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TL-941

# Test Report

Report No: MTI20111105P001

Date of issue: Nov 17, 2020

Client Shenzhen HJR Electronics Technology Co.,LTD.

Manufacturer Shenzhen HJR Electronics Technology Co.,LTD.

Product Particle filtering half mask

Model HJR-CN99-11B

Test Type Commissioned inspection

Shenzhen Microtest Co., Ltd.  
<http://www.mttest.com>



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|                                              |                                                                                                                                                                                     |                        |                         |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------|
| Product                                      | Particle filtering half mask                                                                                                                                                        | Sample No.             | MTI20111105-1-S0001     |
| Brand/Trademark                              |                                                                                                   | Model                  | HJR-CN99-11B            |
| Client                                       | Shenzhen HJR Electronics Technology Co.,LTD.                                                                                                                                        | Test Type              | Commissioned inspection |
| Client Address                               | 5 / F Building A3 Xinjianxing Science and Technology Industrial Park, No. 3333, Guangqiao Avenue, Gongming Street, Guangming New District, Shenzhen City, Guangdong Province, China | Sample Number          | 90 pcs                  |
| Date of Tests                                | 2020.11.11-2020.11.16                                                                                                                                                               |                        |                         |
| Test Specification                           | EN 149:2001+A1:2009                                                                                                                                                                 |                        |                         |
| Basis of Judgment                            | EN 149:2001+A1:2009                                                                                                                                                                 |                        |                         |
| Classification                               | FFP2 NR                                                                                                                                                                             |                        |                         |
| Test Result                                  | The sample has been tested and the test items meet the requirements of EN 149:2001+A1:2009.                                                                                         |                        |                         |
| Remarks                                      | "---" in the report means this item is not applicable,"/" in the report means this item is blank,"N/A" in the report means this item is not application.                            |                        |                         |
| Item Name                                    | File No                                                                                                                                                                             | Uncertainty            |                         |
| Penetration of filter material               | MTI-SOP-PH-U005                                                                                                                                                                     | $U_{rel} = 2.1\%, k=2$ |                         |
| Carbon dioxide content of the inhalation air | MTI-SOP-PH-U007                                                                                                                                                                     | $U_{rel} = 1.8\%, k=2$ |                         |
| Total inward leakage                         | MTI-SOP-PH-U008                                                                                                                                                                     | $U_{rel} = 1.8\%, k=2$ |                         |
| Breathing resistance                         | MTI-SOP-PH-U006                                                                                                                                                                     | 30L/min                | $U_{rel} = 2.5\%, k=2$  |
|                                              |                                                                                                                                                                                     | 95L/min                | $U_{rel} = 2.4\%, k=2$  |
|                                              |                                                                                                                                                                                     | 160L/min               | $U_{rel} = 2.3\%, k=2$  |

