

Test Report 3219386.
Jiangxi Rongge Technology Co., Ltd.


江西荣格科技有限公司

Introduction.

This report has been prepared by Paul Waller and relates to the activity detailed below:

| Job/Registration Details | Client Details |
|--|---|
| Job number: 3219386 Job type: Testing Samples Submitted Start Date: 15/05/2020 Test type: Type retest Sample ID: 10190140 Registration: CE 728056 Scheme: Negative pressure RPE Protocol: PP123 Scheme Manager: Nathan Shipley | Jiangxi Rongge Technology Co., Ltd. 1# Xiafeng Road, Xiafeng Industrial Park Economic Development Zone Guangfeng District Shangrao City Jiangxi 334604 China |

The report has been approved for issue by T Wicksey – Senior Test Engineer

| Approved For Issue | |
|---|-------------------------|
|  | Issue Date: 21 May 2020 |

Objectives.

This is an independent test evaluation to only certain clauses or sub-clauses of the agreed specification in accordance with the following test programme:

BSI COVID-19 filtering face piece technical specification, for COVID-19 masks for use by healthcare workers

Product Scope.

COVID-19 masks for use by healthcare workers

Report Summary.

The samples were received on 7 May 2020 and the testing was started on 15 May 2020.

The samples submitted complied with the requirements of the test work conducted.

Test Samples.

| Sample ID | ER Number | Description |
|-----------|-----------|-----------------------|
| 1 to 19 | 10190140 | Model: RG-MX-P01 FFP2 |

Description of Test Samples.

| Sample Description |
|--|
| COVID-19 masks for use by healthcare workers: Model: RG-MX-P01 FFP2 |

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Test Requirements.

Testing in accordance with BSI COVID-19 filtering face piece technical specification

Technical testing specification for COVID-19 masks for use by healthcare workers

| EN 149:2001+A1:2009 Performance requirement | EN 149:2001+A1:2009 Test method clause | Requirement | Assessment |
|---|--|--|-------------|
| <p>7.7 Practical performance 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 house shall provide full details of those parts of the practical performance tests which revealed these imperfections.</p> <p>2 test subjects, masks tested 'As received'</p> | <p>Testing shall be done in accordance with 8.4.</p> | <p>During the tests the particle filtering half mask shall be subjectively assessed by the wearer and after the test, comments on the following shall be recorded:</p> <ul style="list-style-type: none"> a) head harness comfort; b) security of fastenings; c) field of vision; d) any other comments reported by the wearer on request. | <p>Pass</p> |
| <p>7.9 Leakage 7.9.1 Total inward leakage</p> <p>5 test subjects, masks tested 'As received'</p> | <p>Testing shall be done in accordance with 8.5.</p> | <p>All samples must achieve All individual exercise results tests shall be not greater than 11 % (for FFP2) and, in addition, all arithmetic means for the total inward leakage shall be not greater than 8 % (for FFP2)</p> | <p>Pass</p> |
| <p>7.9 Leakage 7.9.2 Penetration of filter material</p> <p>3 test samples masks tested 'As received', for NaCl (Sodium Chloride) and PO (Paraffin oil), 3min test</p> | <p>Testing shall be done in accordance with 8.11</p> | <p>6% for both PO and NaCl</p> | <p>Pass</p> |
| <p>7.12 Carbon dioxide content of the inhalation air</p> <p>3 test samples, masks tested 'As received'</p> | <p>Testing shall be done in accordance with 8.7.</p> | <p>The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1,0 % (by volume).</p> | <p>Pass</p> |
| <p>7.16 Breathing resistance</p> <p>3 test samples, masks tested 'As received'</p> | <p>Testing shall be done in accordance with 8.9</p> | <p>The breathing resistances shall meet the requirements of;</p> <ul style="list-style-type: none"> 30l/min – 0.7mbar (inhale) 95l/min – 2.4mbar (inhale) 160l/min – 3.0mbar (exhale) | <p>Pass</p> |
| Appendix A - Test Panel Data | | | |
| Product Photographs | | | |

Glossary of Terms.

Pass: Complies. Tested by BSI engineers at BSI laboratories

Pass 1: Complies. Witnessed by BSI engineers in manufacturers laboratory.

Pass 2: Complies. Tests carried out by third party lab; results accepted by BSI.

