

TEST REPORT

2020EC3503

DATE OF RECEPTION

27/04/2020

DATE TESTS

Starting: 27/04/2020

Ending: 17/06/2020

APPLICANT

HANGZHOU FELSHARE BIOTECHNOLOGY CO.,
LTD
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IDENTIFICATION AND DESCRIPTION OF SAMPLES

REFERENCES

Half Mask fel0427

Description:

Particle filtering half mask without exhalation valve covering nose, mouth and chin, white colour

TESTS CARRIED OUT

- VISUAL INSPECTION.
- PRACTICAL BEHAVIOR.
- FILTER PENETRATION WITH PARAFFIN OIL.
- FILTER PENETRATION WITH SODIUM CHLORIDE.
- CO2 CONTENT IN INHALED AIR.
- BREATHING RESISTANCE.



RESULTS

VISUAL INSPECTION

Standard

EN 149:2001+A1:2009 modified by RfU PPE-R/02.075.02

Reference

Half Mask fel0427

Requirements of visual inspection to evaluate the filtering half mask against particles according to standard EN 149:2001 + A1:2009.

Packing (Requirement according to the point 7.4)	
Filtering half mask shall be packaged to protect them from mechanical damage, thermal and contaminant conditions during storage.	Not Evaluated
Materials (Requirement according to the point 7.5)	
The materials used shall withstand handling and use during the period of time for which the half-mask filter has been designed, and it shall not constitute a danger or damage to the user.	PASS
Any material in the filter that is released by the passage of the air flow through the filter shall not be a danger or damage to the user.	PASS
Finished of parts (Requirement according to the point 7.8)	
Parts of the equipment that can come into contact with the user shall not have sharp edges or burrs.	PASS
Exhalation valve (Requirement according to the point 7.15)	
If an exhalation valve is available, it shall be protected against dirt and mechanical damage and shall include any other device necessary to meet the requirements for leakage into the interior.	N.A.
Removable parts (Requirement according to the point 7.18)	
All removable parts (if any) shall be easily connected and secured and, wherever possible, manually.	N.A.

N.A. Does not apply

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RESULTS

PRACTICAL BEHAVIOR

Standard

EN 149:2001+A1:2009 (point 8.4) modified by RfU PPE-R/02.075.02

Testing conditioning

Test date	Initial	Final
10/05/2020	22,7 °C and 45,7 % RH.	22,6 °C and 46,3 % RH.

Observation or deviation of the standard

Description of the simple

Particle filtering half mask without exhalation valve covering nose, mouth and chin, white colour

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RESULTS

Reference

Half Mask fel0427

TESTER 1	Sample No 1
Does the respiratory protective device fit well?	
YES	

Walk test

Results Yes No Does not apply Not Evaluated

Walk for 10 min at a speed of 6 km / h.	Acceptance by tester
The finishing of filtering half mask that are in contact with the user must be free of sharp edges and burr. Materials likely to be in contact with the user's skin shall not present a known risk of irritation or other adverse health effects.	
The user has not suffered any damage by edges. The materials of the mask have not irritated the user.	YES
The head harness shall be designed so that it can be easily put on and removed.	
The tester has been able to put on and take off his half mask without problems.	YES
The head harness shall be adjusted or self-adjusted and hold the full facepiece in its position firmly and comfortably.	
The half mask has been easily adjusted.	YES
The filtering half mask has not hindered the field of vision during its use.	
The user's vision has not been hindered.	YES
The filter half mask has a good facial seal during use.	
The half mask has been maintaining a good face seal.	YES
Other comments.	

