

**Test Report** SL52105268358501TX **Date:** May 28, 2021 **Page 1 of 10**  
 10A LIMITED  
 RMS 1001-1005, 10/F, NANYANG PLAZA, 57 HUNG TO RD., KWUN TONG, KLN, HONG KONG

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Description : (A)10A NanoGO Face Mask Lotus B401  
 Claimed : FFP2

Sample Color : (A)White  
 Style No. : FM3D-M-LOT-B401  
 Lot No./Batch Code : G1c  
 Manufacturer : 10A LIMITED  
 Country of Origin : HONG KONG

Test Performed : Selected test(s) as requested by applicant

Sample Receiving Date : May 13, 2021  
 Testing Period : May 13, 2021 - May 28, 2021  
 Test Result(s) : Unless otherwise stated the results shown in this test report refer only to the sample(s) tested, for further details, please refer to the following page(s).

**Conclusion:**

| Sample No. | Recommendation Level |
|------------|----------------------|
| (A)        | FFP2 NR              |

Signed for and on behalf of  
 SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd Testing Center

Sara Guo (Account Executive)

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Test Result

**Personal Protective Equipment - Respiratory Protective Devices- Filtering Half Masks to Protect against Particles- Requirements, Testing, Marking**

EN 149:2001+A1:2009

**Clause 7.4 Packaging**

(EN 149:2001+A1:2009 Clause 8.2)

| Test Requirement   | Results | Comment |
|--|---------|---------|
| 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. | Comply  | Pass    |

**Clause 7.5 Material**

(EN 149:2001+A1:2009, Clause 8.2 & 8.3.1 & 8.3.2)

| Test Requirement  | Results | Comment |
|---|---------|---------|
| 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.                | Comply  | Pass    |
| After undergoing the conditioning described in 8.3.1 none of the particle filtering half masks shall have suffered mechanical failure of the facepiece or straps. | Comply  |         |
| When conditioned in accordance with 8.3.1 and 8.3.2 the particle filtering half mask shall not collapse.  | Comply  |         |
| Any material from the filter media released by the air flow through the filter shall not constitute a hazard or nuisance for the wearer.                          | Comply  |         |

**Clause 7.6 Cleaning and Disinfecting**

(EN 149:2001+A1:2009, Clause 8.4 & 8.5 & 8.11)

| Test Requirement   | Results  | Comment |
|--|--|---------|
| 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.<br>With reference to 7.9.2, after cleaning and disinfecting the re-usable particle filtering half mask shall satisfy the penetration requirement of the relevant class. | Not applicable<br>(Not designed to be re-usable) | N.A.    |

**Clause 7.7 Practical Performance**

(EN 149:2001+A1:2009, Clause 8.4)

| Test Requirement  | Results          | Comment |
|---|------------------|---------|
| 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. | No imperfections | Pass    |



**Clause 7.8 Finish of Parts**

(EN 149:2001+A1:2009, Clause 8.2)

| Test Requirement  | Results                 | Comment |
|---|-------------------------|---------|
| Parts of the device likely to come into contact with the wearer shall have no sharp edges or burrs. | No sharp edges or burrs | Pass    |

**Clause 7.9.1 Total Inward Leakage**

(EN 149:2001+A1:2009, Clause 8.5)

| Test Requirement   | Results                    | Comment              |
|--|----------------------------|----------------------|
| 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: 25% for FFP1, 11% for FFP2, 5% for FFP3<br><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: 22% for FFP1, 8% for FFP2, 2% for FFP3 | Detail refer to Appendix 1 | Meet FFP1, Meet FFP2 |

