



Report For: Canada Masq Corporation
4-10 Brodie Dr.
Richmond Hill, Ontario
L4B 3K8
Phone: 647 628 9615
Email: anthonyz@canadamasq.com

Laboratory #: 880257-B1-22
Report Date: January 27, 2022
Received Date: January 17, 2022

Attention: Anthony Zhao
Specimen: B1: CA-N95 Flat-Fold Respirator "FF-BLK" Large

TEST REPORT

One specimen, consisting of respirators was submitted to CMTL for assessment of mechanical headstrap strength, particulate filter efficiency and airflow resistance to evaluate acceptability with Health Canada performance criteria for filtering face piece respirators (Date published: 2020-08-25, Date modified: 2021-02-02), 42 CFR Part 84 Subpart K, Sections 171(d), 172 and 174 respectively, and CSA Z94.4.1:21 Sections 5.9.1, 6.3.2 and 6.3.3.2.



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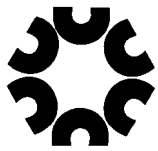
Per Steve Brown
Authorized By Stephen Brown
Per Derek Wild
Technician, Derek Wild



Requirement for Filtering Facepiece Respirators per
Health Canada National Standard Specifications for Respirators during COVID-19:
Guidance for Canadian Manufacturers (Date published: 2020-08-25, Date modified: 2021-02-02),
42 CFR Part 84 Subpart K, Sections 171(d), 172 and 174 and
CSA Z94.4.1:21 Sections 5.9.1, 6.3.2 and 6.3.3.2.

Specimen B1: CA-N95 Flat-Fold Respirator – “FF-BLK” Large (Adult Masks)

Characteristic	Barrier	Summary Results
Particulate Filter Efficiency (%)	≥95	Pass
Airflow (Inhalation) Resistance, mmH ₂ O (Pa)	≤35 (343)	Pass
Airflow (Exhalation) Resistance, mmH ₂ O (Pa)	≤25 (245)	Pass
Mechanical Headstrap Strength, Observations and Proof Load (Newtons per attachment point)	≥10	Pass



PARTICULATE FILTRATION EFFICIENCY

Twenty-five submitted specimens were evaluated for particulate filtration efficiency in accordance with TEB-APR-STP-0059 test procedure to evaluate acceptability with Health Canada and 42 CFR 84 Subpart K requirements for N95 respirators, as well as CSA Z94.4.1:21 Section 6.3.3.2.

Twenty of the specimens were conditioned (C) within a CSZ environmental control chamber for 25±1 hour at a 85±5% relative humidity and 38°C ± 2.5°C, then tested within 10 hours of extraction from the chamber as indicated in NIOSH standard procedure TEB-APR-STP-0059. The remaining five specimens were unconditioned (U) and tested without pre-conditioning as per CSA Z94.4.1:21 Section 6.3.3.2.2.1.

The particulate filter efficiency was performed on a TSI 8130A automated filter tester, and challenged under unidirectional airflow at 85 L/min ± 4 L/min with an aerosol of sodium chloride (NaCl) particles. The particles were generated by an aerosol generator and neutralized to their Boltzmann equilibrium state. The particles were considered to have an average count median diameter of 0.075 ± 0.020 micrometers and a geometric standard deviation not exceeding 1.86.

RESULTS

Specimen #	Conditioned	Flow Rate	Initial Filter Resistance (mmH ₂ O)	Maximum Allowable Leakage (%)	Initial Leakage (%)	Maximum Leakage (%)	Particulate Filtration Efficiency (%)	Requirement (≥95%)	
								Result	Overall Result
1	C	85	11.7	5.00	0.538	0.538	99.5	Pass	Pass
2	C	85	11.0	5.00	0.509	0.509	99.5	Pass	
3	C	85	13.1	5.00	0.562	0.562	99.4	Pass	
4	C	85	11.3	5.00	0.561	0.561	99.4	Pass	
5	C	85	12.0	5.00	0.640	0.640	99.4	Pass	
6	C	85	12.5	5.00	0.513	0.513	99.5	Pass	
7	C	85	12.3	5.00	0.656	0.656	99.3	Pass	
8	C	85	13.7	5.00	0.653	0.653	99.3	Pass	
9	C	85	13.3	5.00	0.685	0.685	99.3	Pass	
10	C	85	14.0	5.00	0.689	0.689	99.3	Pass	
11	C	85	12.7	5.00	0.579	0.579	99.4	Pass	
12	C	85	13.4	5.00	0.623	0.623	99.4	Pass	
13	C	85	15.0	5.00	0.746	0.746	99.3	Pass	
14	C	85	14.2	5.00	0.619	0.619	99.4	Pass	
15	C	85	13.4	5.00	0.589	0.589	99.4	Pass	
16	C	85	13.8	5.00	0.539	0.539	99.5	Pass	
17	C	85	14.7	5.00	0.841	0.841	99.2	Pass	
18	C	85	13.7	5.00	0.543	0.543	99.5	Pass	
19	C	85	12.3	5.00	0.436	0.436	99.6	Pass	
20	C	85	11.3	5.00	2.04	2.04	98.0	Pass	
21	U	85	11.3	5.00	0.505	0.505	99.5	Pass	
22	U	85	11.1	5.00	0.530	0.530	99.5	Pass	
23	U	85	11.5	5.00	0.615	0.615	99.4	Pass	
24	U	85	11.5	5.00	0.491	0.491	99.5	Pass	
25	U	85	11.6	5.00	0.538	0.538	99.5	Pass	

Note: As per Health Canada and 42 CFR Part 84 Subpart K, section 174(i) the minimum efficiency for each of the 20 filters, and 25 filters for CSA Z94.4.1:21, will be determined and recorded and must be equal to or greater than 95% filtration efficiency.



