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End of test: 04/11/2020

TEST REPORT n°20.1659.001.2 – Cancel and replace the test report n°20.1659.001.1

EN 149:2001 + A1:2009

Respiratory protective device – Filtering half masks to protect against particles

FFP3 NR D: 1032501-V2/1032501-V2 IP

Applicant:

HONEYWELL RESPIRATORY SAFETY PRODUCTS
C.S. 55288
ZI Paris Nord II
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France

Report sent for the attention of Ewa MESSAOUDI to the email address: Ewa.Messaoudi@Honeywell.com.

The PPE Technical Manager:
Faniry Mélanie RASOLOFONIAINA

Signature :
Immaterial original

RASOLOFONIAINA Mélanie
Validation électronique

SUMMARY

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1 PURPOSE AND IDENTIFICATION ON THE EQUIPMENT

1.1 Purpose

- Achievement of tests according to European standard EN 149:2001 + A1:2009.

1.2 Identification

- Type of equipment : **Filtering half masks to protect against particles**
- Manufacturer: Honeywell Respiratory Safety Products
- Classe / References: FFP3 NR D: 1032501-V2/1032501-V2 IP

2 TECHNICAL REFERENTIAL USED

Tests have been carried out taking into account the provisions of European standard EN 149:2001 + A1:2009 "Respiratory protective device – Filtering half masks to protect against particles", to the exception of articles 9 and 10.

This test report is not an EU type examination report according to Regulation 2016/425 of 9th march 2016 "Personal Protective Equipment".

3 USE OF REPORT

The reproduction of this report is authorized only under its complete shape.

The results of the present report relate only to tested object.

The report recipient undertakes not to use it for equipment or material that is not strictly identical to the one subject of this report.

This report is exclusively broadcasted under dematerialized shape.

4 CONDITIONS OF TEST

The tests were carried out according to the test methods defined in Article 8 "Testing" of European standard EN 149:2001 + A1:2009.

The samples have been tested in compliance with conditioning defined in article 8.3.

Laboratory temperature: 22°C ± 5°C

Laboratory relative humidity: 55%HR ± 30%HR

The measurement uncertainties are not taken into account for the assessment of conformity.

5 REQUIREMENTS AND TEST RESULTS

Article of the standard EN 149+A1	Content	Conformity*			Comments
		Yes	No	N-A	
Art. 7	**Requirements**				
Art 7.3	**Visual inspection** The visual inspection shall also include the marking and the information supplied by the manufacturer	✓			Date of tests: 29/09/2020
Art 7.4	**Packaging** Particle filtering half masks shall be offered for sale packaged in such a way that they are protected against mechanical damage and contamination before use.	✓			
Art 7.5	**Material** Materials used shall be suitable to withstand handling and wear over the period for which the particle filtering half mask is designed to be used. After undergoing the simulated wearing treatment none of the particle filtering half masks shall have suffered mechanical failure of the facepiece or straps. Three particle filtering half masks shall be tested. When conditioned, the particle filtering half mask shall not collapse. Any material from the filter media released by the air flow through the filter shall not constitute a hazard or nuisance for the wearer.	✓			Date of tests: 08/10/2020
Art 7.6	**Cleaning and disinfecting** If the particle filtering half mask is designed to be re-Usable, the materials used shall withstand the cleaning and disinfecting agents and procedures to be specified by the manufacturer." After cleaning and disinfecting the re-usable particle filtering half mask shall satisfy the penetration requirement of the relevant class.			✓	

Article of the standard EN 149+A1	Content	Conformity*			Comments
		Yes	No	N-A	
Art 7.7	**Practical performance** The particle filtering half mask shall undergo practical performance tests under realistic conditions. These general tests serve the purpose of checking the equipment for imperfections that cannot be determined by the tests described elsewhere in this standard. Where practical performance tests show the apparatus has imperfections related to wearer's acceptance, the test houses hall provide full details of those parts of the practical performance tests which revealed these imperfections. - *Tests carried out on both filtering half masks with and without exhalation valve.*	✓			Date of tests: 15/10/2020 any imperfections determined
	Here are the comments of the test subjects:				
	a) head harness comfort	✓			No comment
	b) security of fastenings	✓			No comment
	c) field of vision	✓			No comment
	d) any other comments reported by the wearer on request	✓			No comment
Art 7.8	**Finish of parts** Parts of the device likely to come into contact with the wearer shall have no sharp edges or burrs	✓			