**Appendix 1: Summarization of Test Data**

Inward Leakage Test Data

| Subject | Sample No. | Condition | Walk(%) | Head Side/side(%) | Head up/down(%) | Talk(%) | Walk(%) | Mean(%) |
|---------|------------|-----------|---------|-------------------|-----------------|---------|---------|---------|
| Zhou    | 1          | A.R.      | 6.07    | 6.19              | 6.59            | 6.89    | 5.62    | 6.27    |
| Luo     | 2          | A.R.      | 7.60    | 6.95              | 6.73            | 7.67    | 7.08    | 7.21    |
| Lu      | 3          | A.R.      | 6.08    | 5.85              | 6.49            | 6.93    | 6.69    | 6.41    |
| Wang    | 4          | A.R.      | 5.44    | 4.57              | 5.47            | 5.59    | 5.52    | 5.32    |
| Bao     | 5          | A.R.      | 7.54    | 7.16              | 7.27            | 7.78    | 7.66    | 7.48    |
| Ding    | 6          | T.C.      | 4.96    | 5.86              | 5.75            | 5.83    | 5.40    | 5.56    |
| Li      | 7          | T.C.      | 7.26    | 7.08              | 7.25            | 8.41    | 7.79    | 7.56    |
| Chen    | 8          | T.C.      | 5.62    | 5.26              | 5.80            | 5.87    | 5.50    | 5.61    |
| Song    | 9          | T.C.      | 6.68    | 6.73              | 6.41            | 6.87    | 6.45    | 6.63    |
| Ye      | 10         | T.C.      | 7.90    | 7.65              | 7.66            | 8.47    | 7.66    | 7.87    |

Facial Dimension

| Subject | Face length | Face Width | Face Depth | Mouth Width |
|---------|-------------|------------|------------|-------------|
| Chen    | 125         | 150        | 120        | 58          |
| Lu      | 115         | 132        | 107        | 48          |
| Zhou    | 115         | 135        | 106        | 52          |
| Li      | 125         | 130        | 107        | 46          |
| Luo     | 125         | 136        | 100        | 43          |
| Zheng   | 128         | 140        | 112        | 55          |
| Wang    | 120         | 147        | 103        | 48          |
| Song    | 120         | 140        | 100        | 50          |
| Bao     | 130         | 134        | 104        | 50          |

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|      |     |     |     |    |
|------|-----|-----|-----|----|
| Ding | 134 | 150 | 110 | 52 |
| Liu  | 120 | 135 | 117 | 50 |
| Ye   | 126 | 137 | 105 | 52 |

Note: A panel of ten clean-shaven persons (without beards or sideburns) were selected covering the spectrum of facial characteristics of typical users of the filtering half masks submitted by applicant (excluding significant abnormalities). It is to be expected that exceptionally some persons cannot be satisfactorily fitted with a particle filtering half mask. Such exceptional subjects shall not be used for testing particle filtering half masks.

**Clause 7.9.2 Penetration of Filter Material**

(EN 149:2001+A1:2009, Clause 8.11 & EN 13274-7:2019)

| Test Requirement  |                                     |                            | Results                    | Comment              |
|---|-------------------------------------|----------------------------|----------------------------|----------------------|
| The penetration of the filter of the particle filtering half mask shall meet the requirements of the following table. |                                     |                            | Detail refer to Appendix 2 | Meet FFP1, Meet FFP2 |
| Classification  | Maximum penetration of test aerosol |                            |                            |                      |
|   | Sodium chloride test 95 l/min       | Paraffin oil test 95 l/min |                            |                      |
|   | % max.                              | % max.                     |                            |                      |
| FFP1  | 20                                  | 20                         |                            |                      |
| FFP2  | 6                                   | 6                          |                            |                      |
| FFP3  | 1                                   | 1                          |                            |                      |

**Appendix 2: Summarization of Test Data**

Penetration of filter material

| Aerosol              | Condition                                     | Sample No. | Penetration (%) |
|----------------------|---|------------|-----------------|
| Sodium chloride test | As received                                   | 1          | 0.266           |
|                      |   | 2          | 0.222           |
|                      |   | 3          | 0.231           |
|                      | Simulated wearing treatment                   | 4          | 0.253           |
|                      |   | 5          | 0.260           |
|                      |   | 6          | 0.275           |
|                      | Mechanical strength + Temperature conditioned | 7          | 0.456           |
|                      |   | 8          | 0.437           |
|                      |   | 9          | 0.395           |
| Paraffin oil test    | As received                                   | 10         | 1.763           |
|                      |   | 11         | 1.654           |
|                      |   | 12         | 1.705           |
|                      | Simulated wearing treatment                   | 13         | 1.456           |
|                      |   | 14         | 1.477           |
|                      |   | 15         | 1.805           |
|                      | Mechanical strength + Temperature conditioned | 16         | 4.651           |
|                      |   | 17         | 5.453           |
|                      |   | 18         | 4.204           |

Flow conditioning: Single filter: 95.0 L/min



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**Clause 7.10 Compatibility with Skin**

(EN 149:2001+A1:2009, Clause 8.4 & 8.5)

| Test Requirement   | Results   | Comment |
|--|---|---------|
| 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. | No irritation or any other adverse effect to health | Pass    |

