

Test Report

EN 149 : 2001 + (A1 : 2009)

Report no: 1.11.08.67

Client: [REDACTED]

Client order: TA11/0137

Order(s) received: 26 July to 30 August 2011

Manufacturer: [REDACTED]

Model(s): 5800, 5801, 5802 and 5803

Date(s) of tests: 28 July to 18 August 2011

Conditions:

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Samples will be disposed of four weeks from the date of this report.

Signed:



Peter Threlfall, Laboratory Supervisor

Issued: 30 August 2011

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Summary of assessment*

Clause		Assessment			
	Model:	5800	5801	5802	5803
7.4	Packaging	Ltd			Ltd
7.5	Material	Ltd	Ltd	Ltd	Ltd
7.6	Cleaning and disinfecting				
7.7	Practical performance	Ltd			Ltd
7.8	Finish of parts		Ltd		Ltd
7.9.1	Total inward leakage	Ltd			Pass
7.9.2	Penetration of filter material: Sodium chloride		Pass		
7.9.2	Penetration of filter material: Paraffin oil		Pass		Ltd
7.10	Compatibility with skin				
7.11	Flammability				Pass
7.12	Carbon dioxide content of the inhalation air			Pass	
7.13	Head harness	Ltd			Ltd
7.14	Field of vision	Ltd			Ltd
7.15	Exhalation valve(s)				Pass
7.16	Breathing resistance			Ltd	Pass
7.17	Clogging				
7.18	Demountable parts				NAP
9	Marking	Fail	Fail	Fail	Fail
10	Information to be supplied by the manufacturer		Pass		Pass

Key

	Highlighting shows the clauses requested for each model. Any other clauses were not requested.
Pass	Requirement satisfied.
Ltd	Testing was insufficient to completely verify compliance with clause. Refer to "Procedures / Result detail".
Fail	Requirement not satisfied. Refer to the "Result detail" section for more information.
NAs	Assessment not carried out.
NAP	Requirement not applicable.
NT	Requested but not tested due to early termination following failure.

* Assessment relates only to those items tested in this report.

Product characteristics

Property	Characteristic			
Model	5800	5801	5802	5803
Classification claimed	FFP2	FFP2	FFP2	FFP2
Exhalation valve(s)	None	Single	None	Single
Usage designation	NR	NR	NR	NR

Sample details

Product	Quantity	Received	INSPEC no. (1X0558 +)
5800 Filtering half mask	26	26 July 2011	104 to 160
5801 Filtering half mask	45		211 to 260
5802 Filtering half mask	26		311 to 360
5803 Filtering half mask	47		401 to 460

Procedures

Testing was performed in accordance with BS EN 149 : 2001 incorporating Corrigendum No. 1 (January 2003), and amendment A1 (2009) unless otherwise specified below.

Unless stated otherwise, samples were tested in the condition as received at INSPEC.

- 7.7 The client instructed that practical performance testing be carried out on one sample only of models 5800 and 5803.

Practical performance tests were conducted in simulation of the practical use of the apparatus under the conditions prevailing in the gallery area of the laboratory. The exercises undertaken and the equipment used were as specified in the standard.

- 7.9.2 Filter penetration testing by the paraffin oil method was carried out using a modified Phoenix SG-20 aerosol generator and a Phoenix model JM-6000 photometer or a TEC Services' model PH-3 photometer. These give similar performance to the instruments specified.

For the 120mg exposure test, the peak penetration during exposure is reported and in addition the penetration after three minutes for comparison purposes.

During the 120mg exposure test, the sodium chloride penetration showed continued decline and the test was terminated as the product was marked NR.

- 7.16 Exhalation resistance was tested at a continuous flow of 160 l/min.

Result detail**7.4 Packaging****Model: 5800**

The masks were not packaged as offered for sale. Manufacturer to certify regarding the final packaging to be used.

NAs

The masks were packaged in cardboard boxes that gave some protection against mechanical damage or contamination before use.

Pass**Model 5803**

The masks were not packaged as offered for sale. Manufacturer to certify regarding the final packaging to be used.

NAs

The masks were packaged in cardboard boxes that gave some protection against mechanical damage or contamination before use.

Pass**7.5 Material****Model: 5800**

Samples 120 to 122 were conditioned in accordance with 8.3.1. None of the samples conditioned suffered mechanical failure or collapse.

Pass

Samples 106 to 108 were conditioned in accordance with 8.3.2. None of the samples conditioned suffered collapse.

Pass

The effects of filter media release were not assessed. Manufacturer to certify.

NAs**Model: 5801**

Samples 220 to 225 were conditioned in accordance with 8.3.1. None of the samples conditioned suffered mechanical failure or collapse.

Pass

Samples 226 to 231 were conditioned in accordance with 8.3.2. None of the samples conditioned suffered collapse.

Pass

The effects of filter media release were not assessed. Manufacturer to certify.

NAs**Model: 5802**

Samples 320 to 322 were conditioned in accordance with 8.3.1. None of the samples conditioned suffered mechanical failure or collapse.

Pass

Samples 317 to 319 were conditioned in accordance with 8.3.2. None of the samples conditioned suffered collapse.

Pass

The effects of filter media release were not assessed. Manufacturer to certify.

NAs**Model: 5803**

Samples 423 to 425 were conditioned in accordance with 8.3.1. None of the samples conditioned suffered mechanical failure or collapse.

Pass

Samples 406 to 410, 417 to 419, 429 to 431, 433, 439, 440, 446 and 447 were conditioned in accordance with 8.3.2. None of the samples conditioned suffered collapse.

Pass

The effects of filter media release were not assessed. Manufacturer to certify.

