



Test Report

No.: T32020240351SN

Date: MAY 11, 2020

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BESTGRAND BIOTECH LIMITED
ROOM D2,24/F SHIELD INDUSTRIAL CENTRE,84-92 CHAI WAN KOK STREET,TSUEN WAN,HONG KONG

The following samples were submitted and identified on behalf of the client as:

3-PLY DISPOSABLE FACE MASK

SGS Case No. : CA320202419909
Lot No. / Batch Code : NOT PROVIDED
Sample Description : BLUE MASK
Manufacturer : BESTGRAND BIOTECH LIMITED
Country of Origin : HONG KONG
Country of Destination : HONG KONG, UNITED STATES
Sample Receiving Date : APR 17, 2020
Test Performing Date : APR 17 TO MAY 11, 2020

Test Requested : Please refer to the result summary.

Test Method & Results : Please refer to next page(s).

Result Summary :

Test Requested	Result Summary
ASTM F2100-19 Standard Specification for Performance of Materials Used in Medical Face Masks	See Result

Signed for and on behalf of
SGS Hong Kong Ltd.

Au Kam Chi, Gigi
Technical Manager

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ASTM F2100-19 Standard Specification for Performance of Materials Used in Medical Face Masks

Scope : This specification covers testing and requirements for materials used in the construction of medical face masks that are used in providing healthcare services such as surgery and patient care. This specification provides for the classification of medical face mask material performance.

Clause	Test Items/requirement	Test Result Summary
<u>5</u>	<u>Classification</u>	See Table 1
<u>6</u>	<u>Requirements</u>	
6.1	The properties of the medical face mask material shall conform to the specifications requirements in Table 1, as tested in accordance with Section 9. Bacterial filtration efficiency (ASTM F2101) Differential pressure (EN 14683:2019 Annex C) Sub-Micron Particulate Filtration (ASTM F2299)	> 98% < 6.0 mm H ₂ O/cm ² > 98%
6.2	Resistance to penetration by synthetic blood (ASTM F1862) Flammability 16 CFR Part 1610	Penetration not seen 120 mm Hg Class 1

Table 1 Medical Face Mask Material Requirements by Performance Level

Characteristics	Level 1 Barrier	Level 2 Barrier	Level 3 Barrier
Bacterial filtration efficiency, %	≥ 95	≥ 98	≥ 98
Differential pressure, mm H ₂ O/cm ²	< 5.0	< 6.0	< 6.0
Sub-micron particulate filtration efficiency at 0.1 micron, %	≥ 95	≥ 98	≥ 98
Resistance to penetration by synthetic blood, minimum pressure in mm Hg for pass result [#]	80	120	160
Flame spread	Class 1	Class 1	Class 1

[#] - An acceptable quality limit of 4.0 % is met for a single sampling plan when 29 or more of the 32 tested specimens show "pass" results.

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Result 1 Bacterial filtration efficiency ASTM F2101-19

Test Side : White Color (Inside)
Pre-Conditioning : Minimum of 4 hours at 21±5°C and 85±5% R.H.
Dimensions of test specimen : ~ 172 mm x 162 mm
BFE Test Area : ~ 40 cm²
BFE Flow Rate : 28.3 l/min
Test bacteria : Staphylococcus aureus ATCC 6538
Mean Particle Size : 2.9 µm
Positive Control Average : 2.1 x 10³ CFU
Negative Monitor Count : < 1 CFU

Test Specimen	Percent BFE (%)
1	99.3
2	99.7
3	99.3
4	99.7
5	99.4

Result 2 Differential pressure EN14683:2019+AC:2019 Appendix C

Test Side : White Color (Inside)
Pre-Conditioning : Minimum of 4 hours at 21±5°C and 85±5% R.H.
Dimensions of test specimen : ~ 172 mm x 162 mm
Flow Rate : 8 l/min

Test Specimen	ΔP (mm H ₂ O/cm ²)	ΔP (Pa/cm ²)
1	6.0	59.2
2	5.8	57.3
3	5.7	55.7
4	5.7	55.7
5	5.6	54.9
Average	5.76	56.56

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Result 3 Sub-Micron Particulate Filtration ASTM F2299/F2299M-03 (Reapproved 2017)

