

Sky iON™ Face Mask: Key Performance characteristics

Performance of the Sky iON™ Face Mask against the functional particle filtration and breathability performance requirements of popular standards for Face Masks has been independently determined as follows*:

Tests performed	FFP2 / P2	Comparable N95 performance*
Filtration EN 149:2001+A1:2009, Clause 8.11 & AFNOR-SPEC-S76-001:2020, Reference to EN13274-7: 2019 Modified	PASS	PASS
Breathability EN 149:2001+A1:2009, Clause 8.9 & EN ISO 9237-1995	PASS	PASS

Testing against FFP2 / P2 functional performance requirements

The Sky iON™ Face Mask has been independently tested by NTEK against the functional performance requirements of the FFP2 / P2 standard and determined to have the following key characteristics when new:

	Requirement	Result**	
Penetration of Filter Material (EN 149:2001+A1:2009, Clause 8.11)	<i>Maximum penetration of test aerosol:</i> Sodium chloride @ 95 L/m ≤ 6% Paraffin oil @ 95 L/m ≤ 6%	Sodium chloride ≤ 3.68% Paraffin oil ≤ 3.73%	PASS
Breathing Resistance (EN 149:2001+A1:2009, Clause 8.9)	<i>Maximum permitted resistance (mbar):</i> Inhalation @ 30 L/min ≤ 0.7 Inhalation @ 95 L/min ≤ 2.4 Exhalation @ 160 L/min ≤ 3.0	Inhalation @ 30 L/min ≤ 0.46 Inhalation @ 95 L/min ≤ 1.95 Exhalation @ 160 L/min ≤ 1.36	PASS
Total Inward Leakage (EN 149:2001+A1:2009 Clause 8.5)	Total inward leakage ≤ 8%	Total inward leakage < 8%	PASS

**NTEK test reports included as appendix

Comparable N95 performance level*

	FFP2 / P2 Requirement	Comparable N95 Requirement*	Result*
Filter performance	<i>Maximum penetration of test aerosol:</i> Sodium chloride @ 95 L/m ≤ 6% Paraffin oil @ 95 L/m ≤ 6%	<i>Maximum penetration of test aerosol:</i> Sodium chloride @ 85 L/m ≤ 5%	Sodium chloride ≤ 3.68% Paraffin oil ≤ 3.73%
Breathing Resistance	<i>Maximum permitted resistance (mbar):</i> Inhalation @ 30 L/min ≤ 0.7 Inhalation @ 95 L/min ≤ 2.4 Exhalation @ 160 L/min ≤ 3.0	<i>Maximum permitted resistance (mbar):</i> Inhalation @ 85 L/min ≤ 3.43 Exhalation @ 85 L/min ≤ 2.45	Inhalation @ 30 L/min ≤ 0.46 Inhalation @ 95 L/min ≤ 1.95 Exhalation @ 160 L/min ≤ 1.36

Refer to <https://multimedia.3m.com/mws/media/17915000/comparison-ffp2-kn95-n95-filtering-facepiece-respirator-classes-tb.pdf> for a helpful comparison between FFP2 / P2, N95 and other international standards.

The test results for the Sky iON™ Face Mask are presented on the following pages.

* Comparisons between standards are for illustrative purposes only.

Mask has not been FDA cleared or approved.

Flashbay
January 2022

Test Report

Applicant: Flashbay Electronics
Address: Building 2 ,Jixun Industrial Park ,Xinjiao ,Dong'ao Village ,Shatian Town ,Huiyang District ,Huizhou City , Guangdong Province,P.R.China

The following sample(s) was/were submitted and identified on behalf of the client as:

Product name: Face Mask
Model: Sky Ion (SKI)
Trade mark: /
Manufacturer: Flashbay Electronics
Address: Building 2 ,Jixun Industrial Park ,Xinjiao ,Dong'ao Village ,Shatian Town ,Huiyang District ,Huizhou City , Guangdong Province,P.R.China
Sample description: Folding mask (black)
Classification: FFP2 NR
Sample quantity: 40 Pcs

Sample Received Date: Jul. 06, 2021
Testing Period: Jul. 06, 2021~ Jul. 09, 2021

Test Requirement:

According to the requirement of the client, the test item(s) of the sample is referring to the standard EN 149:2001+A1:2009.

Test Result(s): Please refer to the following page(s)

Test Method: Please refer to the following page(s)

Compiled by:



Reviewed by:



Approved by:



Date:

2021-07-09

Test Result

Clause 7.9.2 Penetration of Filter Material

(EN 149:2001+A1:2009, Clause 8.11)

Test Requirement			Results
The penetration of the filter of the particle filtering half mask shall meet the requirements of the following table.			Detail refer to Appendix 1
Classification	Maximum penetration of test aerosol(%)		
	Sodium chloride test 95 L/min	Paraffin oil test 95 L/min	
FFP1	20	20	
FFP2	6	6	
FFP3	1	1	