**Clause 7.11 Flammability**

(EN 149:2001+A1:2009, Clause 8.6)

| Test Requirement   | Results                    | Comment |
|--|----------------------------|---------|
| The material used shall not present a danger for the wearer and shall not be of highly flammable nature<br>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. | Detail refer to Appendix 3 | Pass    |

**Appendix 3: Summarization of Test Data**

Flammability

| Condition               | Sample No. | Result |
|-------------------------|------------|--------|
| As received             | 1          | NIL    |
|                         | 2          | NIL    |
| Temperature conditioned | 3          | NIL    |
|                         | 4          | NIL    |

**Clause 7.12 Carbon Dioxide Content of The Inhalation Air**

(EN 149:2001+A1:2009, Clause 8.7)

| Test Requirement   | Results                    | Comment |
|--|----------------------------|---------|
| The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1,0 % (by volume) | Detail refer to Appendix 4 | Pass    |

**Appendix 4: Summarization of Test Data**

Carbon Dioxide Content of The Inhalation Air

| Condition   | Sample No. | Result           |
|-------------|------------|------------------|
| As received | 1          | 0.5906           |
|             | 2          | 0.5919           |
|             | 3          | 0.5906           |
|             |            | Mean value: 0.59 |



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**Clause 7.13 Head Harness**

(EN 149:2001+A1:2009, Clause 8.4 & 8.5)

| Test Requirement  | Results | Comment |
|---|---------|---------|
| The head harness shall be designed so that the particle filtering half mask can be donned and removed easily.   | Comply  | Pass    |
| 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. | Comply  |         |

**Clause 7.14 Field of Vision**

(EN 149:2001+A1:2009, Clause 8.4)

| Test Requirement   | Results | Comment |
|--|---------|---------|
| The field of vision is acceptable if determined so in practical performance tests. | Comply  | Pass    |

**Clause 7.15 Exhalation Valve(s)**

(EN 149:2001+A1:2009, Clause 8.2 & 8.9.1 & 8.3.4 & 8.8)

| Test Requirement  | Results                                   | Comment |
|---|---|---------|
| (a) A particle filtering half mask may have one or more exhalation valve(s), which shall function correctly in all orientations.  | Not applicable due to No exhalation valve | N.A     |
| (b) 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. | Not applicable due to No exhalation valve |         |
| (c) 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.  | Not applicable due to No exhalation valve |         |
| (d) When the exhalation valve housing is attached to the faceblank, it shall withstand axially a tensile force of 10N applied for 10 s.   | Not applicable due to No exhalation valve |         |



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**Clause 7.16 Breathing Resistance**

(EN 149:2001+A1:2009, Clause 8.9)

| Test Requirement  |                                     |          |            | Results                    | Comment                         |
|---|-------------------------------------|----------|------------|----------------------------|---------------------------------|
| The breathing resistances apply to valved and valveless particle filtering half masks and shall meet the requirements of the following table. |                                     |          |            | Detail refer to Appendix 5 | Meet FFP1, Meet FFP2, Meet FFP3 |
| 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  | 1.0                                 | 3.0      | 3.0        |                            |                                 |

**Appendix 5: Summarization of Test Data**

Breathing resistance (mbar)

|                             | Flow rate(l/min) | 1   |     |     |     |     | 2   |     |     |     |     | 3   |     |     |     |     |     |
|-----------------------------|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                             |                  | A   | B   | C   | D   | E   | A   | B   | C   | D   | E   | A   | B   | C   | D   | E   |     |
| As received                 | Inhalation       | 30  | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 |
|                             |                  | 95  | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 |
|                             | Exhalation       | 160 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 |
| Simulated wearing treatment | Inhalation       | 30  | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 |
|                             |                  | 95  | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 |
|                             | Exhalation       | 160 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.9 |
| Temperature conditioned     | Inhalation       | 30  | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 |
|                             |                  | 95  | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
|                             | Exhalation       | 160 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.9 |

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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**Clause 7.17 Clogging**

