

Standard Guide for Accelerated Ageing of Sterile Barrier Systems for Medical Devices in ASTM F1980-16  
Bacterial Filtration Efficiency (BFE) in ASTM F2101

Proven that OOH SHIELD technology can effectively filter bacteria (>99%), after conditioning KV99.81 masks in 120°C for 48 hours, to simulate storing in room temperature for 5 years



**TEST REPORT**

Applicant: Curie Limited  
Room C, 23/F,  
Tsuen Tung Factory Building,  
38-40 Chai Wan Kok Street,  
Tsuen Wan,  
New Territories,  
Hong Kong

Report number: IRITS2020007030001

Date: 3 July 2020

Attn.: Aldrin Or

Sample Description as Declared:

No. of Sample: TWO (2) pieces of composite material for face mask in zipper bag packaging  
Curie KV99  
Colour: White  
Date Received: 15 June 2020  
Testing Period: 16 – 24 June 2020  
Tests Conducted: As requested by the Applicant, with the details as follow:

Testing Summary: The sample(s) were conditioned at an acceleration temperature of 120 °C for 48 hours, followed by pre-conditioning at a minimum of 4 hour at 21 ± 5 °C and relative humidity of 65 ± 5 %. Bacterial filtration efficiency (BFE) test was then performed by spraying the samples with an aerosol of challenge bacterium *Staphylococcus aureus* in peptone water using a nebulizer. The aerosol was then drawn through the samples following by a tryptic soy agar plate under vacuum (flow rate: 100 Litres per minute). Number of *Staphylococcus aureus* colonies formed on the tryptic soy agar plate were counted after incubated at 37 ± 2 °C for 48 ± 4 hr. The BFE test procedure was modified from ASTM F2101: 2019.

For and on behalf of  
Institute for Research in Innovative Technology & Sustainability  
The Open University of Hong Kong

---

Dr. Eric Tung-po Sze

Report number: IRITS2020007030001

Date: 3 July 2020

Results:

Test Sample Number	Bacterium Colonies Formed	Bacterial Filtration Efficiency
#1	N.D. <sup>a</sup>	> 99 %
#2	N.D. <sup>a</sup>	> 99 %
Negative Control	N.D. <sup>a</sup>	N/A <sup>b</sup>

<sup>a</sup> None Detected (N.D.) – There were no detected bacterium colony of *Staphylococcus aureus* found

<sup>b</sup> N/A – Not Applicable

Remark: The time and temperature selected for the acceleration conditioning were based on ASTM Standard F1980-16 Appendix X1. Accelerated aging of polymers, which are equivalent to five year of room-temperature (20 °C) aging, with an aging factor  $Q_{10} = 2.0$ .

Sample Photos:



<End of Test Report>