Article of the standard EN 149+A1	Content	Conformity*			Comments
		Yes	No	N-A	
Art 7.9	**Leakage**				
Art 7.9.1	**Total inward leakage** The laboratory tests shall indicate that the particle filtering half mask can be used by the wearer to protect with high probability against the potential hazard to be expected. The total inward leakage consists of three components: face seal leakage, exhalation valve leakage (if exhalation valve fitted) and filter penetration. 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:	✓			Date of tests: 02/11/2020
	5 % for FFP3	✓			50 results ≤ 5%
	and, in addition, at least 8 out of the 10 individual wearer arithmetic means for the total inward leakage shall be not greater than:				9 averages ≤ 2%
	2 % for FFP3	✓			

*** The measurement uncertainties are not taken into account for the assessment of conformity.**

Exercise	Test subject reference									
	1	2	3	4	5	6	7	8	9	10
Walk	1,528	0,129	0,251	0,319	0,616	0,138	0,175	0,141	1,242	0,260
Left-Right	2,251	0,462	0,597	0,733	2,368	0,464	0,563	0,350	2,685	0,497
Up-Down	1,265	1,090	0,432	0,693	1,398	1,561	0,936	1,010	1,266	0,385
Alphabet	0,392	0,901	0,322	0,610	1,713	0,422	0,246	1,444	0,730	0,598
Walk	0,640	0,895	0,173	1,170	2,779	0,458	0,175	0,806	1,220	1,135
average	**1,215**	**0,695**	**0,355**	**0,705**	**1,775**	**0,609**	**0,419**	**0,750**	**1,429**	**0,575**

* Total inward leakage values in %

<table>
<tr><th rowspan="2">Article of the standard EN 149+A1</th><th rowspan="2">Content</th><th colspan="3">Conformity*</th><th rowspan="2">Comments</th></tr>
<tr><th>Yes</th><th>No</th><th>N-A</th></tr>
<tr><td>Art 7.9.2</td><td>Penetration of filter material
The penetration of the filter of the particle filtering half mask shall meet the requirements of Table1.

Tableau 1 – Penetration of filter material
<table>
<tr><th rowspan="2">Classification</th><th colspan="2">Maximum penetration of test aerosol</th></tr>
<tr><th>Sodium chloride test 95 l/min % max.</th><th>Paraffin oil test 95 l/min % max.</th></tr>
<tr><td>FFP1</td><td>20</td><td>20</td></tr>
<tr><td>FFP2</td><td>6</td><td>6</td></tr>
<tr><td>FFP3</td><td>1</td><td>1</td></tr>
</table></td><td>✓

✓</td><td></td><td></td><td>Date of tests:
08/10/2020</td></tr>
</table>

*** The measurement uncertainties are not taken into account for the assessment of conformity.**

Paraffin oil penetration of filter material tests results (%)

Conditioning	AR			SWT		
Penetration (3min)	0,03	≤0,01	0,01	≤0,01	≤0,01	0,82

Conditioning	MS		
Exposure (120mg)	0,01	0,01	0,01
Penetration (3min) after storage	N/A	N/A	N/A

Sodium chloride penetration of filter material tests results (%)

Conditioning	AR			SWT		
Penetration (3min)	0,06	0,10	0,01	≤0,01	≤0,01	≤0,01

Conditioning	MS		
Exposure (120mg)	≤0,01	≤0,01	≤0,01
Penetration (3min) after storage	N/A	N/A	N/A

As Received (AR), Simulated Wearing Treatment (SWT), Mechanical Strength (MS)

