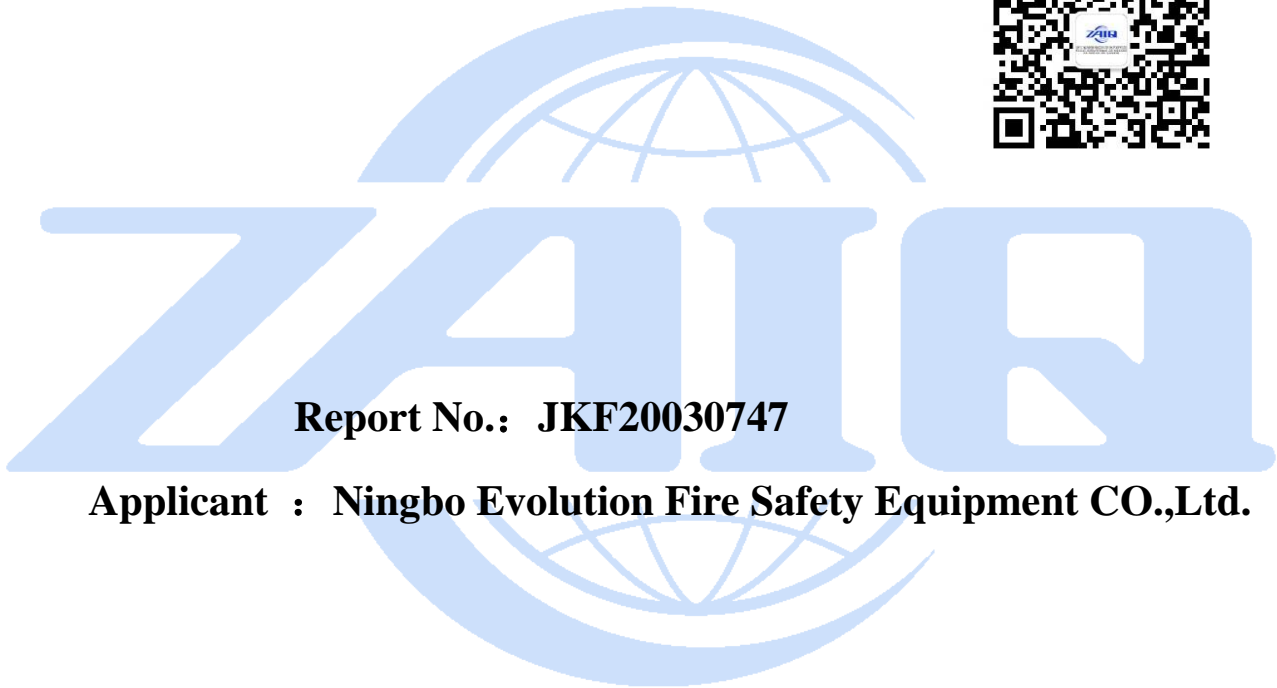




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TEST REPORT



Report No.: JKF20030747

Applicant : Ningbo Evolution Fire Safety Equipment CO.,Ltd.



Zhejiang Academy of Science and Technology for Inspection and Quarantine

Add: No. 398, Jianshe 3 Road, Xiaoshan District, Hangzhou, Zhejiang, China

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Report No.: JKF20030747

Report date: 2020-11-23

| The information are provided by client(applicant): | | | | |
|--|---|---|-----------------|--------------------------|
| Sample Information | Sample Name: | Filtering half mask | | |
| | Style No.: | FB01 | | |
| | Brand: | FlameBrother | | |
| Customer Information | Applicant: | Ningbo Evolution Fire Safety Equipment CO.,Ltd. | | |
| | Address: | No.91-1,Fengyi Rd.,Economic Development Zone,Yuyao, Ningbo,Zhejiang 315400,China | | |
| | Manufacturer: | Ningbo Evolution Fire Safety Equipment CO.,Ltd. | | |
| | Manufacturer address: | No.91-1,Fengyi Rd.,Economic Development Zone,Yuyao, Ningbo,Zhejiang 315400,China | | |
| The information are confirmed by testing organization: | | | | |
| Test Information | Date of sample received: | 2020-11-17 | Testing period: | 2020-11-17 to 2020-11-23 |
| | Quantity: | 70 Pieces | | |
| | Sample description: | White mask | | |
| | Basis of judgment: | EN 149:2001+A1:2009 FFP2 NR Respiratory protective devices—Filtering half masks to protect against particles —Requirements, testing, marking | | |
| Test Conclusion | The items tested meet the requirements of EN 149:2001+A1:2009 FFP2 NR | | | |
| Test Result | Please refer to next pages. | | | |
| Remark | / | | | |

