

# Test Report



Report No	255/7475338 3 of 5	This Report consists of 8 pages
Licence/Cert. No	CE 79995	
Client	Handan Hengyong Protective & Clean C-1-901 Yuyuan Plaza 9 West Yuhua Road 050000 Shijiazhuang Hebei	
Authority & date	BSI: Service Management Order No 7475338 Dated 17 September 2010 Equipment Record No 10111703	
Items tested	Model: HY8920 FFP2 Filtering face masks	
Specification	Article 11A Audit test to BS EN 149:2001 + A1: 2009 Respiratory protective devices – Filtering half masks to protect against particles– Incorporating Corrigendum July 2002 See Assessment Summary	
Results	See Assessment Summary	
Prepared by	S Hickman <i>S Hickman</i>	Senior Technician Engineer
Authorized by	D J Newton <i>D.J. Newton</i>	Senior Engineer
Issue Date	21 February 2011	
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of CP0322 'Conditions of Contract for Testing'. 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 the Managing Director, BSI Testing Services, who reserves the absolute right to agree or reject all or any of the details of any items or publicity for which consent may be sought.	

**BS EN 149:2001 +A1: 2009**

SPECIFICATION:- Article 11A Audit test to BS EN 149:2001 + A1: 2009  
Respiratory protective devices - Filtering half masks to protect against  
particles - Incorporating Corrigendum July 2002  
(see Assessment Summary for details)

CLIENT/MANUFACTURER: Handan Hengyong Protective & Clean

MODEL: HY8920 FFP2

NUMBER OF SAMPLES: Thirty (30) samples submitted

ER NO: 10111703

DATE RECEIVED: 12 October 2010

DATE STARTED: 25 October 2010

MANUFACTURER'S CLAIMED EQUIPMENT PERFORMANCE:-

Filter classification: FFP2

**INTRODUCTION**

The samples detailed above were a certified model submitted by the Client for an Article 11A Audit assessment programme. BSI Product Certification requested Clause 7.9.2 'Penetration of filter material' and Clause 7.16 'Breathing Resistance' to be assessed.

This Report should be read in conjunction with the Specification.

Unless specified all testing was performed in accordance with BS EN 149:2001 + A1: 2009.

**ASSESSMENT SUMMARY**

An Assessment Summary is presented on page 3.

BS EN 149:2001 +A1: 2009

**ASSESSMENT SUMMARY**

CLAUSE NO AND TITLE		ASSESSMENT	LOCATION
<b>7</b>	<b>REQUIREMENTS</b>		
<b>7.1</b>	<b>General</b>	-	Page 4
<b>7.2</b>	<b>Nominal values and tolerances</b>	-	Page 4
<b>7.3</b>	<b>Visual inspection</b>	N/As (1)	-
<b>7.4</b>	<b>Packaging</b>	N/As (1)	-
<b>7.5</b>	<b>Material</b>	N/As (1)	-
<b>7.6</b>	<b>Cleaning and disinfecting</b>	N/As (1)	-
<b>7.7</b>	<b>Practical performance</b>	N/As (1)	-
<b>7.8</b>	<b>Finish of parts</b>	N/As (1)	-
<b>7.9</b>	<b>Leakage</b>	-	-
<b>7.9.1</b>	<b>Total inward leakage</b>	N/As (1)	-
<b>7.9.2</b>	<b>Penetration of filter material</b>	Pass	Pages 5 - 6
<b>7.10</b>	<b>Compatibility with skin</b>	N/As (1)	-
<b>7.11</b>	<b>Flammability</b>	N/As (1)	-
<b>7.12</b>	<b>Carbon dioxide content of inhalation air</b>	N/As (1)	-
<b>7.13</b>	<b>Head harness</b>	N/As (1)	-
<b>7.14</b>	<b>Field of vision</b>	N/As (1)	-
<b>7.15</b>	<b>Exhalation valve(s)</b>	N/As (1)	-
<b>7.16</b>	<b>Breathing resistance</b>	Pass	Pages 7 - 8
<b>7.17</b>	<b>Clogging</b>	N/As (1)	-
<b>7.18</b>	<b>Demountable parts</b>	N/As (1)	-
<b>9</b>	<b>Marking</b>	N/As (1)	-
<b>10</b>	<b>Information to be supplied by the manufacturer</b>	N/As (1)	-

N/As: Not Assessed

(1) Not required by BSI Product Certification.

