



Test Report

No. HKHC2004002498HC

Date :Apr 28, 2020

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HONESTY TRADING DEVELOPMENT CO. LTD
ROOM D4,12/F,BLOCK D,TUEN MUN INDUSTRIAL CENTRE,2 SAN PING CIRCUIT,TUEN
MUN,N.T.,Hong Kong

Job No. : HKHC200400001257

The following sample was submitted and identified by the client as Disposable 3 Ply Protective Mask

Product Description : Disposable 3 Ply Protective Mask
Quantity Received : 2 packs
Sample Appearance : White mask
SGS Sample No. : HKHC200400001257-101
Sample Receiving Condition : In unopened plastic pack under ambient condition
Manufacturer / Supplier : Honesty Trading Development Co. Ltd.
Country of Origin : Hong Kong
Sample Receiving Date : Apr 09, 2020
Testing Period : Apr 09, 2020 – Apr 28, 2020

Test Requested

1. To perform Bacterial Filtration Efficiency Test and Differential Pressure Test on the submitted sample.
2. To perform Particle Filtration Efficiency Test on the submitted sample.
3. To perform Synthetic blood fluid penetration resistance test on the submitted sample.
4. To perform Flammability test on the submitted sample.

Test Methods and Test Results

Please refer to the following page(s).

Signed for and on behalf of
SGS Hong Kong Ltd.

HO CHI MING, RICKY
SENIOR MANAGER - COSMETICS, PERSONAL
CARE & HOUSEHOLD SERVICES

Signed for and on behalf of
SGS Hong Kong Ltd.

WONG KIN MAN, GILMAN
TECHNICAL DEVELOPMENT MANAGER
- COSMETICS, PERSONAL CARE &
HOUSEHOLD SERVICES

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Test Methods and Test Results

1. Bacterial Filtration Efficiency Test

Summary

The BFE test is performed to determine the filtration efficiency of test articles by comparing the bacterial control counts upstream of the test article to the bacterial counts downstream. A suspension of *Staphylococcus aureus* was aerosolized using a nebulizer and delivered to the test article at a constant flow rate and fixed air pressure. The challenge delivery was maintained at $1.7 - 3.0 \times 10^3$ colony forming units (CFU) with a mean particle size (MPS) of $3.0 \pm 0.3 \mu\text{m}$. The aerosols were drawn through a six-stage, viable particle, Andersen sampler for collection. This test method complies with ASTM F2101-19 and EN 14683:2019, Annex B.

The Delta P test is performed to determine the breathability of test articles by measuring the differential air pressure on either side of the test article using a manometer, at a constant flow rate. The Delta P test complies with EN 14683:2019, Annex C and ASTM F2100-19.

Test Side	:	Back side
BFE Test Area	:	~40 cm ²
BFE Flow Rate	:	28.3 Litres per minute (L/min)
Delta P Flow Rate	:	8 Liters per minute (L/min)
Conditioning Parameters	:	85 ± 5% relative humidity (RH) and 21 ± 5°C for a minimum of 4 hours
Test Article Dimensions	:	~175 mm x ~167 mm
Positive Control Average	:	2.9 x 10 ³ CFU
Negative Monitor Count	:	<1 CFU
MPS	:	3.1 μm

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Results:

Test Article Number	Percent BFE (%)
1	99.2
2	99.5
3	>99.9
4	99.7
5	99.3

Test Article Number	Delta P (mm H ₂ O/cm ²)	Delta P (Pa/cm ²)
1	3.0	29.3
2	3.1	30.2
3	3.0	29.5
4	2.3	22.8
5	2.8	27.3

The filtration efficiency percentages were calculated using the following equation:

$$\% \text{ BFE} = \frac{C - T}{C} \times 100$$

C = Positive control average

T= Plate count total recovered downstream of the test article

Note:

1. Results reported on the submitted sample on an as received basis.
2. The analysis was performed by a SGS assessed competent subcontractor laboratory.

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2. Particle Filtration Efficiency Test

Summary

This procedure was performed to evaluate the non-viable particle filtration efficiency (PFE) of the test article. Monodispersed polystyrene latex spheres (PSL) were nebulized (atomized), dried, and passed through the test article. The particles that passed through the test article were enumerated using a laser particle counter.

Three one-minute counts were performed, with the test article in the system, and the results averaged. Three one-minute control counts were performed, without a test article in the system, before and after each test article and the counts were averaged. Control counts were performed to determine the average number of particles delivered to the test article. The filtration efficiency was calculated using the average number of particles penetrating the test article compared to the average of the control values.

The procedure employed the basic particle filtration method described in ASTM F2299, with some exceptions; notably the procedure incorporated a non-neutralized challenge. In real use, particles carry a charge, thus this challenge represents a more natural state. The non-neutralized aerosol is also specified in the FDA guidance document on surgical face masks. All test method acceptance criteria were met.

Test Side	:	Front side
Area Tested	:	91.5 cm ²
Particle Size	:	0.1 μm
Laboratory Conditions	:	20°C, 23% relative humidity (RH) at 0711; 20°C, 23% RH at 0839
Average Filtration Efficiency	:	97.1%
Standard Deviation	:	2.36

Results:

Test Article Number	Average Test Article Counts	Average Control Counts	Filtration Efficiency (%)
1	116	12079	99.04
2	815	12151	93.3
3	115	11963	99.04
4	337	12935	97.4
5	459	13516	96.6

Note:

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3. Synthetic blood fluid penetration resistance

Summary:

This procedure was performed to evaluate surgical facemasks and other types of protective clothing materials designed to protect against fluid penetration. The purpose of this procedure is to simulate an arterial spray and evaluate the effectiveness of the test article in protecting the user from possible exposure to blood and other body fluids. The distance from the target area surface to the tip of the cannula is 30.5 cm. A test volume of 2 mL of synthetic blood was employed using the targeting plate method.

This test method was designed to comply with ASTM F1862 and ISO 22609 (as referenced in EN 14683:2019 and AS4381:2015) with the following exception: ISO 22609 requires testing to be performed in an environment with a temperature of $21 \pm 5^\circ\text{C}$ and a relative humidity of $85 \pm 10\%$. Instead, testing was performed at ambient conditions within one minute of removal from the environment chamber held at those parameters.

Number of Test articles tested	:	32
Number of Test articles passed	:	32
Test Side	:	Front Side
Pre-conditioning	:	Minimum of 4 hours at $21 \pm 5^\circ\text{C}$ and $85 \pm 5\%$ relative humidity (RH)
Test Conditions	:	19.8°C and 22% RH

Results: Per ASTM F1862 and ISO 22609, an acceptable quality limit of 4.0% is met for a normal single sampling plan when ≥ 29 of 32 test articles show passing results.

Test Pressure: 80 mmHg (10.7 kPa)

Test Article Number	Synthetic Blood Penetration
1-32	None Seen

Note:

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2. The analysis was performed by a SGS assessed competent subcontractor laboratory.

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4. Flammability test

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

Fabric Surface : Smooth

Test Specimen Direction : Length

	<u>As Received</u>	
	<u>Flame Spread (sec.)</u>	<u>Burn Code</u>
(1)	--	IBE
(2)	--	IBE
(3)	--	IBE
(4)	--	IBE
(5)	--	IBE

Flammability Classification : Class 1

Remarks : Class 1 Normal Flammability

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

Burn Code Description:

IBE = Ignited, but extinguished

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Sample Receiving Date : Apr 09, 2020

PHOTO APPENDIX



HKHC200400001257-101

SGS authenticate the photo on original report only

*** End of Report ***

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