Pass*: Report resulted in uncertainty and states that Compliance is more probable than non-compliance.

Fail: Non-compliance. Product does not meet the requirements of this clause.

Fail*: Report resulted in uncertainty and states that Non-compliance is more probable than compliance.

N/T: Not Tested

N/A: Not Applicable

AR: As Received

TC: Temperature Conditioned

SW: Simulated Wear

FT: Flow Tested

MS: Mechanical strength

MMDF: Manufactures Minimum Design Flow

MMDC: Manufactures Minimum Design Condition

Conditions of Issue.

This Test Report is issued subject to the conditions stated in current issue of 'BSI Terms of Service'. The results contained herein apply only to the particular sample(s) tested and to the specific tests carried out, as detailed in this Test Report. The issuing of this Test Report does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of any product. No extract, abridgement or abstraction from a Test Report may be published or used to advertise a product without the written consent of BSI, who reserve the absolute right to agree or reject all or any of the details of any items or publicity for which consent may be sought.

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Opinions and Interpretations expressed herein are outside the scope of our UKAS accreditation.

Unless otherwise stated, any results not obtained from testing in a BSI laboratory are outside the scope of our UKAS accreditation.

Test Results.

Testing in accordance with BSI COVID-19 filtering face piece technical specification

BS EN 149:2001 +A1:2009 Technical testing specification for COVID-19 masks for use by healthcare workers

| CLAUSE | REQUIREMENTS | ASSESSMENT |
|--------|--|------------|
| 7.7 | <p>Practical performance</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 house shall provide full details of those parts of the practical performance tests which revealed these imperfections.</p> <p>Test in accordance with clause 8.4 of the standard.</p> <p>Testing in accordance with BSI COVID-19 filtering face piece technical specification, for masks for use by healthcare workers</p> <p>During the tests the particle filtering half mask shall be subjectively assessed by the wearer and after the test, comments on the following shall be recorded: a) head harness comfort; b) security of fastenings; c) field of vision; d) any other comments reported by the wearer on request.</p> | Pass |

Table A: Practical performance

| Test candidate | Sample | Comments | | | | Assessment |
|----------------|--------|----------------------|------------------------|-----------------|--------------------|------------|
| | | Head harness comfort | Security of fastenings | Field of vision | Any other comments | |
| JS3 | 1 AR | OK | OK | Good | None | Pass |
| LM2 | 2 AR | OK | OK | OK | None | Pass |

7.9 Leakage

7.9.1

Total inward leakage

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.

The total inward leakage consists of three components: face seal leakage, exhalation valve leakage (if exhalation valve fitted) and filter penetration.

Test in accordance with clause 8.5 of the standard.

Pass

Testing in accordance with BSI COVID-19 filtering face piece technical specification, for masks for use by healthcare workers

5 test subjects, masks tested 'As received'. All individual exercise results tests shall be not greater than 11 % (for FFP2) and, in addition, all arithmetic means for the total inward leakage shall be not greater than 8 % (for FFP2).

Table B: Clause 7.9.1 - Total inward leakage

| Test candidate | Sample | Pre test condition | Inward Leakage (%) | | | | | | Assessment |
|----------------|--------|--------------------|--------------------|--------------------------------|-----------------------------|---------------------|---------|---------|------------|
| | | | A | B | C | D | E | Average | |
| | | | Walking | Walking with head side to side | Walking with head up & down | Walking and talking | Walking | | |
| BH1 | 3 | AR | 5.58 | 6.07 | 8.42 | 3.95 | 6.06 | 6.02 | Pass |
| JB1 | 4 | AR | 1.16 | 1.48 | 1.92 | 2.46 | 2.80 | 1.96 | Pass |
| RF1 | 5 | AR | 1.22 | 9.96 | 9.85 | 2.55 | 7.14 | 6.14 | Pass |
| GR1 | 6 | AR | 4.38 | 4.22 | 4.35 | 1.24 | 4.04 | 3.65 | Pass |
| BH2 | 7 | AR | 2.31 | 2.06 | 2.01 | 0.38 | 0.45 | 1.44 | Pass |