 Compiled: *Hong Pu*

 Reviewed: *Daniel Shi*

 Approved: *Tom Xue*

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| No. | Test Items                                   | Spec Chapter | Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Test Data                                                                          | Assessment |
|-----|----------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------|
| 1   | Visual inspection                            | 7.3          | The visual inspection shall also include the marking and the information supplied by the manufacturer.                                                                                                                                                                                                                                                                                                                                                                        | Meet the requirements                                                              | Pass       |
| 2   | Material                                     | 7.5          | Meet the requirements of 7.5                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Meet the requirements                                                              | Pass       |
| 3   | Practical performance                        | 7.7          | The particle filtering half mask shall undergo practical performance tests under realistic conditions.                                                                                                                                                                                                                                                                                                                                                                        | Meet the requirements                                                              | Pass       |
| 4   | Finish of parts                              | 7.8          | Parts of the device likely to come into contact with the wearer shall have no sharp edges or burrs.                                                                                                                                                                                                                                                                                                                                                                           | Meet the requirements                                                              | Pass       |
| 5   | Total inward leakage                         | 7.9.1        | 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:<br>25 % for FFP1, 11 % for FFP2, 5 % for FFP3 .<br>and, in addition, at least 8 out of the 10 individual wearer arithmetic means for the total inward leakage shall be not greater than:<br>22 % for FFP1, 8 % for FFP2, 2 % for FFP3. | Test results are shown in Annex A Table 7.9.1-A&B.                                 | Pass       |
| 6   | Penetration of filter material               | 7.9.2        | Sodium chloride test<br>95l/min: FFP1≤20%, FFP2≤6%, FFP3≤1%.<br>Paraffin oil test<br>95l/min: FFP1≤20%, FFP2≤6%, FFP3≤1%.                                                                                                                                                                                                                                                                                                                                                     | Test results are shown in Annex A Table 7.9.2.                                     | Pass       |
| 7   | Compatibility with skin                      | 7.10         | 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.                                                                                                                                                                                                                                                                                                                        | Meet the requirements                                                              | Pass       |
| 8   | Flammability                                 | 7.11         | 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.                                                                                                                                                                                                                                                                                                                                       | A.R.:<br>29#: not burn<br>30#: not burn<br>T.C.:<br>31#: not burn<br>32#: not burn | Pass       |
| 9   | Carbon dioxide content of the inhalation air | 7.12         | The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1,0 % (by volume).                                                                                                                                                                                                                                                                                                                                                               | A.R.:<br>33#: 0.79%<br>34#: 0.80%<br>35#: 0.83%<br>Mean: 0.81%                     | Pass       |

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|                                                                                                                                                          |                      |      |                                                                                                                                                                                                     |                                                                      |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------|
| 10                                                                                                                                                       | Head harness         | 7.13 | Meet the requirements of 7.13                                                                                                                                                                       | Meet the requirements                                                | Pass |
| 11                                                                                                                                                       | Field of vision      | 7.14 | The field of vision is acceptable if determined so in practical performance tests.                                                                                                                  | Meet the requirements                                                | Pass |
| 12                                                                                                                                                       | Exhalation valve(s)  | 7.15 | Meet the requirements of 7.15                                                                                                                                                                       | Only applicable to Exhalation valve(s) Particle filtering half mask. | N/A  |
| 13                                                                                                                                                       | Breathing resistance | 7.16 | Inhalation 30<br>l/min:FFP1≤0.6mbar,FFP2≤0.7mbar,FFP3≤1.0mbar.<br>Inhalation 95<br>l/min:FFP1≤2.1mbar,FFP2≤2.4mbar,FFP3≤3.0mbar.<br>Exhalation 160<br>l/min:FFP1≤3.0mbar,FFP2≤3.0mbar,FFP3≤3.0mbar. | Test results are shown in Annex A Table 7.16.                        | Pass |
| 14                                                                                                                                                       | Demountable parts    | 7.18 | All demountable parts (if fitted) shall be readily connected and secured, where possible by hand.                                                                                                   | /                                                                    | N/A  |
| Note: A.R.:As received      S.W.: Simulated wearing treatment      M.S.:Mechanical strength<br>T.C.:Temperature conditioning      F.C.:Flow conditioning |                      |      |                                                                                                                                                                                                     |                                                                      |      |

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**Annex A: Summarization of Test Data**
**Table 7.9.1-A Total inward leakage test data**