(EN 149:2001+A1:2009, Clause 8.9 & 8.10)

| Test Requirement  | Results                               | Comment                             |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
|---|---------------------------------------|-------------------------------------|----------------------------|-------------------------------|----------------------------|---|---|--|------|------|------|----|----|------|---|---|------|---|---|---------------------------------------|------|
| <p><b>Clause 7.17.2 Breathing resistance</b><br/> <b>Valved particle filtering half masks:</b><br/>                     After clogging the inhalation resistances shall not exceed:<br/>                     FFP1: 4 mbar, FFP2: 5 mbar, FFP3: 7 mbar at 95L/min continuous flow<br/>                     The exhalation resistance shall not exceed 3 mbar at 160 L/min continuous flow.</p> <p><b>Valveless particle filtering half masks:</b><br/>                     After clogging the inhalation and exhalation resistances shall not exceed:<br/>                     FFP1: 3 mbar, FFP2: 4 mbar, FFP3: 5 mbar at 95L/min continuous flow</p>   | Optional for single shift device only | N.A.                                |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
| <p><b>Clause 7.17.3 Penetration of filter material</b><br/>                     All types (valved and valveless) of particle filtering half masks claimed to meet the clogging requirement shall also meet the requirements.</p> <table border="1"> <thead> <tr> <th rowspan="3">Classification</th> <th colspan="2">Maximum penetration of test aerosol</th> </tr> <tr> <th>Sodium chloride test 95 l/min</th> <th>Paraffin oil test 95 l/min</th> </tr> <tr> <th>%</th> <th>%</th> </tr> </thead> <tbody> <tr> <td></td> <td>max.</td> <td>max.</td> </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> </tbody> </table> | Classification                        | Maximum penetration of test aerosol |                            | Sodium chloride test 95 l/min | Paraffin oil test 95 l/min | % | % |  | max. | max. | FFP1 | 20 | 20 | FFP2 | 6 | 6 | FFP3 | 1 | 1 | Optional for single shift device only | N.A. |
| Classification  |                                       | Maximum penetration of test aerosol |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
|   |                                       | Sodium chloride test 95 l/min       | Paraffin oil test 95 l/min |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
|   | %                                     | %                                   |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
|   | max.                                  | max.                                |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
| FFP1  | 20                                    | 20                                  |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
| FFP2  | 6                                     | 6                                   |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |
| FFP3  | 1                                     | 1                                   |                            |                               |                            |   |   |  |      |      |      |    |    |      |   |   |      |   |   |                                       |      |

**Clause 7.18 Demountable Parts**

(EN 149:2001+A1:2009, Clause 8.2)

| Test Requirement   | Results              | Comment |
|--|----------------------|---------|
| All demountable parts (if fitted) shall be readily connected and secured, where possible by hand | No demountable parts | N.A.    |

| Test   | Uncertainty |
|--|-------------|
| Total inward leakage                         | 3.4%        |
| Penetration of filter material               | 4.8%        |
| Carbon dioxide content of the inhalation air | 3.9%        |
| Breathing resistance (30L/min)               | 5.9%        |
| Breathing resistance (95L/min)               | 4.9%        |
| Breathing resistance (160L/min)              | 4.3%        |

