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Protecting People

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Test Report for Medical Masks – ATSM F1862 Resistance to Penetration by Synthetic Blood

Prepared for:

Client Name: Layfield Canada Ltd.

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Job ID: 220914-LFC-A

Quote ID: PTL-Q-2022-1021

Date: 9/28/2022

Report Version: 2

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Executive Summary

Thirty-two M6060 respirator samples were tested for resistance to penetration by synthetic blood in accordance with ASTM F1862/F1862-M-17 at a test pressure of 160 mm Hg. All testing were performed in the VCH PPE testing laboratory. Calibration of instruments and equipment were verified to be current, and within operation specifications prior to use. Samples were catalogued upon receipt and inventoried after visual inspection.

Two samples exhibited penetration of synthetic blood on the interior of the respirator when tested at a pressure of 160 mm Hg (Table 4), meeting the acceptable quality limit of 4% for level 3 barrier specified in ASTM F1862/F1862-M-17 and ASTM F2100-21.

Materials

Table 1. Sample and testing info.

Sample Name	Number of Samples	Analysis ID	Date Samples Received	Sample Prep and Test Date
M6060	32	220914-LFC-A-1	9/14/2022	9/15/2022

Methods

Test Standard: ASTM F2100-21[1]
Test: ASTM F1862/F1862-M-17[2]
Test Apparatus: *Conditioning environment: 21 ± 5 °C, 85 ± 5 % relative humidity*
Apparatus: ASTM 1862 Facemask Blood Penetration Test Apparatus

Procedures:

Testing were performed in accordance with ASTM F1862/F1862-M-17. The distance from the target area to the tip of the cannula is 30.5 cm. Visual inspection of the inner surface of the respirator for detecting the presence of synthetic blood penetration was performed within 10 seconds of testing. All equipment had a valid calibration at the time of testing.

Sample conditioning environment: *21 ± 5 °C, 85 ± 5 % relative humidity; samples were conditioned for a minimum of four hours prior to testing.*

Equipment:

Table 2. Equipment calibration due dates.

Equipment	Calibration Due Date
ASTM 1862 Facemask Blood Penetration Test Apparatus	N/A
Precision Balance (C021452358)	June 30 2023
Climate Chamber (W819.0119)	October 15 2022
Timer (210779774)	September 13 2023

Lab Environmental Conditions:

Table 3. Laboratory environmental conditions.

Date	*Temperature (°C)*	*Relative Humidity (%)*
9/15/2022	21.3	56

Results

Table 4. ASTM F1862/F1862-M-17 test results for M6060 N95-Style Respirator tested at a pressure of 160 mm Hg.

Sample ID	Pass/Fail
220914-LFC-A-1-1	Pass
220914-LFC-A-1-2	Pass
220914-LFC-A-1-3	Pass
220914-LFC-A-1-4	Pass
220914-LFC-A-1-5	Fail
220914-LFC-A-1-6	Fail
220914-LFC-A-1-7	Pass
220914-LFC-A-1-8	Pass
220914-LFC-A-1-9	Pass
220914-LFC-A-1-10	Pass
220914-LFC-A-1-11	Pass
220914-LFC-A-1-12	Pass
220914-LFC-A-1-13	Pass
220914-LFC-A-1-14	Pass
220914-LFC-A-1-15	Pass
220914-LFC-A-1-16	Pass
220914-LFC-A-1-17	Pass
220914-LFC-A-1-18	Pass
220914-LFC-A-1-19	Pass
220914-LFC-A-1-20	Pass
220914-LFC-A-1-21	Pass
220914-LFC-A-1-22	Pass
220914-LFC-A-1-23	Pass
220914-LFC-A-1-24	Pass
220914-LFC-A-1-25	Pass
220914-LFC-A-1-26	Pass
220914-LFC-A-1-27	Pass
220914-LFC-A-1-28	Pass
220914-LFC-A-1-29	Pass
220914-LFC-A-1-30	Pass
220914-LFC-A-1-31	Pass
220914-LFC-A-1-32	Pass
Summary	**30 Pass 2 Fail**

Table 5. ASTM F2100 Medical Face Mask material Requirements by Performance Level[1] classification of barrier performance.

Characteristic	Level 1 Barrier	Level 2 Barrier	Level 3 Barrier
Resistance to penetration by synthetic blood	80 mm Hg	120 mm Hg	160 mm Hg

This table is intended to aid in interpretation of results.

References

1. American Society for Testing and Materials. (2021). *Standard Specification for Performance of Materials Used in Medical Face Masks* (ASTM F2100 – 21). Retrieved from https://www.astm.org/f2100-21.html
2. American Society for Testing and Materials. (2017). *Standard Test Method for Resistance of Medical Face Masks to Penetration by Synthetic Blood (Horizontal Projection of Fixed Volume at a Known Velocity)* (ASTM F1862/F1862M – 17). Retrieved from https://www.astm.org/f1862_f1862m-17.html

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These data are representative of only the samples tested. This report may be copied only in its entirety.

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Reviewed by: *Titus Wong*, MD, Medical Director

Version	Replaces	Change	Description	Approved by	Release Date
2	220914-LFC-A	Editorial	Reference to model name, M6060, added. Added statement referencing AQL of 4% met. Job ID updated on page 1 and 3 to 220914-LFC-A.	TW	9/28/2022

End of Report