Test Results. (Continued)

| CLAUSE | REQUIREMENTS | ASSESSMENT |
|--------|--------------|------------|
|--------|--------------|------------|

7.9.2 Penetration of filter material

Testing in accordance with BSI COVID-19 filtering face piece technical specification, for masks for use by healthcare workers

3 test samples masks tested 'As received', for NaCl (Sodium Chloride) and PO (Paraffin oil), 3 min test. Testing shall be done in accordance with 8.11. 6% limit for both PO and NaCl

Pass

Table C: Clause 8.11 - Sodium Chloride penetration test

| Sample number | Pre-test condition | Flow through filter (l/min) | Penetration (%) | |
|---------------|--------------------|-----------------------------|-----------------|--------|
| | | | Limit | Actual |
| 8 | AR | 95 | < 6 | 0.278 |
| 9 | AR | | | 0.315 |
| 10 | AR | | | 0.285 |

Table D: Clause 8.11 - Paraffin oil penetration test

| Sample number | Pre-test condition | Flow through filter (l/min) | Penetration (%) | |
|---------------|--------------------|-----------------------------|-----------------|--------|
| | | | Limit | Actual |
| 11 | AR | 95 | < 6 | 2.258 |
| 12 | AR | | | 2.259 |
| 13 | AR | | | 0.848 |

7.12 Carbon dioxide content of inhalation air

The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1.0% (by volume).

Pass

Test in accordance with clause 8.7 of the standard.

Table E: Clause 8.7 - Carbon Dioxide content of the inhalation air

| Sample | Pre-test condition | Dead space CO ₂ (%) | |
|--------|--------------------|--------------------------------|----------|
| | | Limit | Measured |
| 14 | AR | < 1.0 | 0.57 |
| 15 | AR | | 0.60 |
| 16 | AR | | 0.60 |

Test Results. (Continued)

| CLAUSE | REQUIREMENTS | ASSESSMENT |
|--------|--------------|------------|
|--------|--------------|------------|

7.16

Breathing resistance

Testing in accordance with BSI COVID-19 filtering face piece technical specification, for masks for use by healthcare workers

3 test samples masks tested 'As received'. Test in accordance with clause 8.9 of the standard.

Pass

The breathing resistances shall meet the requirements of FFP2;
30l/min – 0.7mbar (inhale), 95l/min – 2.4mbar (inhale), 160l/min – 3.0mbar (exhale)

Table F: Clause 8.9 – Breathing resistance. Inhalation resistance at a continuous flow

| Sample | Pre-test condition | Continuous flow (l/min) | Inhalation resistance (mbar) | |
|--------|--------------------|-------------------------|------------------------------|----------|
| | | | Limit | Measured |
| 17 | AR | 30 | < 0.7 | 0.44 |
| 18 | AR | | | 0.47 |
| 19 | AR | | | 0.45 |
| 17 | AR | 95 | < 2.4 | 1.38 |
| 18 | AR | | | 1.44 |
| 19 | AR | | | 1.40 |

Table G: Clause 8.9 – Breathing resistance. Exhalation resistance at a continuous flow, measured in five orientations with the worst case reported

| Sample | Pre-test condition | Continuous flow (l/min) | Exhalation resistance (mbar) | |
|--------|--------------------|-------------------------|------------------------------|----------|
| | | | Limit | Measured |
| 17 | AR | 160 | < 3.0 | 2.16 |
| 18 | AR | | | 2.26 |
| 19 | AR | | | 2.15 |

Appendix A. – Test Panel Data

| Test Candidate | Facial Dimensions (mm) | | | | | Sex |
|----------------|------------------------|---------------|------------|----------------|--------------------|------|
| | Length of face | Width of face | Face depth | Width of mouth | Head Circumference | |
| JS3 | 126 | 134 | 124 | 49 | 600 | Male |
| LM2 | 110 | 148 | 125 | 44 | 589 | Male |
| BH1 | 124 | 145 | 126 | 49 | 590 | Male |
| JB1 | 114 | 144 | 108 | 59 | 574 | Male |
| RF1 | 104 | 122 | 121 | 55 | 549 | Male |
| GR1 | 124 | 145 | 126 | 49 | 590 | Male |
| BH2 | 124 | 148 | 120 | 51 | 595 | Male |

Note: All candidates were clean shaven

Product photographs.



Front view



Side View



Inside View

End of Report