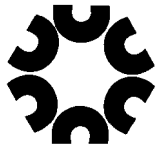
AIRFLOW (INHALATION) RESISTANCE

Twenty submitted specimens were evaluated for airflow (inhalation) resistance based on TEB-APR-STP-0007 using a TSI 8130A automated filter tester considered by NIOSH to be an acceptable pressure drop measurement.

Tests were performed with the salt generator turned-off under no loading conditions. Using hot-melt glue the filtering facepiece respirators were sealed onto flat plates with joint for connection to the resistance apparatus for measurements of pressure drop.

RESULTS

Specimen #	Maximum Allowable Resistance (mmH ₂ O) Inhalation	Maximum Allowable Resistance (Pa) Inhalation	Actual Resistance (mmH ₂ O) Inhalation	Actual Resistance (Pa) Inhalation	Requirement (≤35 mmH ₂ O) (≤343 Pa)	
					Result	Overall Result
1	35	343	11.0	107.9	Pass	Pass
2	35	343	11.1	108.9	Pass	
3	35	343	11.0	107.9	Pass	
4	35	343	11.7	114.7	Pass	
5	35	343	12.4	121.6	Pass	
6	35	343	12.1	118.7	Pass	
7	35	343	11.4	111.8	Pass	
8	35	343	11.9	116.7	Pass	
9	35	343	12.1	118.7	Pass	
10	35	343	12.6	123.6	Pass	
11	35	343	11.9	116.7	Pass	
12	35	343	12.2	119.6	Pass	
13	35	343	11.8	115.7	Pass	
14	35	343	12.1	118.7	Pass	
15	35	343	12.7	124.5	Pass	
16	35	343	12.2	119.6	Pass	
17	35	343	12.9	126.5	Pass	
18	35	343	11.8	115.7	Pass	
19	35	343	11.9	116.7	Pass	
20	35	343	10.5	103.0	Pass	



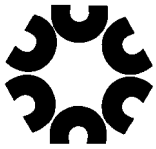
AIRFLOW (EXHALATION) RESISTANCE*

Twenty submitted specimens were evaluated for airflow (exhalation) resistance based on TEB-APR-STP-0003 using a TSI 8130A automated filter tester considered by NIOSH to be an acceptable pressure drop measurement.

Tests were performed with the salt generator turned-off under no loading conditions. Using hot-melt glue the filtering facepiece respirators were sealed onto flat plates, and mounted in reverse, with joint for connection to the resistance apparatus for measurements of pressure drop.

RESULTS

Specimen #	Maximum Allowable Resistance (mmH ₂ O) Exhalation	Maximum Allowable Resistance (Pa) Exhalation	Actual Resistance (mmH ₂ O) Exhalation	Actual Resistance (Pa) Exhalation	Requirement (≤25 mmH ₂ O) (≤245 Pa)	
					Result	Overall Result
1	25	245	10.6	104.0	Pass	Pass
2	25	245	10.6	104.0	Pass	
3	25	245	10.5	103.0	Pass	
4	25	245	10.7	104.9	Pass	
5	25	245	11.0	107.9	Pass	
6	25	245	10.9	106.9	Pass	
7	25	245	10.3	101.0	Pass	
8	25	245	10.4	102.0	Pass	
9	25	245	10.5	103.0	Pass	
10	25	245	11.0	107.9	Pass	
11	25	245	10.4	102.0	Pass	
12	25	245	10.6	104.0	Pass	
13	25	245	10.7	104.9	Pass	
14	25	245	10.8	105.9	Pass	
15	25	245	11.1	108.9	Pass	
16	25	245	10.9	106.9	Pass	
17	25	245	11.1	108.9	Pass	
18	25	245	11.0	107.9	Pass	
19	25	245	10.5	103.0	Pass	
20	25	245	10.0	98.1	Pass	



MECHANICAL HEADSTRAP STRENGTH (Specimen B1 – Large Adult Masks)



Report For: Cambridge Materials Testing Limited 6991 Millcreek Drive, Unit 13 MISSISSAUGA, Ontario L5N 6B9	Laboratory #: 880829-21
Attention: Derek Wild	Report Date: January 24, 2022 Received Date: January 19, 2022
Specimen: CMTL Mississauga Lab # 880257, Customer: Canada Masq Corporation, Identified as B1 – CA-N95 Flat Fold Respirator "FF-BLK" Large	Customer P.O.#:

PROOF LOAD TEST REPORT

Ten submitted specimens were subjected to proof load testing in accordance with Health Canada National Standard Specifications for Respirators during COVID-19: Guidance for Canadian Manufacturers, Date Published: February 2, 2021, CSA Z94.4.1:21, Section 5.9.1 and Federal Regulation 42 CFR 84 – Subpart K, Section 171(d). Testing was performed by donning the mask body on to a head form. A proof load of 10 N per attachment point was then applied to the elastomeric strap for 10 seconds. The proof load was then removed and the specimen was examined for failure. Testing machine was operated in accordance with ASTM A370-21 paragraph 8 with a test speed of 75mm/minute.

RESULTS

Specimen	Observations
1	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
2	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
3	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
4	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
5	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
6	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
7	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
8	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
9	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.
10	There was no evidence of breakage, tearing, separation from the point of fixation to the respirator body, permanent deformation or other obvious loss of function in the securing mechanism.

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 Per Nicholas Wolfenberg
 Nicholas Wolfenberg Authorized By
 Per Matthew Liska
 Matthew Liska Technician