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RESULTS

Work simulation test

Results Yes No Does not apply Not Evaluated

Walking for 5 min. at a free height of $(1,3 \pm 0,2)$ m; Crawling on all fours for 5 min. at a free height of $(0,7 \pm 0,05)$ m.; and Filling a 1.5 m hopper, about 20 times.	Acceptance by tester
The finishing of filtering half mask that are in contact with the user must be free of sharp edges and burr. Materials likely to be in contact with the user's skin shall not present a known risk of irritation or other adverse health effects.	
The user has not suffered any damage by edges. The materials of the mask have not irritated the user.	YES
The head harness shall be designed so that it can be easily put on and removed.	
The tester has been able to put on and take off his half mask without problems.	YES
The head harness shall be adjusted or self-adjusted and hold the full facepiece in its position firmly and comfortably.	
The half mask has been easily adjusted.	YES
The filtering half mask has not hindered the field of vision during its use.	
The user's vision has not been hindered.	YES
The filter half mask has a good facial seal during use.	
The half mask has been maintaining a good face seal.	YES
Other comments.	

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RESULTS

Requirements to be met according to EN 149:2001+A1:2009, point 7.7 and according to RfU PPE-R / 02.075.02

The respiratory protective equipment shall not have imperfections related to user acceptance.

Requirement added RfU PPE-R/02.075.02: During the practical performance test, the test subject should pay particular attention to the ability of the product to maintain a good faceséal. If the wearer observes that a good faceséal is not maintained, they shall be instructed to readjust the filtering half mask according to the user instructions. Should the test subject experience further difficulties with maintaining a good faceséal during the practical performance test, the filtering half mask shall be considered unsatisfactory.

The test was carried out at APPE Laboratory located at Polígono Industrial Santiago Payá C/ Filá Benimerines, 25 B – 03801 Alcoy (Alicante).

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RESULTS

FILTER PENETRATION WITH PARAFFIN OIL

Standard

EN 149:2001+A1:2009 (point 8.11) modified by RfU PPE-R/02.075

Apparatus

Paraffin oil penetration equipment.

Testing conditioning

Test date	Initial	Final
27/04/2020	25,1 °C and 47,6 % RH.	24,9 °C and 48,1 % RH.

Sample Conditioning

- Samples: as received.

Observation or deviation of the standard

Description of the simple

Particle filtering half mask without exhalation valve covering nose, mouth and chin, white colour

Test uncertainty

The expanded uncertainty is $\pm 18\%$ of the value of the measurand for a probability of coverage of 95%.

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RESULTS

Reference

Half Mask fel0427

Paraffin oil penetration test (3 min.)	
Sample No.	Average value of penetration %
1	8,28
2	8,89

Exposure to 120mg of Paraffin oil	
Sample No.	Max. value of penetration %
1	--

Requirements to be met according to RfU PPE-R/02.075

Maximum penetration to the paraffin oil of the filter material:

Classification (*)	Paraffin oil test 95 l/min % Max.
FFP2	6
FFP3	1

(*) The levels FFP2 or FFP3 are guidance parameters from the standard EN 149: 2001 + A1: 2009, not applicable for RfU PPE-R / 02.075 since the final validity for COVID 19 certification method is according to a PASS / NOT PASS.

The test was carried out at APPE Laboratory located at Polígono Industrial Santiago Payá C/Filá Benimerines, 25 B – 03801 Alcoy (Alicante).

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RESULTS

FILTER PENETRATION WITH SODIUM CHLORIDE

Standard

EN 149:2001+A1:2009 (point 8.11) modified by RfU PPE-R/02.075.02

Apparatus

Sodium chloride penetration equipment

Testing conditioning

Test date	Initial	Final
14/06/2020	25,6 °C / 44,2 %	24,9 °C / 48 %

Sample Conditioning

- As received

Observation or deviation of the standard

Description of the sample

Particle filtering half mask without exhalation valve covering nose, mouth and chin, white color.

Test uncertainty

The expanded uncertainty is $\pm 0,002$ % for a probability of coverage of 95%.

