Test Report

Test Report No. :AS20032301PPE

Type / Model Name : Folding Type 16.5cm*10cm (±1cm)

Filter Grade : FFP2

Product Name : KN95 mask (external bridge of nose)

Applicant : GUIZHOU BOCAI MEDICAL DEVICES CO., LTD.
# PPE -- TEST REPORT

<table>
<thead>
<tr>
<th>Test Report No.</th>
<th>AS20032301PPE</th>
<th>Date of issue</th>
<th>10-Apr.-2020</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Type / Model Name</th>
<th>Folding Type 16.5cm*10cm (±1cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter Grade</td>
<td>FFP2</td>
</tr>
<tr>
<td>Product Name</td>
<td>KN95 mask (external bridge of nose)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Applicant</th>
<th>GUIZHOU BOCAI MEDICAL DEVICES CO., LTD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>4 / F, Building 24, Intelligent terminal (mobile phone) Industrial Park, Intersection of Huaxia Avenue and Donghai Road, Zhengzhou Airport Economic Comprehensive Experimental Zone, China</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>GUIZHOU BOCAI MEDICAL DEVICES CO., LTD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>4 / F, Building 24, Intelligent terminal (mobile phone) Industrial Park, Intersection of Huaxia Avenue and Donghai Road, Zhengzhou Airport Economic Comprehensive Experimental Zone, China</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prepared By</th>
<th>Shenzhen AS Technology Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Building A3, Digital Technology Park, Gao Xin South 7# Road High-Tech Industrial Park, Nanshan District, Shenzhen, China</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Result</th>
<th>POSITIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>according to the</td>
<td></td>
</tr>
<tr>
<td>standards listed in</td>
<td></td>
</tr>
<tr>
<td>clause 1 test</td>
<td></td>
</tr>
<tr>
<td>standards:</td>
<td></td>
</tr>
</tbody>
</table>

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.
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1 TEST STANDARDS

The tests were performed according to following standards:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 149:2001+A1:2009</td>
<td>Respiratory protective devices-Filtering half masks to protect against Particles-Requirements, testing, marking</td>
</tr>
</tbody>
</table>
2 SUMMARY

GENERAL REMARKS:
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Masks (sanitary products used to filter the air entering the nose and mouth)
Mask is a kind of sanitary product, which is generally used to filter the air entering the mouth and nose by wearing it on the mouth and nose, so as to block harmful gases, smells and droplets from entering and leaving the mouth and nose of the wearer. It is made of gauze or paper, etc.

Masks have a certain filtering effect on the air entering the lungs. When respiratory infectious diseases are prevalent, and when working in dust and other polluted environment, wearing masks has a very good effect.

FINAL ASSESSMENT:

Date of receipt of test sample : 02-04-2020

Testing commenced on : 02-04-2020

Testing concluded on : 10-04-2020

Tested By: Antany
10-04-2020

Approved By: Davis/Technical Manager
10-04-2020

Report No.AS20032301PPE
3 PRODUCT UNDER TEST

3.1 Photo documentation of the Product
3.2 Correlation parameter

FFP1 type mask: minimum filtering effect 80%
FFP2 type mask: minimum filtering effect 94%
FFP3 type mask: minimum filtering effect 99%

Medical or not
Masks are divided into medical masks and non-medical masks.

Item classification edit

N series: no time limit for protection of non oil suspended particles
R Series: eight hours for protection of non oil and sweat oil suspended particles
P Series: no time limit for the protection of non oil suspension particles and sweat oil suspension particles
4 TEST ENVIRONMENT

4.1 Address of the test laboratory

Shenzhen AS Technology Co., Ltd.
Building A3, Digital Technology Park, Gao Xin South 7# Road
High-Tech Industrial Park, Nanshan District, Shenzhen,
P.R.China. P.C. 518000

Subcontractor: NIL

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 20-25 °C

Humidity: 55-60 %

Atmospheric pressure: 100-106 kPa
### 5 TEST CONDITIONS AND RESULTS

Possible test case verdicts:
- test case does not apply to the test object........N(Not apply)
- test object does meet the requirement..........P(Pass)
- test object does not meet the requirement.......F(Fail)

Copy of marking plate:

