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End of test: 25/05/2020

**TEST REPORT n°20.0514.001.1**

**PPE-R 02.075 Version 01**

**Respiratory protective device – Filtering half mask to protect against COVID-19  
Requirements of EN 149:2001+A1:2009 class FFP2 (Modified)**

**Filtering half-mask LT2020-01**

**Applicant:**

**Ningbo Lvtu Safety Technology Co Ltd**  
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Report sent for the attention of Sean Liang to the email address [Seanliang@188.com](mailto:Seanliang@188.com)

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*Immaterial original*



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Validation électronique

## SUMMARY

1	PURPOSE AND SAMPLE .....	3
2	TECHNICAL REFERENTIAL USED .....	3
3	USE OF REPORT .....	3
4	CONDITIONS OF TEST .....	3
5	TEST RESULTS.....	4
6	CONCLUSION .....	4

## 1 PURPOSE AND IDENTIFICATION ON THE EQUIPMENT

### 1.1 Purpose

- Achievement of tests according to PPE-R 02.075 Version 01 Requirements of EN 149:2001 +A1:2009 class FFP2 (modified).

### 1.2 Identification

- Type of equipment : **Filtering half masks to protect against COVID-19**
- Manufacturer: Ningbo Lvtu Safety Technology Co Ltd
- Classes / Models: Filtering half-mask LT2020-01

## 2 TECHNICAL REFERENTIAL USED

Tests have been carried out taking into account the provisions of PPE-R 02.075 Version 01 Requirements of EN 149:2001+A1:2009 class FFP2 (modified) "Respiratory protective device – Filtering half masks to protect against COVID-19", to the exception of articles 9 and 10.

This test report is not an EU type examination report according to Regulation 2016/425 of 9<sup>th</sup> 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 PPE-R 02.075 Version 01 Requirements of EN 149:2001+A1:2009 class FFP2 (modified).

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	
<b>Art. 7</b>	<b>Requirements</b>				
Art 7.3	<b>Visual inspection</b> The visual inspection shall also include the marking and the information supplied by the manufacturer	✓			Date of tests: 25/05/2020
Art 7.4	<b>Packaging</b> 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	<b>Material</b> 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.  - <i>Tests carried out on both filtering half masks with and without exhalation valve.</i>	✓			Date of tests: 20/05/2020
Art 7.6	<b>Cleaning and disinfecting</b> 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	<p><b>Practical performance</b></p> <p>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 shall provide full details of those parts of the practical performance tests which revealed these imperfections.</p> <p>- <i>Tests carried out on both filtering half masks with and without exhalation valve.</i></p> <p>Here are the comments of the test subjects:</p> <p>a) head harness comfort</p> <p>b) security of fastenings</p> <p>c) field of vision</p> <p>d) any other comments reported by the wearer on request</p>	✓			Date of tests: 25/05/2020  any imperfections determined
Art 7.8	<p><b>Finish of parts</b></p> <p>Parts of the device likely to come into contact with the wearer shall have no sharp edges or burrs</p>			✓	

Article of the standard EN 149+A1	Content	Conformity*			Comments
		Yes	No	N-A	
Art 7.9 Art 7.9.1	<p><b>Leakage</b></p> <p><b>Total inward leakage</b></p> <p>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.</p> <p>The total inward leakage consists of three components: face seal leakage, exhalation valve leakage (if exhalation valve fitted) and filter penetration.</p> <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="text-align: center;">11 % for FFP2 <i>(also valid for FFP1 requirement: 25 %)</i></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="text-align: center;">8 % for FFP2 <i>(also valid for FFP1 requirement: 22 %)</i></p>			<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>	