**BS EN 149:2001 +A1: 2009****EXAMINATION AND TEST****Model Type: HY8920 FFP2**

<b>CLAUSE</b>	<b>REQUIREMENT</b>	<b>ASSESSMENT</b>
<b>7</b> <b>7.1</b>	<b>REQUIREMENTS</b> <b>General</b> In all tests all samples shall meet the requirements.	-
<b>7.2</b>	<b>Nominal values and tolerances</b> Unless otherwise specified, the values stated in this European Standard are expressed as nominal values. Except for temperature limits, values, which are not stated as maxima or minima, shall be subject to a tolerance of $\pm 5\%$ . Unless otherwise specified, the ambient temperature for testing shall be (16 – 32) °C, and the temperature limits shall be subject to an accuracy of $\pm 1^\circ\text{C}$ .	-

**BS EN 149:2001 +A1: 2009****EXAMINATION AND TEST (CONTINUED)****Model Type: HY8920 FFP2**

CLAUSe	REQUIREMENT	ASSESSMENT																																																																	
7.9 7.9.2	<p><b>Leakage</b></p> <p>Penetration of filter material (Sodium Chloride Method)</p> <p>The penetration of the filter of the particle filtering half mask shall meet the requirements of Table 1 of the standard. A total of 12 particle filtering half masks shall be tested for each aerosol: 3 as received, 3 after temperature conditioning in accordance with clause 8.3.2, 3 after the simulated wearing treatment described in clause 8.3.1, and 3 after the test for mechanical strength in accordance with clause 8.3.3.</p> <p>Test in accordance with clause 8.11 of the standard.</p> <p>Table A. Maximum sodium chloride penetration @ 95 l/min</p> <table><tr><th>Sample No</th><th>Pre-test condition</th><th>Flow through filter (l/min)</th><th>Max Specified Penetration (%)</th><th>Actual Penetration (%)</th></tr><tr><td>1</td><td>AR</td><td>95</td><td>6</td><td>0.0124</td></tr><tr><td>2</td><td>AR</td><td>95</td><td>6</td><td>0.0107</td></tr><tr><td>3</td><td>AR</td><td>95</td><td>6</td><td>0.0390</td></tr><tr><td>4</td><td>TC</td><td>95</td><td>6</td><td>0.0630</td></tr><tr><td>5</td><td>TC</td><td>95</td><td>6</td><td>0.0115</td></tr><tr><td>6</td><td>TC</td><td>95</td><td>6</td><td>0.0527</td></tr><tr><td>7</td><td>SW</td><td>95</td><td>6</td><td>0.0927</td></tr><tr><td>8</td><td>SW</td><td>95</td><td>6</td><td>0.0263</td></tr><tr><td>9</td><td>SW</td><td>95</td><td>6</td><td>0.0127</td></tr><tr><td>10</td><td>MS</td><td>95</td><td>6</td><td>0.1467</td></tr><tr><td>11</td><td>MS</td><td>95</td><td>6</td><td>0.1327</td></tr><tr><td>12</td><td>MS</td><td>95</td><td>6</td><td>0.1132</td></tr></table>	Sample No	Pre-test condition	Flow through filter (l/min)	Max Specified Penetration (%)	Actual Penetration (%)	1	AR	95	6	0.0124	2	AR	95	6	0.0107	3	AR	95	6	0.0390	4	TC	95	6	0.0630	5	TC	95	6	0.0115	6	TC	95	6	0.0527	7	SW	95	6	0.0927	8	SW	95	6	0.0263	9	SW	95	6	0.0127	10	MS	95	6	0.1467	11	MS	95	6	0.1327	12	MS	95	6	0.1132	See Table A
Sample No	Pre-test condition	Flow through filter (l/min)	Max Specified Penetration (%)	Actual Penetration (%)																																																															
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AR: As Received  
SW: Simulated Wear

