		Left Ocular	Right Ocular
Refractive Power	$\pm 0.06$ D	-0.0166	-0.0238
Astigmatism	$\leq 0.06$ D	0.0300	0.0414
Resolving Power	Pattern 20 min.	Pattern 20	Pattern 20
Prismatic Power	$\leq 0.50$ $\Delta$	0.25 $\Delta$	0.25 $\Delta$
Vertical Prism Imbalance	$\leq 0.25$ $\Delta$	0.00 $\Delta$	
Horizontal Prism Imbalance	$\leq 0.25$ $\Delta$ (Base In) $\leq 0.50$ $\Delta$ (Base Out)	0.30 $\Delta$ (Base Out)	

5.1.5 Refractive Power, Astigmatism, Prism and Prism Imbalance for Prescription Protectors

N/A

5.2 Physical Requirements

Pass

Protectors shall be free from projections, sharp edges or other defects which are likely to cause discomfort or injury during use.

5.2.1 Drop Ball Impact Resistance

Pass

When tested in accordance with Section 9.6, protector lenses shall not fracture when impacted by a 25.4 mm (1 in.) steel ball when dropped from a height of 127 cm (50 in.). Glass welding filter lenses shall be tested and used in conjunction with a safety plate in order to comply with the impact performance criteria.

5.2.2 Protector Acceptance Criteria

Pass

When each type test is conducted as indicated above, a complete device shall fail if any of the following occurs:

- piece fully detached from the inner surface
- fracture
- penetration of the rear surface
- lens not retained

**Remark:** N/A = Not Applicable.

--- See Next Page ---

## TEST REPORT

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Report No. : YA80138/2014

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### Test Method and Result

#### Clause

#### Results

#### 5.2.3 Ignition

Pass

When tested in accordance with Section 9.7, protectors shall not ignite or continue to glow once the rod is removed. Each externally exposed material (exclusive of textiles or elastic bands) shall be tested.

#### 5.2.4 Corrosion Resistance of Metal Components

Pass

When tested in accordance with Section 9.8, metal components used in protectors shall be corrosion resistant to the degree that the function of the protector shall not be impaired by the corrosion. Lenses and electrical components are excluded from these requirements.

#### 5.2.5 Minimum Coverage Area

Pass

The eyewire and lens shall cover in plane view an area of not less than 40 mm (1.57 in.) in width and 33 mm (1.30 in.) in height (elliptical) in front of each eye, centered on the geometrical center of the lens.

Frames designed for small head sizes shall cover in plane view an area of not less than 34 mm (1.34 in.) in width and 28 mm (1.10 in.) in height (elliptical), centered on the geometrical center of the lens.

Frames designed for small head sizes shall be tested on the 54 mm (2.13 in.) PD headform and are permitted to have an eye size, including eyewire thickness, as small as 34 x 28mm (1.34 x 1.10 in.). Frames that are tested using the small headform shall be marked on the frame with the letter "H."

#### 5.3 Minimum Lens Thickness

N/A

The minimum lens thickness for specified protectors shall be those indicated in Table 3.

**Note.** For spectacle, plano, impact rated protector: No minimum thickness requirement.

#### 5.4 Marking Requirements

Excluded

#### 5.5 Other Requirements

N/A

#### 5.6 Replaceable Lenses

N/A

#### 5.7 Aftermarket Components

N/A

**Remark:** N/A = Not Applicable.

--- See Next Page ---



## TEST REPORT

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### Test Method and Result

#### Clause

#### 6.2.2 High Mass Impact

When tested in accordance with Section 9.11, the complete device shall be capable of resisting an impact from a pointed projectile weighing 500g(17.6oz.) dropped from a height of 127cm(50.0in.).

Results

Pass

#### 6.2.3 High Velocity Impact

When tested in accordance with Section 9.12, the complete device shall be capable of resisting an impact from a 6.35 mm (0.25 in) diameter steel ball traveling at the velocity as 45.72 m/s. No contact with the eye of the headform is permitted as a result of impact.

Pass

#### Finding

Determined	Remark	Result
6 out of 6 Passed	No contact with the eye of the head form and no piece shall be detached from the inner surface and the lens shall be retained in the frame and shall not fracture.	Pass

#### 6.2.4 Penetration Test (lenses only)

When tested in accordance with Section 9.13, lenses for all complete devices shall be capable of resisting penetration by a weighted needle with a total weight of 44.2 gm (1.56 oz.) dropped from a height of 127 cm (50.0 in.).

Pass

#### 7.1.1 Optional Transmittance Attributes

Refer to Table 7. Transmittance requirements for Ultraviolet Filters.

U6

#### Finding

Scale U6	Maximum Effective Far-Ultra-Violet Average Transmittance	Maximum Near Ultra-Violet Average Transmittance %
Transmittance requirements	0.01 %	0.1 %
Result	0.00 %	0.00 %

#### 7.1.1 Optional Transmittance Attributes

Refer to Table 9. Transmittance requirements for Visible Light Filters

See Note\*

**Note\*:** Transmittance for visible light of tested sample didn't meet any scale requirements of Table 9

#### Remark:

1. The samples are complete devices claimed by applicant.
2. 18 samples were provided by applicant and samples were randomly selected by SGS to be assessed.

--- See Next Page ---

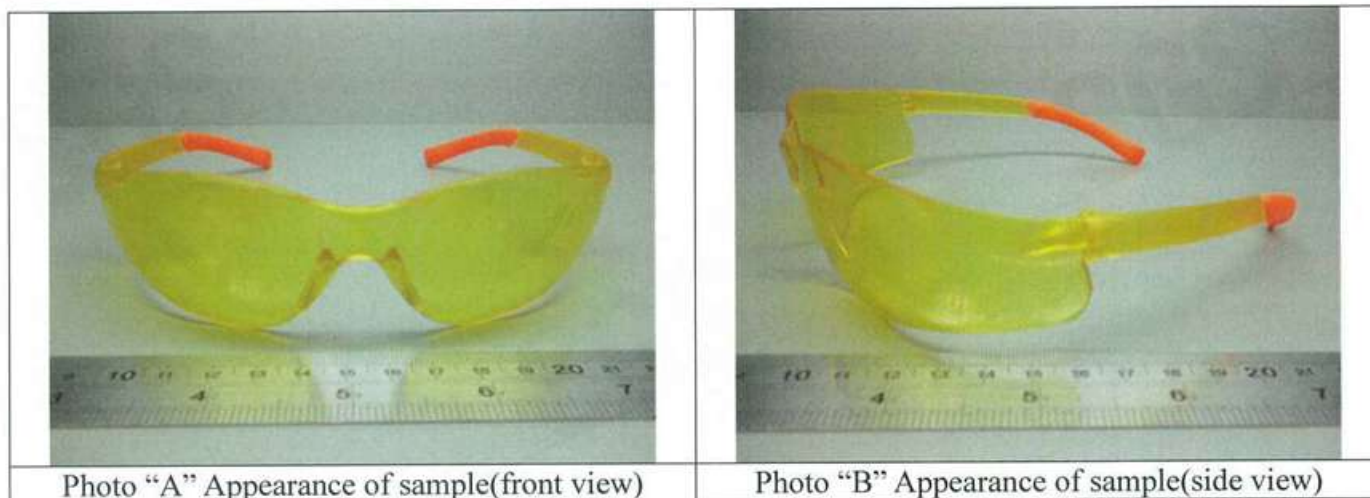
## TEST REPORT

Mechanical & Hardgoods Laboratory

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### – Picture(s) –



--- End of Report ---