Article of the standard EN 149+A1	Content	Conformity*			Comments
		Yes	No	N-A	
Art 7.10	**Compatibility with skin** Materials that may come into contact with the wearer's skin shall not be known to be likely to cause irritation or any other adverse effect to health.	✓			Manufacturer statement
Art 7.11	**Flammability** The material used shall not present a danger for the wearer and shall not be of highly flammable nature. When tested, the particle filtering half mask shall not burn or not to continue to burn for more than 5 s after removal from the flame. The particle filtering half mask does not have to be usable after the test.	✓			Date of test: 15/10/2020
Art 7.12	**Carbon dioxide content of the inhalation air** The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1,0 % (by volume)	✓			Date of tests: 06/10/2020 CO_2 (%) 0,68% | 0,67% | 0,65%
Art 7.13	**Head harness** The head harness shall be designed so that the particle filtering half mask can be donned and removed easily. The head harness shall be adjustable or self-adjusting and shall be sufficiently robust to hold the particle filtering half mask firmly in position and be capable of maintaining total inward leakage requirements for the device.	✓			Self-Adjusting head harness
Art 7.14	**Field of vision** The field of vision is acceptable if determined so in practical performance tests	✓			See Art 7.7
Art 7.15	**Exhalation valve(s)** A particle filtering half mask may have one or more exhalation valve(s), which shall function correctly in all orientations			✓	
	If an exhalation valve is provided it shall be protected against or be resistant to dirt and mechanical damage and may be shrouded or may include any other device that may be necessary for the particle filtering half mask to comply with 7.9.			✓	
	Exhalation valve(s), if fitted, shall continue to operate correctly after a continuous exhalation flow of 300 l/min over a period of 30 s.			✓	
	When the exhalation valve housing is attached to the face blank, it shall withstand axially a tensile force of 10 N applied for 10s.			✓	

*** The measurement uncertainties are not taken into account for the assessment of conformity.**

<table>
<tr><th rowspan="2">Article of the standard EN 149+A1</th><th rowspan="2">Content</th><th colspan="3">Conformity*</th><th rowspan="2">Comments</th></tr>
<tr><th>Yes</th><th>No</th><th>N-A</th></tr>
<tr><td>Art 7.16</td><td>Breathing resistance
The breathing resistances apply to valved and valveless particle filtering half masks and shall meet the requirements of Table 2.

Tableau 2 – Breathing resistance
<table><tr><th rowspan="2">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><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</td><td>3</td><td>3.0</td></tr></table></td><td>✓

✓</td><td></td><td></td><td>Date of tests:
07/10/2020</td></tr>
</table>

*** The measurement uncertainties are not taken into account for the assessment of conformity.**

Breathing resistance tests results

Conditioning	AR			SWT			TC		
at 30l/min	0,38	0,40	0,37	0,34	0,32	0,32	0,35	0,34	0,32
at 95l/min	1,34	1,35	1,22	1,17	1,11	1,13	1,15	1,17	1,13
at 160l/min	1,94	1,97	1,88	1,82	1,66	1,67	1,74	1,83	1,74

Values in mbar

Article of the standard EN 149+A1	Content	Conformity*			Comments
		Yes	No	N-A	
Art 7.17	**Clogging**				Date of test: 21/10/2020
Art 7.17.1	**General** For single shift use devices, the clogging test is an optional test. For re-usable devices the test is mandatory. Devices designed to be resistant to clogging, shown by a slow increase of breathing resistance when loaded with dust, shall be subjected to the treatment described in 8.10. The specified breathing resistance shall not be exceeded before the required dust load of 833 mg.h/m3 is reached	✓			
Art 7.17.2	**Breathing resistance**				
Art 7.17.2.1	**Valved particle filtering half masks** After clogging the inhalation resistances shall not exceed : — FFP1 : 4 mbar ; — FFP2 : 5 mbar ; — FFP3 : 7 mbar ; at 95 l/min continuous flow The exhalation resistance shall not exceed 3 mbar at 160 l/min continuous flow			✓	
Art 7.17.2.2	**Valveless particle filtering half masks** After clogging the inhalation and exhalation resistances shall not exceed : — FFP1 : 3 mbar — FFP2 : 4 mbar — FFP3 : 5 mbar ; at 95 l/min continuous flow	✓			Date of test: 22/10/2020 After clogging test, inhalation and exhalation resistances don't exceed 5mbar
Art 7.17.3	**Filter penetration** All types (valved and valveless) of particle filtering half masks claimed to meet the clogging requirement shall also meet the requirements given in 7.9.2, for the Penetration test according to EN 13274-7, after the clogging treatment.	✓			After clogging test, solid and liquid particles penetration don't exceed 0,88%
Art 7.18	**Demountable parts** All demountable parts (if fitted) shall be readily connected and secured, where possible by hand.			✓	

6 CONCLUSION

The filtering half masks against particles 1032501-V2 and 1032501-V2 IP comply with the requirements of European standard EN 149:2001 + A1:2009, only for the tests described in § 2 and § 5 and the classes specified on §1.2.

Note: neither instructions for use nor marking were evaluated according to the European standard EN 149:2001 + A1:2009.