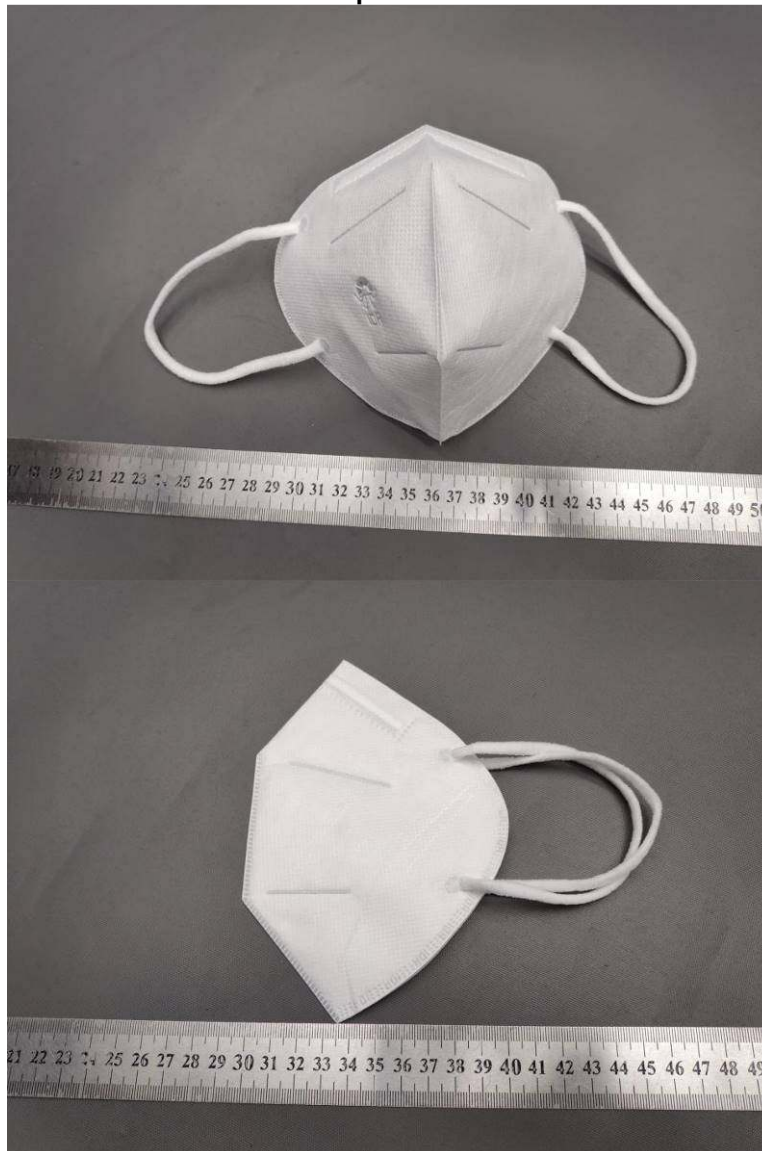
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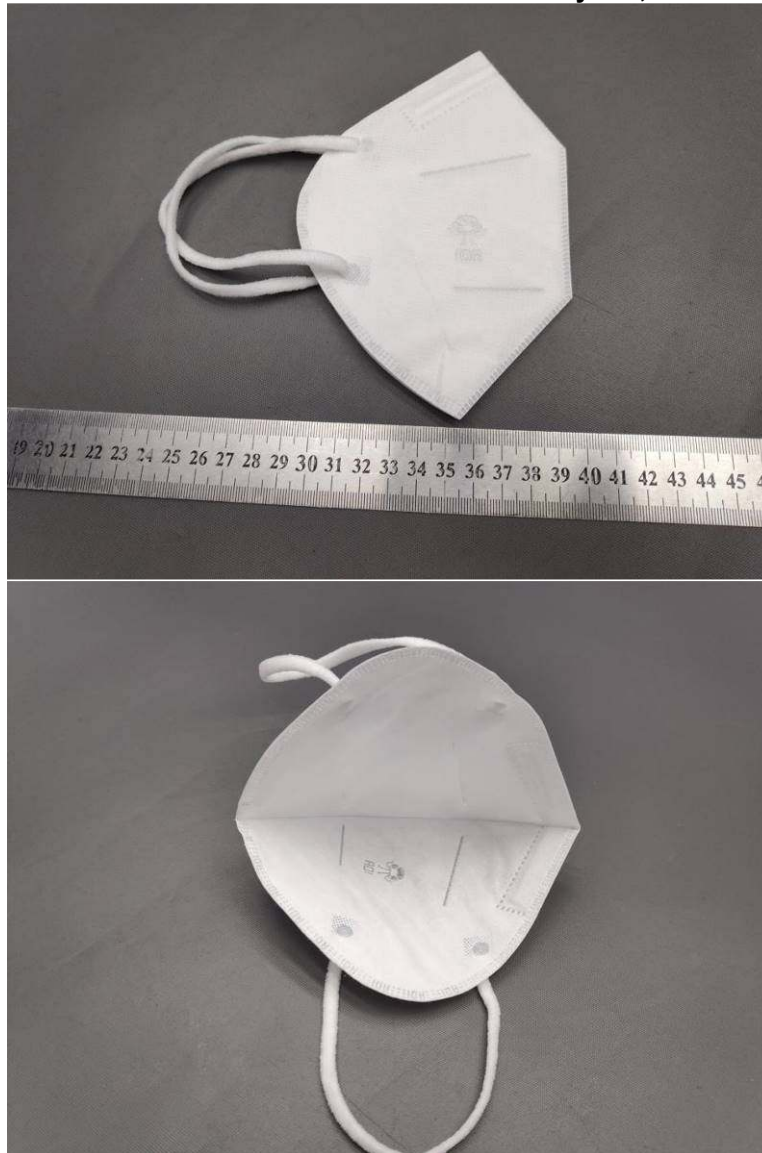
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