Edit:

叶义文

Ye yiwen

Sign:

Zhao dong

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Test Results:

Clause 7.5 Material

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

| Requirement | Results | Rating |
|---|---------|--------|
| 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 conditioning described in 8.3.1 none of the particle filtering half masks shall have suffered mechanical failure of the facepiece or straps. When conditioned in accordance with 8.3.1 and 8.3.2 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. | Comply | Pass |

Clause 7.6 Cleaning and disinfecting

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

| Requirement | Results | Rating |
|--|--|--------|
| 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. 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 (Not designed to be re-usable) | N/A |

Clause 7.7 Practical performance

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

| Requirement | Results | Rating |
|---|------------------|--------|
| 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)

| Requirement | Results | Rating |
|---|-------------------------|--------|
| 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)

| Requirement | Results | Rating |
|--|--|--------|
| 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 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 | 47 out of the 50 individual exercise \leq 11% 10 out of the 10 individual wearer arithmetic means \leq 8% | Pass |

Table 7.9.1-A Inward leakage test data

| Subject | Sample No. | Condition | Walk (%) | Head side/side (%) | Head up/down (%) | Talk (%) | Walk (%) | Mean (%) |
|---------|------------|-------------------------|----------|--------------------|------------------|----------|----------|----------|
| CQQ | 1 | As received | 5.267 | 5.551 | 5.894 | 9.495 | 6.087 | 6.459 |
| WLJ | 2 | | 5.512 | 5.727 | 6.034 | 9.827 | 6.357 | 6.691 |
| WG | 3 | | 6.483 | 6.371 | 6.757 | 11.148 | 7.308 | 7.613 |
| ZJH | 4 | | 6.622 | 6.710 | 7.021 | 10.656 | 7.530 | 7.708 |
| TLB | 5 | | 6.649 | 7.015 | 7.286 | 10.508 | 7.295 | 7.750 |
| ZMY | 6 | Temperature conditioned | 6.804 | 6.926 | 7.236 | 11.256 | 7.113 | 7.867 |
| LJF | 7 | | 6.402 | 6.493 | 6.966 | 11.132 | 6.969 | 7.592 |
| HML | 8 | | 6.091 | 6.242 | 6.811 | 10.586 | 6.839 | 7.314 |
| RK | 9 | | 5.998 | 5.908 | 6.265 | 9.829 | 6.424 | 6.885 |
| ZD | 10 | | 5.770 | 5.733 | 6.066 | 9.786 | 6.243 | 6.719 |

Table 7.9.1-B Facial dimensions

| Subject | Face Length (mm) | Face Width (mm) | Face Depth (mm) | Mouth Width (mm) |
|---------|------------------|-----------------|-----------------|------------------|
| CQQ | 136 | 167 | 125 | 65 |
| WLJ | 132 | 159 | 110 | 60 |
| WG | 120 | 152 | 109 | 57 |
| ZJH | 122 | 150 | 104 | 50 |
| TLB | 125 | 152 | 111 | 57 |
| ZMY | 137 | 150 | 120 | 60 |
| LJF | 125 | 135 | 90 | 55 |
| HML | 124 | 130 | 115 | 55 |
| RK | 112 | 161 | 146 | 50 |
| ZD | 116 | 160 | 115 | 55 |

Clause 7.9.2 Penetration of filter material

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

| Requirement | | | Results | Rating |
|---|----------------------------------|-------------------------------|-----------------------------|--------|
| The penetration of the filter of the particle filtering half mask shall meet the requirements of the following table. | | | Detail refer to Table 7.9.2 | Pass |
| Classification | Sodium chloride test 95 L/min | Paraffin oil test 95 L/min | | |
| FFP1 | ≤20% | ≤20% | | |
| FFP2 | ≤6% | ≤6% | | |
| FFP3 | ≤1% | ≤1% | | |