Appendix 1: Summarization of Test Data

Penetration of filter material

Aerosol	Condition	Sample No.	Penetration (%)	
			Average in 30s after 3 min	Max. during exposure
Sodium chloride test	A.R.	1#	3.56	/
		2#	2.98	/
		3#	3.68	/
Paraffin oil test	A.R.	4#	3.32	/
		5#	3.60	/
		6#	3.73	/
Flow rate of test aerosol: 95.0 L/min				

Clause 7.9.1 Total Inward Leakage

(EN 149:2001+A1:2009 Clause 8.5)

Test Requirement	Results
<p>For particle filtering half masks fitted in accordance with the manufacturer's information, at least 46 out of the 50 individual exercise results (i.e. 10 subjects x 5 exercises) for total inward leakage shall be not greater than:</p> <p style="padding-left: 40px;">25% for FFP1 11% for FFP2 5% for FFP3</p> <p>and, in addition, at least 8 out of the 10 individual wearer arithmetic means for the total inward leakage shall be not greater than:</p> <p style="padding-left: 40px;">22% for FFP1 8% for FFP2 2% for FFP3</p>	<p style="text-align: center;">Detail refer to Appendix 2</p>

Appendix 2: Summarization of Test Data

Subject	Sample	Condition	Normal Breathing (%)	Head Side/Side (%)	Head Up/Down (%)	Speak Loudly (%)	Normal Breathing (%)	Mean (%)
Huang	10#	A.R.	6.6	6.7	6.9	7.1	6.5	6.76
Zhou	11#	A.R.	7.0	7.2	7.5	7.6	6.9	7.24
Ma	12#	A.R.	5.8	6.1	6.3	6.4	5.7	6.06
Wu	13#	A.R.	6.3	6.6	6.7	6.9	6.4	6.58
Li	14#	A.R.	6.8	7.0	7.2	7.3	6.6	6.98
Wu	15#	A.R.	7.2	7.4	7.6	7.7	7.0	7.38
Zhai	16#	A.R.	5.5	5.6	5.8	6.2	5.3	5.68
Zheng	17#	A.R.	6.2	6.3	6.5	6.8	6.1	6.38
Huang	18#	A.R.	6.9	7.1	7.3	7.5	6.8	7.12
Wu	19#	A.R.	7.4	7.6	7.7	7.9	7.2	7.56

Facial Dimension:

Subject	Length of Face (mm)	Width of Face (mm)	Depth of Face (mm)	Width of Mouth (mm)
Huang	130	140	125	52
Zhou	100	148	125	55
Ma	120	158	110	50
Wu	110	148	121	54
Li	112	146	112	50
Wu	120	154	128	54
Zhai	135	165	125	53
Zheng	106	155	112	54
Huang	105	157	118	51
wu	112	172	118	55

Clause 7.16 Breathing Resistance

EN 149:2001+A1:2009, Clause 8.9)

Test Requirement				Results																						
<p>The breathing resistances apply to valved and valveless filtering half masks and shall meet the requirements as the following table.</p> <table border="1"> <thead> <tr> <th rowspan="3">Classification</th> <th colspan="3">Maximum permitted resistance (mbar)</th> </tr> <tr> <th colspan="2">Inhalation</th> <th>Exhalation</th> </tr> <tr> <th>30 L/min</th> <th>95 L/min</th> <th>160 L/min</th> </tr> </thead> <tbody> <tr> <td>FFP1</td> <td>0.6</td> <td>2.1</td> <td>3.0</td> </tr> <tr> <td>FFP2</td> <td>0.7</td> <td>2.4</td> <td>3.0</td> </tr> <tr> <td>FFP3</td> <td>1.0</td> <td>3.0</td> <td>3.0</td> </tr> </tbody> </table>				Classification	Maximum permitted resistance (mbar)			Inhalation		Exhalation	30 L/min	95 L/min	160 L/min	FFP1	0.6	2.1	3.0	FFP2	0.7	2.4	3.0	FFP3	1.0	3.0	3.0	<p>Detail refer to Appendix 3</p>
Classification	Maximum permitted resistance (mbar)																									
	Inhalation		Exhalation																							
	30 L/min	95 L/min	160 L/min																							
FFP1	0.6	2.1	3.0																							
FFP2	0.7	2.4	3.0																							
FFP3	1.0	3.0	3.0																							

Appendix 3: Summarization of Test Data

Specimen	Condition	Inhalation(mbar)		Exhalation resistance(mbar)				
		At 30 L/min	At 95 L/min	At 160 L/min				
				A	B	C	D	E
7#	A.R.	0.45	1.93	1.35	1.34	1.35	1.36	1.36
8#		0.46	1.94	1.36	1.35	1.35	1.34	1.35
9#		0.45	1.95	1.36	1.35	1.35	1.34	1.35

A: facing directly ahead; B: facing vertically upwards; C: facing vertically downwards; D: lying on the left side; E: lying on the right side

Test	Uncertainty
Total inward leakage	6.40 %
Penetration of filter material (NaCl)	1.60 %
Penetration of filter material (Paraffin Oil)	1.78 %
Breathing resistance (30 L/min)	3.60 %
Breathing resistance (95 L/min)	2.20 %
Breathing resistance (160 L/min)	2.00 %

Sample photo(s):



Fig.1



Fig.2

****End of Report****

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