<table>
<thead>
<tr>
<th>KN95 mask (external bridge of nose)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model: Folding Type 16.5cm*10cm (± 1cm)</td>
</tr>
<tr>
<td>GUIZHOU BOCAI MEDICAL DEVICES CO., LTD.</td>
</tr>
<tr>
<td>Made in China</td>
</tr>
<tr>
<td>Clause</td>
</tr>
<tr>
<td>--------</td>
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<tr>
<td>5</td>
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<td>6</td>
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<tr>
<td>7</td>
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<tr>
<td>7.1</td>
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<td>7.2</td>
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<tr>
<td>7.3</td>
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<tr>
<td></td>
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<td>7.4</td>
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<td>7.6</td>
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<tr>
<td></td>
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<tr>
<td>7.7</td>
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<tr>
<td></td>
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<tr>
<td>Clause</td>
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<tr>
<td>7.8</td>
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<td>7.9</td>
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<tr>
<td>7.9.1</td>
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<td></td>
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<tr>
<td>7.9.2</td>
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<tr>
<td></td>
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<tr>
<td>7.10</td>
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<tr>
<td></td>
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<td>7.11</td>
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<td></td>
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<td>7.12</td>
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<td></td>
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<tr>
<td>7.13</td>
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<td></td>
</tr>
<tr>
<td>Clause</td>
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<tr>
<td>--------</td>
</tr>
<tr>
<td>7.14</td>
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<td>7.15</td>
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<tr>
<td></td>
</tr>
<tr>
<td>7.16</td>
</tr>
<tr>
<td>7.17</td>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>7.17.2</td>
</tr>
<tr>
<td>7.17.2.1</td>
</tr>
<tr>
<td>7.17.2.2</td>
</tr>
<tr>
<td>7.17.3</td>
</tr>
<tr>
<td>7.18</td>
</tr>
<tr>
<td>8</td>
</tr>
</tbody>
</table>
### EN 149:2001+A1:2009

<table>
<thead>
<tr>
<th>Clause</th>
<th>Requirement + Test</th>
<th>Result - Remark</th>
<th>Verdict</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>General</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>No special measuring devices and methods are specified, commonly used devices and</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>methods shall be used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2</td>
<td>Visual inspection</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>The visual inspection is carried out appropriate by the test house prior to</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>laboratory or practical performance tests.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3</td>
<td>Conditioning</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>8.3.1</td>
<td>Simulated wearing treatment</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>A breathing machine is adjusted to 25 cycles/min and 2.0l/stroke.</td>
<td>25cycles/min 2.0l/stroke.</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>For testing, a saturator is incorporated in the exhalation line between the</td>
<td>A saturator incorporated by</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>breathing machine and the dummy head,</td>
<td>breathing machine and the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The spilling out of the dummy’s mouth and contaminating the particle filtering</td>
<td>Incline considered</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>half mask the head shall be incline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3.2</td>
<td>Temperature conditioning</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>Exposet masks to the following thermal cycle:</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>a) For 24h to a dry atmosphere of (70±3)℃;</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>b) For 24h to a temperature of (-30±3)℃;</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>Allow to return to room temperature for at least 4h between exposures and prior to</td>
<td>5h to paid for</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>subsequent testing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3.4</td>
<td>Flow conditioning</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>A total of 3 valved particle filtering half masks shall be tested, one as received</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>and two temperature conditioned in accordance with 8.3.2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Marking</td>
<td></td>
<td>--</td>
</tr>
<tr>
<td>9.1</td>
<td>Packaging</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>The following information shall be clearly and durably marked on the smallest</td>
<td>Complied, clearly marked</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>commercially available packaging or legible through it if the packaging is</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>transparent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.1.1</td>
<td>The name, trademark or other means of identification of the manufacturer or</td>
<td>GUIZHOU BOCAI MEDICAL DEVICES</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>supplier.</td>
<td>CO., LTD.</td>
<td></td>
</tr>
<tr>
<td>9.1.2</td>
<td>Type-identifying marking.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>9.1.3</td>
<td>Classification: FFP1, FFP2, FFP3.</td>
<td>FFP2 NR</td>
<td>P</td>
</tr>
<tr>
<td>Clause</td>
<td>Requirement + Test</td>
<td>Result - Remark</td>
<td>Verdict</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>9.1.4</td>
<td>The number and year of publication of this European Standard.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>9.1.5</td>
<td>At least they ear of end of shelf life.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>9.1.6</td>
<td>The sentence “see information supplied by the manufacturer”, at least in the official language(s) of the country of destination, or by using the pictogram as shown in Figure 12b.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>9.1.7</td>
<td>The manufacturer’s recommended conditions of storage (at least the temperature and humidity) or equivalent pictogram, as shown in Figures 12c and 12d.</td>
<td>See product manual</td>
<td>P</td>
</tr>
<tr>
<td>9.1.8</td>
<td>The packaging of those particle filtering half masks passing the dolomite clogging test shall be additionally marked with the letter &quot;D&quot;.</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>9.2</td>
<td>Particle filtering half mask</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>Particle filtering half masks complying with this European Standards hall be clearly and durably marked with the following:</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>9.2.1</td>
<td>The name, trademark or other means of identification of the manufacturer or supplier.</td>
<td>GUIZHOU BOCAI MEDICAL DEVICES CO., LTD.</td>
<td>P</td>
</tr>
<tr>
<td>9.2.2</td>
<td>Type-identifying marking.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>9.2.3</td>
<td>The number and year of publication of this European Standard.</td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>9.2.4</td>
<td>The symbols FFP1, FFP2 or FFP3 according to class.</td>
<td>FFP2 NR</td>
<td>P</td>
</tr>
<tr>
<td>9.2.5</td>
<td>If appropriate the letter D (dolomite) in accordance with clogging performance. This letter shall follow the class designation (see 9.2.4).</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>9.2.6</td>
<td>Sub-assemblies and components with considerable bearing on safety shall be marked so that they can be identified.</td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>
### 6 Attachments: Test table

The penetration of the filter of the particle filtering half mask shall meet the requirements of Table 1.