Table 7.9.2 Penetration of filter material

| Aerosol | Condition | Sample No. | Penetration (%) |
|--|---|------------|-----------------|
| Sodium chloride test | As received | 11 | 0.002 |
| | | 12 | 0.003 |
| | | 13 | 0.007 |
| | Simulated wearing treatment | 14 | 0.023 |
| | | 15 | 0.010 |
| | | 16 | 0.006 |
| | Mechanical strength+ Temperature conditioned | 17 | 0.027 |
| | | 18 | 0.046 |
| | | 19 | 0.033 |
| Paraffin oil test | As received | 20 | 0.046 |
| | | 21 | 0.059 |
| | | 22 | 0.042 |
| | Simulated wearing treatment | 23 | 0.596 |
| | | 24 | 0.613 |
| | | 25 | 1.152 |
| | Mechanical strength+ Temperature conditioned | 26 | 2.480 |
| | | 27 | 3.681 |
| | | 28 | 3.287 |
| Flow conditioning: single filter: 95.0 L/min | | | |

Clause 7.10 Compatibility with skin

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

| Requirement | Results | Rating |
|--|---|--------|
| 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)

| Requirement | Results | Rating |
|--|----------------------------|--------|
| When tested, the particle filtering half mask shall not burn or not to continue to burn for more than 5s after removal from the flame. | Detail refer to Table 7.11 | Pass |

Table 7.11 Flammability

| Condition | Sample No. | Result |
|-------------------------|------------|----------|
| As received | 29 | Not burn |
| | 30 | Not burn |
| Temperature conditioned | 31 | Not burn |
| | 32 | Not burn |

Clause 7.12 Carbon dioxide content of the inhalation air

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

| Requirement | Results | Rating |
|---|----------------------------|--------|
| The carbon dioxide content of the inhalation air (dead space) shall not exceed an average of 1.0 % (by volume). | Detail refer to Table 7.12 | Pass |

Table 7.12 Carbon dioxide content of the inhalation air

| Condition | Sample No. | Result (%) |
|-------------|------------|---------------------|
| As received | 33 | 0.48 |
| | 34 | 0.45 |
| | 35 | 0.47 |
| | | Mean value: 0.47 |

Clause 7.13 Head harness

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

| Requirement | Results | Rating |
|--|---------|--------|
| 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. | Comply | Pass |

Clause 7.14 Field of vision

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

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

Clause 7.15 Exhalation valve

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

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

Clause 7.16 Breathing resistance

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

| Requirement | Results | Rating | | | | | | | | | | | | | | | | | | | | | | |
|---|----------------|-------------------------------------|----------|------------|------------|--|------------|---------|---------|----------|------|-----|-----|-----|------|-----|-----|-----|------|-----|-----|-----|----------------------------|------|
| <p>The penetration of the filter of the particle filtering half mask shall meet the requirements of the following table.</p> <table border="1" data-bbox="261 1061 1019 1319"> <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>30L/min</th> <th>95L/min</th> <th>160L/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>1.0</td> <td>3.0</td> <td>3.0</td> </tr> </tbody> </table> | Classification | Maximum permitted resistance (mbar) | | | Inhalation | | Exhalation | 30L/min | 95L/min | 160L/min | FFP1 | 0.6 | 2.1 | 3.0 | FFP2 | 0.7 | 2.4 | 3.0 | FFP3 | 1.0 | 3.0 | 3.0 | Detail refer to Table 7.16 | Pass |
| Classification | | Maximum permitted resistance (mbar) | | | | | | | | | | | | | | | | | | | | | | |
| | | Inhalation | | Exhalation | | | | | | | | | | | | | | | | | | | | |
| | 30L/min | 95L/min | 160L/min | | | | | | | | | | | | | | | | | | | | | |
| FFP1 | 0.6 | 2.1 | 3.0 | | | | | | | | | | | | | | | | | | | | | |
| FFP2 | 0.7 | 2.4 | 3.0 | | | | | | | | | | | | | | | | | | | | | |
| FFP3 | 1.0 | 3.0 | 3.0 | | | | | | | | | | | | | | | | | | | | | |

