



# AXIOM LABORATORY PTE LTD

## ENVIRONMENTAL TESTING, ASSESSMENT & CONSULTANCY

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### TEST REPORT NO: AL-21-399M

Company Name : EBC International Eyewear Sdn Bhd  
Address : No. 7-01, Jalan Cengkerik 3, Pusat Perdagangan Kempas,  
81200 Johor Baru, Johor  
Date Tested : 15 July 2021  
Date Reported : 22 July 2021  
Sample Description : Antibacterial Testing on Flexi Ion Spectacle Frame

One (1) product was submitted by EBC International Eyewear Sdn Bhd  
and testing was conducted on 15 July 2021 – 21 July 2021:

#### Product Name: Flexi Ion Spectacle Frame

Antibacterial Testing was conducted by our technical personnel in a controlled environment.

#### Antibacterial Test Procedure:

- 1) Weigh the spectacle.
- 2) Spray the *Escherichia coli* (ATCC 25922) and *Staphylococcus aureus* (ATCC 6538) cultures onto the two spectacles until fully covered.
- 3) Weigh each spectacle with the culture and calculate the volume sprayed.
- 4) Leave the spectacles at room temperature 25°C for 1 hour.
- 5) After 1 hour, wash the spectacles surface culture with 100ml of sterile saline solution.
- 6) Pipette 1 ml and 0.1 ml each of the washed saline solution into the petri dish respectively.
- 7) Pour approximately 12 ml of TSA into the plate and mix thoroughly. Allow to solidify.
- 8) Incubate the TSA plates at 35°C for 24 hours.
- 9) Record the number of counts.
- 10) Calculate the percentage killed.

#### Calculation:

$$\frac{\text{Initial Count of Bacteria (cfu/ml)} - \text{Count of Surviving Bacteria (cfu/ml)}}{\text{Initial Bacteria Count (cfu/ml)}} \times 100$$



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On microbiological analysis, the following results were obtained:

**Bacteria Load on the Spectacles:**

Test Microorganism	Initial Load, cfu/spectacle
<i>Escherichia coli</i> (ATCC 25922)	1960
<i>Staphylococcus aureus</i> (ATCC 6538)	4420

**Flexi Ion Spectacle Frame:**

Test Microorganism	Initial Count of Bacteria, cfu/spectacle	Count of Surviving Test Microorganism, cfu/spectacle	Percentage Kill of Test Microorganism, %
<i>Escherichia coli</i> (ATCC 25922)	1960	200	89.8
<i>Staphylococcus aureus</i> (ATCC 6538)	4420	400	88.7

**Conclusion:**

The Flexi Ion Spectacle Frame was 89.8% effective at killing *Escherichia coli* (ATCC 25922) and 88.7% effective at killing *Staphylococcus aureus* (ATCC 6538). Thus, the Flexi Ion Spectacle Frame is approximately 89% effective in killing bacteria.



**Chang Hee Kuan**  
Principal Consultant  
Environmental Service