**Table 1 — Penetration of filter material**

<table>
<thead>
<tr>
<th>Classification</th>
<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>

**Table 7.9.2 — Penetration of test aerosol test**

<table>
<thead>
<tr>
<th>Item</th>
<th>Models</th>
<th>Sample1</th>
<th>Sample2</th>
<th>Sample3</th>
<th>Sample4</th>
<th>Sample5</th>
<th>Sample6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium chloride test</td>
<td>Sample1</td>
<td>5.6</td>
<td>5.6</td>
<td>5.7</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
</tr>
<tr>
<td>Sodium chloride test</td>
<td>Sample2</td>
<td>5.6</td>
<td>5.6</td>
<td>5.7</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
</tr>
<tr>
<td>Sodium chloride test</td>
<td>Sample3</td>
<td>5.7</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Sodium chloride test</td>
<td>Sample4</td>
<td>5.5</td>
<td>5.7</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Sodium chloride test</td>
<td>Sample5</td>
<td>5.5</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Sodium chloride test</td>
<td>Sample6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Paraffin oil test</td>
<td>Sample1</td>
<td>5.5</td>
<td>5.7</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Paraffin oil test</td>
<td>Sample2</td>
<td>5.5</td>
<td>5.7</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Paraffin oil test</td>
<td>Sample3</td>
<td>5.7</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Paraffin oil test</td>
<td>Sample4</td>
<td>5.5</td>
<td>5.7</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Paraffin oil test</td>
<td>Sample5</td>
<td>5.5</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Paraffin oil test</td>
<td>Sample6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
</tbody>
</table>

**Table 8.5 — Leakage test**

<table>
<thead>
<tr>
<th>Item</th>
<th>Models</th>
<th>Sample1</th>
<th>Sample2</th>
<th>Sample3</th>
<th>Sample4</th>
<th>Sample5</th>
<th>Sample6</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl flow rate (L/min)</td>
<td>Sample1</td>
<td>90</td>
<td>100</td>
<td>120</td>
<td>110</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td>NaCl aerosol (um)</td>
<td>Sample2</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>0.3 Pumping flow rate (L/min)</td>
<td>Sample3</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>NaCl concentration before mask (Mg/m3)</td>
<td>Sample4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>NaCl concentration after mask (Mg/m3)</td>
<td>Sample5</td>
<td>0.6</td>
<td>0.8</td>
<td>0.6</td>
<td>0.7</td>
<td>0.6</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Note:**
- Test ark volume is 2m³
- Average Leakage ratio is 8%<11%
- Calculation formula as below:

\[
P(\%) = \frac{C_2}{C_1} \times \left( \frac{t_{IN} + t_{EX}}{t_{IN}} \right) \times 100
\]
### Table 8.9.2  Exhalation resistance test

<table>
<thead>
<tr>
<th>Item</th>
<th>Sample1</th>
<th>Sample2</th>
<th>Sample3</th>
<th>Sample4</th>
<th>Sample5</th>
<th>Sample6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation gas velocity (L/min)</td>
<td>160</td>
<td>160</td>
<td>160</td>
<td>160</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>Maximum resistance (mbar)</td>
<td>2.45</td>
<td>2.46</td>
<td>2.47</td>
<td>2.45</td>
<td>2.46</td>
<td>2.45</td>
</tr>
</tbody>
</table>

Conclusion: Maximum permitted resistance <3.0 mbar

### Table 8.9.3  Inhalation resistance test

<table>
<thead>
<tr>
<th>Item</th>
<th>Sample1</th>
<th>Sample2</th>
<th>Sample3</th>
<th>Sample4</th>
<th>Sample5</th>
<th>Sample6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation gas velocity (L/min)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Maximum resistance (mbar)</td>
<td>0.42</td>
<td>0.43</td>
<td>0.45</td>
<td>0.43</td>
<td>0.42</td>
<td>0.43</td>
</tr>
</tbody>
</table>

Conclusion: Maximum Inhalation resistance <0.7 mbar

### Table 8.9.3.2  Inhalation resistance test

<table>
<thead>
<tr>
<th>Item</th>
<th>Sample1</th>
<th>Sample2</th>
<th>Sample3</th>
<th>Sample4</th>
<th>Sample5</th>
<th>Sample6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation (L/min)</td>
<td>95</td>
<td>95</td>
<td>95</td>
<td>95</td>
<td>95</td>
<td>95</td>
</tr>
<tr>
<td>Maximum resistance (mbar)</td>
<td>2.12</td>
<td>2.14</td>
<td>2.14</td>
<td>2.13</td>
<td>2.12</td>
<td>2.13</td>
</tr>
</tbody>
</table>

Conclusion: Maximum Inhalation resistance <2.4 mbar

-----End of Test Report-----