Table 7.16 Breathing resistance (mbar)

| Test item | Condition | Sample No. | A | B | C | D | E |
|--------------------------|-----------------------------|------------|------|------|------|------|------|
| Inhalation (30 L/min) | As received | 36 | 0.59 | 0.60 | 0.60 | 0.59 | 0.60 |
| | | 37 | 0.58 | 0.57 | 0.57 | 0.58 | 0.58 |
| | | 38 | 0.56 | 0.55 | 0.55 | 0.56 | 0.55 |
| | Simulated wearing treatment | 39 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| | | 40 | 0.55 | 0.54 | 0.54 | 0.55 | 0.55 |
| | | 41 | 0.55 | 0.54 | 0.54 | 0.55 | 0.56 |
| | Temperature conditioned | 42 | 0.47 | 0.47 | 0.48 | 0.48 | 0.48 |
| | | 43 | 0.49 | 0.48 | 0.49 | 0.49 | 0.49 |
| | | 44 | 0.48 | 0.47 | 0.48 | 0.48 | 0.48 |

| Test item | Condition | Sample No. | A | B | C | D | E |
|---------------------------|--------------------------------|------------|------|------|------|------|------|
| Inhalation (95 L/min) | As received | 36 | 2.37 | 2.36 | 2.36 | 2.38 | 2.37 |
| | | 37 | 2.36 | 2.37 | 2.36 | 2.38 | 2.37 |
| | | 38 | 2.34 | 2.33 | 2.34 | 2.32 | 2.35 |
| | Simulated wearing treatment | 39 | 2.36 | 2.37 | 2.36 | 2.37 | 2.36 |
| | | 40 | 2.37 | 2.39 | 2.38 | 2.38 | 2.39 |
| | | 41 | 2.39 | 2.40 | 2.39 | 2.38 | 2.39 |
| | Temperature conditioned | 42 | 2.23 | 2.24 | 2.25 | 2.22 | 2.22 |
| | | 43 | 2.27 | 2.26 | 2.26 | 2.27 | 2.28 |
| | | 44 | 2.25 | 2.25 | 2.26 | 2.26 | 2.25 |
| Exhalation (160 L/min) | As received | 36 | 2.55 | 2.53 | 2.55 | 2.55 | 2.54 |
| | | 37 | 2.67 | 2.65 | 2.63 | 2.64 | 2.65 |
| | | 38 | 2.59 | 2.60 | 2.60 | 2.58 | 2.59 |
| | Simulated wearing treatment | 39 | 2.58 | 2.59 | 2.57 | 2.56 | 2.58 |
| | | 40 | 2.56 | 2.57 | 2.57 | 2.57 | 2.58 |
| | | 41 | 2.57 | 2.57 | 2.59 | 2.58 | 2.58 |
| | Temperature conditioned | 42 | 2.36 | 2.38 | 2.36 | 2.37 | 2.37 |
| | | 43 | 2.38 | 2.40 | 2.40 | 2.42 | 2.41 |
| | | 44 | 2.39 | 2.39 | 2.39 | 2.38 | 2.40 |

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

Clause 7.17 Clogging

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

| Requirement | Results | Rating |
|--|---------------------------------------|--------------|
| <p>7.17.2 Breathing resistance:</p> <p>7.17.2.1 Valved particle filtering half masks After clogging the inhalation resistances shall not exceed FFP1:4mbar, FFP2:5mbar, FFP3:7mbar at 95 L/min continuous flow; The exhalation resistance shall not exceed 3mbar at 160 L/min continuous flow.</p> <p>7.17.2.2 Valveless particle filtering half masks After clogging the inhalation and exhalation resistances shall not exceed FFP1:3mbar, FFP2:4mbar, FFP3:5mbar at 95 L/min continuous flow.</p> <p>7.17.3 Penetration of filter material: All types (valved and valveless) of particle filtering half masks claimed to meet the clogging requirement shall also meet the requirements given in 7.9.2, for the Penetration test according to EN 13274-7, after the clogging treatment.</p> | Optional for single shift device only | Not required |

Clause 7.18 Demountable parts

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

| Requirement | Results | Rating |
|---|---------|--------|
| All demountable parts (if fitted) shall be readily connected and secured, where possible by hand. | Comply | Pass |

Sample photo



*** End of Report***



STATEMENT

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