TEST REPORT

REPORT NUMBER: PI-00062-21
RECEIVING DATE: Jan. 14, 2021
ISSUE DATE: Jan. 23, 2021

Applicant	:	American Safety Power Tools (Pvt) Ltd.
Contact person	:	Mr. Zia
Address	:	Plot 1&2, 12&13 E-IV Phase II, Export Processing Zone, Karachi.
Contact details	:	Tel: 0312-2326337 Fax: / Email: /

Manufacturer	:	American Safety Power Tools Pvt Ltd.
Buyer	:	Self-Reference
Brand	:	/
Label	:	/
Fabric	:	/
Fabric Weight	:	/
Content	:	/
Construction	:	/
Color	:	White
Style No	:	/
Reference	:	/
Program	:	/
Design	:	/
Country of Origin	:	/
Sample Description	:	Face Mask (KN95)
Pervious Report No	:	/
End Use	:	/
Test Standard	:	/

Signed on the behalf of:
Tti Testing Laboratories

Ali Ashraf
General Manager Operations

Test Results:

1. **pH of an aqueous extract of fabric:**

ISO 3071

Temperature: 20.7°C, pH of KCL Solution: 5.20

pH Value	6.44

2. **Formaldehyde (Free & Hydrolyzed Method):**

BS EN ISO 14184-1

Inner Layer	ND
Outer Layer	ND

Remarks: - Lower limit is 16 mg/kg. Below this limit; the result is reported as "Not Detectable.

Note:

Method detection limit: 16 mg/kg

Mg/kg: milligram per kilogram

ND: Not Detected

Tti Testing Laboratories

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3. Bacterial Filtration Efficiency (BFE):

EN 14683:2019+AC:2019 (Annex B)

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 x 10^3 colony forming units (CFU) with a mean particle size (MPS) of 3.0 ± 0.3 µm. The aerosols were drawn through a six-stage viable particle, Andersen sampler collection. This test method complies with ASTM F2101-19 and EN 14683:2019, Annex B.

Tested Side	Inside
BFE Test Area	~40 cm^2
BFE Flow Rate	28.3 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	~ 206 mm x ~151 mm
Positive Control Average	2.2 x 10^3 CFU
Negative Monitor Count	<1 CFU
MPS	2.8 µm

Specimen Number	Percentage BFE (%)
1	99.97
2	99.95
3	99.97
4	99.97
5	99.93

The filtration efficiency percentage 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: Results reported on the submitted sample on an as received basis

4. Particulate Filtration Efficiency (PFE):

ASTM F2299/F2299M-2017

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.

Five one-minute counts were performed, with the test article in the system, and the results averaged. Five 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 value @ flow rate of 28 L/M.

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	Outside
Area Tested	91.5 cm^2
Particle Size	0.1 – 1.0 µm
Laboratory Conditions	21±3°C, 40±10% relative humidity (RH)

Filtration Efficiency (%) 0.1 µm	Filtration Efficiency (%) 0.3 µm	Filtration Efficiency (%) 0.5 µm	Filtration Efficiency(%)1.0µm
99.50	99.70	99.90	100

Note: Results reported on the submitted sample on an as received basis.

5. Microbial Cleanliness:

EN ISO 11737-1

Procedure:		
Extract fluid	:	Peptone tween with NaCl
Extract fluid volume	:	Approx. 300ml
Extract method	:	Orbital shaking for 5 minutes at 250 rpm.
Plating method	:	Pour plate method
Agar medium Bacteria	:	Tryptic soy agar
Agar medium for Fungus	:	Sabouraud Dextrose Agar
TAMC	:	Incubation for 3 days at 30-35°C.
TYMC	:	Incubated for 7 days at 20-25°C.

Results:

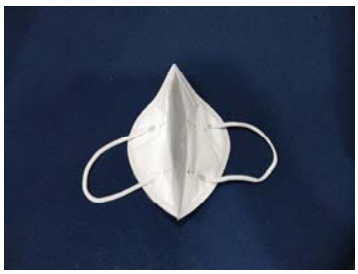
Specimen No	Mask Weight (g)	Total Bioburden (cfu/mask)	Total Bioburden (cfu/g)
1	4.64	113	24.3
2	4.59	108	23.5
3	4.61	110	23.7
4	4.64	105	22.62
5	4.60	100	21.7

Note:

≤ : Less than and Equal.
Cfu : Colony Forming Unit
TAMC : Total Aerobic Microbial Count
TYMC : Total Yeast Mold Count

Remarks: Results reported on the submitted sample on and as received basis.

Image of submitted sample



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