TC: Temperature Conditioned  
MS: Mechanical strength

**BS EN 149:2001 +A1: 2009****EXAMINATION AND TEST (CONTINUED)****Model Type: HY8920FFP2**

CLAUSE	REQUIREMENT	ASSESSMENT																																																																	
7.9 7.9.2	<p><b>Leakage (continued)</b></p> <p>Penetration of filter material (Paraffin oil method)</p> <p>The penetration of the filter of the particle filtering half mask shall meet the requirements of Table 1 of the standard. A total of 12 particle filtering half masks shall be tested for each aerosol: 3 as received, 3 after temperature conditioning in accordance with clause 8.3.2, 3 after the simulated wearing treatment described in clause 8.3.1, and 3 after the test for mechanical strength in accordance with clause 8.3.3.</p> <p>Test in accordance with clause 8.11 of the standard.</p> <p>Table B. Maximum paraffin oil penetration @ 95 l/min</p> <table><tr><th>Sample No</th><th>Pre-test condition</th><th>Flow through filter (l/min)</th><th>Max Specified Penetration (%)</th><th>Actual Penetration (%)</th></tr><tr><td>1</td><td>AR</td><td>95</td><td>6</td><td>0.04</td></tr><tr><td>2</td><td>AR</td><td>95</td><td>6</td><td>0.03</td></tr><tr><td>3</td><td>AR</td><td>95</td><td>6</td><td>0.07</td></tr><tr><td>4</td><td>TC</td><td>95</td><td>6</td><td>0.09</td></tr><tr><td>5</td><td>TC</td><td>95</td><td>6</td><td>0.04</td></tr><tr><td>6</td><td>TC</td><td>95</td><td>6</td><td>0.10</td></tr><tr><td>7</td><td>SW</td><td>95</td><td>6</td><td>0.11</td></tr><tr><td>8</td><td>SW</td><td>95</td><td>6</td><td>0.03</td></tr><tr><td>9</td><td>SW</td><td>95</td><td>6</td><td>0.02</td></tr><tr><td>10</td><td>MS</td><td>95</td><td>6</td><td>0.12</td></tr><tr><td>11</td><td>MS</td><td>95</td><td>6</td><td>0.13</td></tr><tr><td>12</td><td>MS</td><td>95</td><td>6</td><td>0.18</td></tr></table>	Sample No	Pre-test condition	Flow through filter (l/min)	Max Specified Penetration (%)	Actual Penetration (%)	1	AR	95	6	0.04	2	AR	95	6	0.03	3	AR	95	6	0.07	4	TC	95	6	0.09	5	TC	95	6	0.04	6	TC	95	6	0.10	7	SW	95	6	0.11	8	SW	95	6	0.03	9	SW	95	6	0.02	10	MS	95	6	0.12	11	MS	95	6	0.13	12	MS	95	6	0.18	See Table B
Sample No	Pre-test condition	Flow through filter (l/min)	Max Specified Penetration (%)	Actual Penetration (%)																																																															
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10	MS	95	6	0.12																																																															
11	MS	95	6	0.13																																																															
12	MS	95	6	0.18																																																															

AR: As Received

SW: Simulated Wear

TC: Temperature Conditioned

MS: Mechanical strength

BS EN 149:2001 +A1: 2009

## EXAMINATION AND TEST (CONTINUED)

Model Type: HY8920 FFP2

CLAUSE	REQUIREMENT				ASSESSMENT
7.16	<b>Breathing resistance</b> The breathing resistances apply to valved and valveless particle filtering half masks and shall meet the requirements of Table 2 of the standard.  A total of 12 valved particle filtering half masks shall be tested: 3 as received, 3 after temperature conditioning in accordance with clause 8.3.2, 3 after the test for simulated wearing in accordance with clause 8.3.1, and 3 after the flow conditioning in accordance with clause 8.3.4. Test in accordance with clause 8.9 of the standard. Test in accordance with clause 8.9 of the standard. Table C: Inhalation resistance @ 30 l/min				See Tables C, D and E
	Sample No	Pre-test condition	Continuous flow (l/min)	Max spec inhalation resistance (mbar)	Actual inhalation resistance (mbar)
	1	AR	30	0.7	0.36
	2	AR	30	0.7	0.30
	3	AR	30	0.7	0.32
	4	TC	30	0.7	0.26
	5	TC	30	0.7	0.34
	6	TC	30	0.7	0.28
	7	SW	30	0.7	0.30
	8	SW	30	0.7	0.20
	9	SW	30	0.7	0.24
	Table D: Inhalation resistance @ 95 l/min				
	Sample No	Pre-test condition	Continuous flow (l/min)	Max spec inhalation resistance (mbar)	Actual inhalation resistance (mbar)
	1	AR	95	2.4	1.14
	2	AR	95	2.4	1.00
	3	AR	95	2.4	1.04
	4	TC	95	2.4	0.98
	5	TC	95	2.4	1.10
	6	TC	95	2.4	0.99
	7	SW	95	2.4	0.99
	8	SW	95	2.4	0.91
	9	SW	95	2.4	0.98

AR: As Received  
 SW: Simulated Wear

TC: Temperature Conditioned

BS EN 149:2001 +A1: 2009

**EXAMINATION AND TEST (CONTINUED)**

Model Type: HY8920 FFP1

CLAUSE	REQUIREMENT					ASSESSMENT
7.16	Breathing resistance (continued)					
	Table E: Exhalation resistance @ 160 l/min					
	Sample No	Pre-test condition	Continuous flow (l/min)	Max spec exhalation resistance (mbar)	Actual exhalation resistance (mbar)	
	1	AR	160	3.0	1.67	
	2	AR	160	3.0	1.59	
	3	AR	160	3.0	1.61	
	4	TC	160	3.0	1.64	
	5	TC	160	3.0	1.63	
	6	TC	160	3.0	1.65	
	7	SW	160	3.0	1.60	
	8	SW	160	3.0	1.51	
	9	SW	160	3.0	1.54	

AR: As Received  
SW: Simulated Wear

TC: Temperature Conditioned

**End of Report**