Test Side : Blue Color (Outside)
Pre-Conditioning : Minimum of 4 hours at 21±3°C and 30-50±5% R.H.
Test Condition : 21 °C and 31% R.H.
Test Area : 91.5 cm²
Particle Size : 0.1 µm
Average Filtration Efficiency : 99.52%
Standard Deviation : 0.117

Test Specimen	Test Article Counts	Average Control Counts	Filtration Efficiency (%)
1	70	12,621	99.45
2	50	12,666	99.61
3	80	12,198	99.34
4	50	12,548	99.60
5	53	12,730	99.58

Result 4 Resistance to penetration by synthetic blood ASTM F1862/F1862M-17

Test Side : Blue Side (Outside)
Pre-Conditioning : Minimum of 4 hours at 21±5°C and 85±5% R.H.
Test Condition : 20.7 °C and 22% R.H.
Test Pressure : 120 mmHg
No of Test Specimen Tested : 32
No of Test Specimen Passed : 32

Test Specimen #	Synthetic Blood Penetration
1-32	None Seen

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Result 5 Flammability Test of Clothing Textiles (16 CFR Part 1610 - October 20, 2008 Edition)

Sample : Fabric cut from submitted sample
Fabric Surface : Plain (Face)
Test Specimen Direction : Length

As Received		
	Flame Spread (sec.)	Burn Code
(1)	--	IBE
(2)	--	IBE
(3)	--	IBE
(4)	--	IBE
(5)	--	IBE
Flammability Classification:		Class 1
Requirement:		Class 1

Remarks:

1. Class 1 – Normal Flammability

Class 1 textiles exhibit normal flammability and are acceptable for use in clothing.

Test Criteria for plain surface textile fabric:

(A) There are no burn times; or

(B) There is only one burn time and it is equal to or greater than 3.5 seconds; or

(C) The average burn time of two or more specimens is equal to or greater than 3.5 seconds.

2. Disposable fabrics and garments shall not apply to be refurbished before testing.

Burn Code Description:

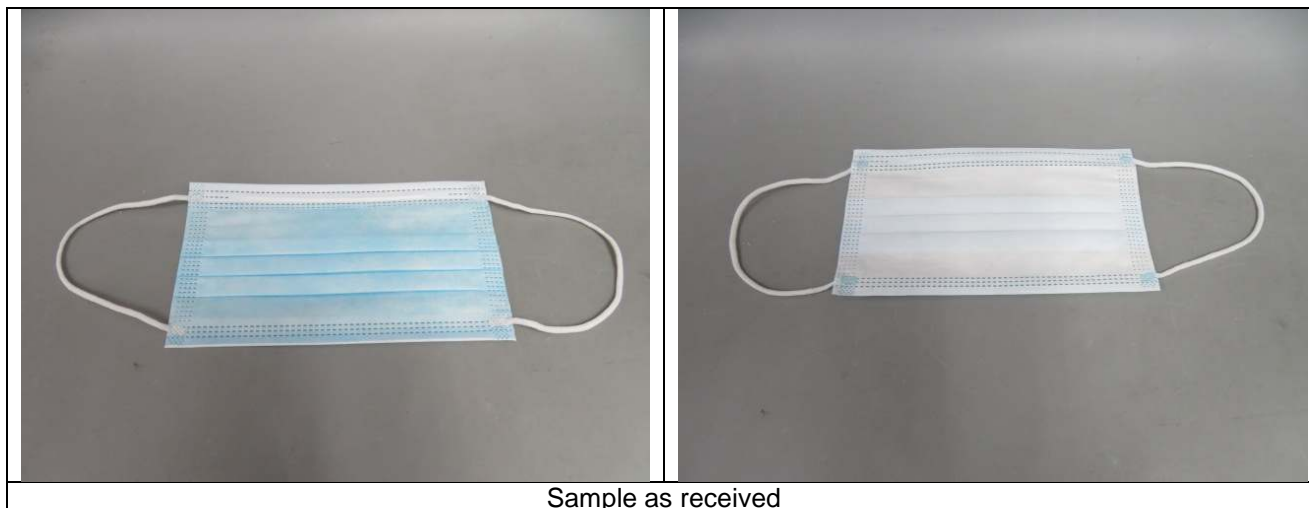
IBE = Ignited, but extinguished

Note : All the test results except Flammability test contained in this Test Report was conducted by a SGS assessed competent subcontractor laboratory

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Photo Appendix



Sample as received

*** End of Report ***

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