Test specification: EN 149:2001+A1:2009 Clause 8.5

| Subject  | No. | Condition | Walk(%) | Head Side/side(%) | Head Up/down(%) | Talk(%) | Walk(%) | Mean(%) |
|----------|-----|-----------|---------|-------------------|-----------------|---------|---------|---------|
| Harper   | 1#  | A.R.      | 2.46    | 2.90              | 4.12            | 5.65    | 4.13    | 3.85    |
| John     | 2#  | A.R.      | 3.50    | 5.20              | 6.63            | 5.02    | 3.74    | 4.82    |
| Margaery | 3#  | A.R.      | 2.66    | 5.19              | 4.15            | 3.70    | 2.79    | 3.70    |
| Noak     | 4#  | A.R.      | 3.39    | 3.04              | 2.76            | 2.41    | 4.15    | 3.15    |
| Shane    | 5#  | A.R.      | 3.77    | 3.78              | 3.85            | 4.76    | 3.76    | 3.98    |
| Baron    | 6#  | T.C.      | 2.50    | 3.36              | 2.16            | 1.51    | 1.43    | 2.19    |
| Elaine   | 7#  | T.C.      | 3.95    | 4.74              | 3.69            | 3.48    | 2.59    | 3.69    |
| Lucy     | 8#  | T.C.      | 2.49    | 3.50              | 3.47            | 4.38    | 3.48    | 3.46    |
| Lani     | 9#  | T.C.      | 2.54    | 2.53              | 2.89            | 3.76    | 2.94    | 2.93    |
| Hong     | 10# | T.C.      | 5.08    | 5.53              | 5.98            | 4.22    | 4.91    | 5.14    |

**Table 7.9.1-B Facial dimension**

| Subject  | Face Length (mm) | Face Width (mm) | Face Depth (mm) | Mouth Width (mm) |
|----------|------------------|-----------------|-----------------|------------------|
| Harper   | 133              | 149             | 116             | 65               |
| John     | 122              | 140             | 123             | 58               |
| Margaery | 125              | 142             | 125             | 54               |
| Noak     | 110              | 138             | 115             | 57               |
| Shane    | 110              | 142             | 122             | 60               |
| Baron    | 110              | 140             | 105             | 56               |
| Elaine   | 102              | 142             | 103             | 59               |
| Lucy     | 99               | 142             | 108             | 55               |
| Lani     | 135              | 150             | 130             | 51               |
| Hong     | 106              | 138             | 115             | 57               |

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**Table 7.9.2 Penetration of filter material**

Test specification:EN 149:2001+A1:2009 Clause 8.11

| Aerosol                                                                                 | Condition                                       | Sample No. | Average penetration after 3min (%) | Maximum penetration during exposure (%) |
|-----------------------------------------------------------------------------------------|-------------------------------------------------|------------|------------------------------------|-----------------------------------------|
| Sodium chloride test<br>Flow: 95L/min<br>Aerosol concentration:<br>11 mg/m <sup>3</sup> | As received                                     | 11#        | 0.25                               | /                                       |
|                                                                                         |                                                 | 12#        | 0.10                               | /                                       |
|                                                                                         |                                                 | 13#        | 0.11                               | /                                       |
|                                                                                         | Simulated wearing treatment                     | 14#        | 0.07                               | /                                       |
|                                                                                         |                                                 | 15#        | 0.09                               | /                                       |
|                                                                                         |                                                 | 16#        | 0.05                               | /                                       |
|                                                                                         | Mechanical strength+<br>Temperature conditioned | 17#        | /                                  | 0.12                                    |
|                                                                                         |                                                 | 18#        | /                                  | 0.17                                    |
|                                                                                         |                                                 | 19#        | /                                  | 0.14                                    |
| Paraffin oil test<br>Aerosol concentration:<br>21 mg/m <sup>3</sup>                     | As received                                     | 20#        | 0.23                               | /                                       |
|                                                                                         |                                                 | 21#        | 0.26                               | /                                       |
|                                                                                         |                                                 | 22#        | 0.19                               | /                                       |
|                                                                                         | Simulated wearing treatment                     | 23#        | 0.18                               | /                                       |
|                                                                                         |                                                 | 24#        | 0.17                               | /                                       |
|                                                                                         |                                                 | 25#        | 0.19                               | /                                       |
|                                                                                         | Mechanical strength+<br>Temperature conditioned | 26#        | /                                  | 0.43                                    |
|                                                                                         |                                                 | 27#        | /                                  | 0.70                                    |
|                                                                                         |                                                 | 28#        | /                                  | 0.51                                    |