Article of the standard EN 149+A1	Content	Conformity*			Comments														
		Yes	No	N-A															
Art 7.9.2	<p><b>Penetration of filter material</b> The penetration of the filter of the particle filtering half mask shall meet the requirements of Table1.</p> <p>Tableau 1 – Penetration of filter material</p> <table border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </table>	Classification	Maximum penetration of test aerosol		Sodium chloride test 95 l/min % max.	Paraffin oil test 95 l/min % max.	FFP1	20	20	FFP2	6	6	FFP3	1	1	✓			<p>Date of tests: 22/05/2020</p> <p>All tests were carried out on Filtering half-mask LT2020-01</p>
Classification	Maximum penetration of test aerosol																		
	Sodium chloride test 95 l/min % max.	Paraffin oil test 95 l/min % max.																	
FFP1	20	20																	
FFP2	6	6																	
FFP3	1	1																	

**Paraffin oil penetration of filter material tests results (%)**

Conditioning	AR			SWT		
Penetration (3min)	1,644	1,842	1,356	1,613	1,279	1,243

Conditioning	MS+TC		
Exposure (120mg)	1,464	1,880	1,922
Penetration (3min) after storage	N/A	N/A	N/A

**Sodium chloride penetration of filter material tests results (%)**

Conditioning	AR			SWT		
Penetration (3min)	1,334	1,208	1,139	1,205	1,671	1,902

Conditioning	MS+TC		
Exposure (120mg)	1,440	1,075	1,850
Penetration (3min) after storage	N/A	N/A	N/A

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

Article of the standard EN 149+A1	Content	Conformity*			Comments				
		Yes	No	N-A					
Art 7.10	<b>Compatibility with skin</b> 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	<b>Flammability</b> 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.  - Tests carried out on both filtering half masks with and without exhalation valve.			✓	Date of test: 19/05/2020  The mask doesn't burn 5s after removal from the flame				
Art 7.12	<b>Carbon dioxide content of the inhalation air</b> The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1,0 % (by volume)  - Tests carried out on both filtering half masks with and without exhalation valve.	✓			Date of tests: 22/05/2020  CO <sub>2</sub> (%) <table border="1" data-bbox="1177 1064 1501 1128"> <tr> <th colspan="2">Without valve</th> </tr> <tr> <td>0,60</td> <td>0,65</td> </tr> </table>	Without valve		0,60	0,65
Without valve									
0,60	0,65								
Art 7.13	<b>Head harness</b> 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 harnesses				
Art 7.14	<b>Field of vision</b> The field of vision is acceptable if determined so in practical performance tests	✓			See Art 7.7				
Art 7.15	<b>Exhalation valve(s)</b> 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.			✓  ✓  ✓  ✓	(Not applicable for filtering half mask without valve)				



Article of the standard EN 149+A1	Content	Conformity*			Comments																						
		Yes	No	N-A																							
Art 7.16	<p><b>Breathing resistance</b> The breathing resistances apply to valved and valveless particle filtering half masks and shall meet the requirements of Table 2.</p> <p style="text-align: center;">Tableau 2 – Breathing resistance</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <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</td> <td>3</td> <td>3.0</td> </tr> </tbody> </table> <p>- Tests carried out on both FFP2 filtering half masks: Filtering half-mask LT2020-01</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	3	3.0	✓			Date of tests: 20/05/2020
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	3	3.0																								

**Breathing resistance tests results**

Conditioning	AR	SWT
Half mask	Without valve	Without valve
at 30l/min	0,55	0,50
at 95l/min	1,16	1,33
at 160l/min	2,10	1,85

Values in mbar

Conditioning	TC
Half mask	Without valve
at 30l/min	0,56
at 95l/min	1,30
at 160l/min	1,85

Values in mbar

Article of the standard EN 149+A1	Content	Conformity*			Comments
		Yes	No	N-A	
Art 7.17	<b>Clogging</b>			✓	<b>Not requested</b>

## 6 CONCLUSION

The filtering half masks against particles SJ2278, SJ2278V, SJ2268, SJ2268V comply with the requirements of PPE-R 02.075 Version 01 Requirements of EN 149:2001+A1:2009 class FFP2 modified, 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 PPE-R 02.075 Version 01 Requirements of EN 149:2001+A1:2009 class FFP2 modified.