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RESULTS

Reference

Half Mask fel0427

Sodium chloride penetration test (3,5 min)	
Sample No.	Average value of penetration %
1	1,18
2	1,53
3	1,28

Exposure to 120mg of sodium chloride	
Sample No.	Max. value of penetration
1	1,4
2	1,4
3	1,5

Requirements to be met according to RfU PPE-R/02.075.02

Maximum penetration to the sodium chloride of the filter material:

Classification (*)	Sodium chloride test 95 l/min % Max
FFP2	6
FFP3	1

(*) The levels FFP2 or FFP3 are guidance parameters from the standard EN 149: 2001 + A1: 2009, not applicable for RfU PPE-R/02.075.02 since the final validity for COVID 19 certification method is according to a PASS / NOT PASS.

The test was carried out at APPE Laboratory located at Polígono Industrial Santiago Payá C/ Filá Benimerines, 25 B – 03801 Alcoy (Alicante).

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RESULTS

CO2 CONTENT IN INHALED AIR

Standard

EN 149:2001+A1:2009 (punto / point 8.7)

Apparatus

Dynamic Breathing equipment, Sheffield test head, Measured CO2 flow and CO2 analyzer.

Testing conditioning

Test date	Initial	Final
28/04/2020	24,7 °C and 37,1 % RH.	24,3 °C and 37,3 % RH.

Observation or deviation of the standard

Description of the simple

Particle filtering half mask without exhalation valve covering nose, mouth and chin, white colour

Test uncertainty

The expanded uncertainty is $\pm 12\%$ of the value of the measured for a probability of coverage of 95%.

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RESULTS

Reference

Half Mask fel0427

Sample No.	Average value of CO2 contained in inhaled air (%)
1	0,36
2	0,32
3	0,30
Average	0,33

Requirements to be met according to EN 149:2001+A1:2009, point 7.12.

Carbon dioxide content in inhalation air (dead space) should not exceed an average of 1.0% (by volume).

The test was carried out at APPE Laboratory located at Polígono Industrial Santiago Payá C/ Filá Benimerines, 25 B – 03801 Alcoy (Alicante).

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RESULTS

BREATHING RESISTANCE

Standard

EN 149:2001 + A1:2009 (point 8.9) modified by RfU PPE-R/02.075.02

Apparatus

Sheffield test head, constant breathing equipment and digital flowmeter.

Test conditioning

Test date	Initial	Final
27/04/2020	24,4 °C and 46,5 % RH.	25,0 °C and 51,5 % RH.

Sample Conditioning

- Samples: as received.

Observation or deviation of the standard

Description of the simple

Particle filtering half mask without exhalation valve covering nose, mouth and chin, white colour

Uncertainty

The expanded uncertainty is ± 10 % of the value of the measurand for a probability of coverage of 95%.

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RESULTS

Reference

Half Mask fel0427

Sample No.	Resistance to inhalation (30l/min) mbar	Resistance to inhalation (95l/min) mbar
1	0,21	1,02
2	0,18	1,13
3	0,20	0,93

Sample No.	Resistance to exhalation (160 l/min) mbar				
	Forward	Upwards	Down	Towards the left side	Towards the right side
1	2,24	2,19	2,19	2,16	2,19
2	2,18	2,19	2,21	2,14	2,12
3	2,11	2,11	2,20	2,18	2,15

Requirements to be met according to RfU PPE-R/02.075.02

Classification (*)	Maximum resistance permitted (mbar)		
	Inhalation		Exhalation
	30 l/min	95 l/min	160 l/min
FFP2	0.7	2.4	3.0
FFP3	1.0	3.0	3.0

(*) The levels FFP2 or FFP3 are guidance parameters from the standard EN 149: 2001 + A1: 2009, not applicable for RfU PPE-R / 02.075 since the final validity for COVID 19 certification method is according to a PASS / NOT PASS.

The test was carried out at APPE Laboratory located at Polígono Industrial Santiago Payá C/Filá Benimerines, 25 B – 03801 Alcoy (Alicante).

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Head of Advance Personal Protective Equipment Lab.

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