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**Table 7.16 Breathing resistance(mbar)**

Test specification: EN 149:2001+A1:2009 Clause 8.9

|                             | Flow rate  |          | 36#  |      |      |      |      | 37#  |      |      |      |      | 38#  |      |      |      |      |
|-----------------------------|------------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                             |            |          | A    | B    | C    | D    | E    | A    | B    | C    | D    | E    | A    | B    | C    | D    | E    |
|                             | 30 l/min   |          | 0.53 | 0.53 | 0.54 | 0.54 | 0.53 | 0.56 | 0.55 | 0.55 | 0.54 | 0.54 | 0.51 | 0.52 | 0.51 | 0.52 | 0.53 |
| As received                 | Inhalation | 95 l/min | 1.84 | 1.84 | 1.85 | 1.86 | 1.85 | 1.86 | 1.87 | 1.87 | 1.86 | 1.85 | 1.81 | 1.82 | 1.82 | 1.83 | 1.84 |
|                             | Exhalation | 160l/min | 2.88 | 2.88 | 2.89 | 2.90 | 2.90 | 2.90 | 2.90 | 2.91 | 2.91 | 2.90 | 2.92 | 2.93 | 2.93 | 2.92 | 2.91 |
| Simulated wearing treatment | Flow rate  |          | 39#  |      |      |      |      | 40#  |      |      |      |      | 41#  |      |      |      |      |
|                             |            |          | A    | B    | C    | D    | E    | A    | B    | C    | D    | E    | A    | B    | C    | D    | E    |
|                             | Inhalation | 30 l/min | 0.54 | 0.54 | 0.54 | 0.55 | 0.55 | 0.57 | 0.58 | 0.57 | 0.56 | 0.56 | 0.57 | 0.57 | 0.57 | 0.56 | 0.55 |
|                             |            | 95 l/min | 1.86 | 1.86 | 1.87 | 1.87 | 1.87 | 1.86 | 1.87 | 1.87 | 1.86 | 1.85 | 1.85 | 1.86 | 1.86 | 1.87 | 1.87 |
|                             | Exhalation | 160l/min | 2.92 | 2.93 | 2.93 | 2.93 | 2.92 | 2.94 | 2.95 | 2.96 | 2.95 | 2.94 | 2.95 | 2.96 | 2.95 | 2.95 | 2.94 |
| Temperature conditioned     | Flow rate  |          | 42#  |      |      |      |      | 43#  |      |      |      |      | 44#  |      |      |      |      |
|                             |            |          | A    | B    | C    | D    | E    | A    | B    | C    | D    | E    | A    | B    | C    | D    | E    |
|                             | Inhalation | 30 l/min | 0.55 | 0.56 | 0.57 | 0.56 | 0.56 | 0.55 | 0.55 | 0.56 | 0.56 | 0.55 | 0.54 | 0.54 | 0.55 | 0.55 | 0.54 |
|                             |            | 95 l/min | 1.81 | 1.82 | 1.82 | 1.83 | 1.83 | 1.82 | 1.83 | 1.83 | 1.84 | 1.84 | 1.79 | 1.80 | 1.81 | 1.81 | 1.82 |
|                             | Exhalation | 160l/min | 2.94 | 2.95 | 2.94 | 2.93 | 2.93 | 2.92 | 2.93 | 2.93 | 2.94 | 2.94 | 2.92 | 2.92 | 2.93 | 2.93 | 2.94 |

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

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**Pictures**



1.Test Address:

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2.Client Address:

5 / F Building A3 Xijianxing Science and Technology Industrial Park, No. 3333, Guangqiao Avenue, Gongming Street, Guangming New District, Shenzhen City, Guangdong Province, China

3.Test environmental/conditions:

The test items are carried out under the conditions specified in the corresponding specifications (except where noted)

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