NAs

7.7 Practical performance**Model: 5800****Sample and subject details:**

Sample	Subject
148	SNT
149	-

Pass
NAs

No adverse comments were made following testing.

Model: 5803**Sample and subject details:**

Sample	Subject
448	GW
449	-

Pass
NAs

No adverse comments were made following testing.

7.8 Finish of parts**Model: 5801**

None of the samples used in the limited laboratory testing undertaken showed evidence of sharp edges or burrs.

Ltd

Model: 5803

None of the samples used in the limited laboratory testing undertaken showed evidence of sharp edges or burrs.

Ltd

7.9.1 Total inward leakage (%)**Model: 5800**

Subject	Sample	Cond.	Walk	Head side/ side	Head up/down	Talk	Walk	Mean
ED	104	AR	0.16	0.09	0.14	0.49	0.52	0.28
CB	105	AR	0.96	0.37	1.24	1.29	0.28	0.83
SLM	106	TC	0.55	0.41	0.40	0.54	0.09	0.40
MDC	107	TC	0.48	0.76	0.69	1.83	0.56	0.87
GW	108	TC	0.08	0.08	0.09	1.16	0.12	0.31
Maximum permitted			11					8

All 25 individual exercise results were not greater than 11%.

Ltd

All 5 individual wearer arithmetic means were not greater than 8%.

Ltd

Model: 5803

Subject	Sample	Cond.	Walk	Head side/ side	Head up/down	Talk	Walk	Mean
INH	401	AR	1.01	0.98	0.76	2.16	0.52	1.09
KDS	402	AR	6.94	6.04	8.65	6.67	5.38	6.74
AH	404	AR	1.59	2.20	4.09	3.65	4.13	3.13
RH	405	AR	0.79	1.04	3.63	4.56	1.52	2.31
SMC	406	TC	2.29	2.43	3.90	4.09	2.18	2.98
BH	407	TC	1.04	0.87	1.03	2.29	0.67	1.18
SAH	408	TC	1.14	0.55	2.12	0.41	0.25	0.89
MDC	409	TC	2.23	2.73	2.58	1.97	2.53	2.41
MPF	410	TC	1.03	1.59	1.86	4.89	2.14	2.30
KRB	460	AR	0.49	0.64	0.46	1.34	0.41	0.67
Maximum permitted			11					8

All 50 individual exercise results were not greater than 11%.

Pass

All 10 individual wearer arithmetic means were not greater than 8%.

Pass

Subject facial dimensions:

Subject	Face Length (mm)	Face Width (mm)	Face Depth (mm)	Mouth Width (mm)
ED	114	138	100	47
CB	116	133	112	46
SLM	117	130	103	42
MDC	120	146	114	57
GW	117	133	120	53
INH	125	153	95	58
KDS	102	128	98	49
AH	119	113	115	50
RH	111	134	96	40
SMC	118	131	109	52
BH	120	139	108	54
SAH	105	137	114	52
MDC	120	146	114	57
MPF	124	150	124	49
KRB	108	130	108	49

7.9.2 Penetration of filter material

Model: 5801

Sodium chloride

Pass

Sample	Condition	Penetration (%)	
		After 3 mins	Max during exposure
211	A.R.	0.09	
212		0.09	
213		0.10	
220	S.W.	0.08	
221		0.08	
222		0.53	
226	M.S. + T.C.	0.15	0.15
227		1.15	1.15
228		0.54	0.54
Maximum permitted		6.0	

Paraffin oil:

Pass

Sample	Condition	Penetration (%)	
		After 3 mins	Max during exposure
214	A.R.	0.56	
215		0.25	
216		0.32	
223	S.W.	0.77	
224		0.42	
225		0.56	
229	M.S. + T.C.	1.13	1.24
230		1.04	1.09
231		1.13	1.18
Maximum permitted		6.0	

Model: 5803

Paraffin oil

Sample	Condition	Penetration (%)		
		After 3 mins	Max during exposure	
414	A.R.	Not requested		NAs
415				NAs
416				NAs
423	S.W.	0.42		Pass
424		0.42		Pass
425		0.41		Pass
429	M.S. + T.C.	0.49	0.61	Pass
430		0.47	0.63	Pass
431		0.54	0.68	Pass
Maximum permitted		6.0		

7.11 Flammability

Model: 5803

Samples 444 and 445 (A.R.) and 446 and 447 (T.C.) were tested. None of the samples ignited.

Pass

7.12 Carbon dioxide content of the inhalation air

Model: 5802

Pass

Sample	CO ₂ (%)
335	0.96
336	0.96
337	0.96
Maximum permitted	1.0

7.13 Head harness**Model: 5800**

The head harness was designed to allow the particle filtering half-mask to be donned and removed easily during limited practical performance and limited total inward leakage testing.

Ltd

The head harness was self-adjusting and there were no adverse comments regarding security following limited practical performance and limited total inward leakage testing.

Ltd

The product satisfied the total inward leakage requirements for the limited testing carried out. See 7.9.1 for results.

Ltd**Model: 5803**

The head harness was designed to allow the particle filtering half-mask to be donned and removed easily during limited practical performance and total inward leakage testing.

Ltd

The head harness was self-adjusting and there were no adverse comments regarding security following limited practical performance and total inward leakage testing.

Ltd

The product satisfied the total inward leakage requirements. See 7.9.1 for results.

Pass**7.14 Field of vision****Model: 5800**

There were no adverse comments following limited practical performance tests.

Ltd**Model: 5803**

There were no adverse comments following limited practical performance tests.

Ltd**7.15 Exhalation valve****Model : 5803**

There were no observed problems during testing of function in all orientations. See 7.16 for results.

Pass

The valve was protected against dirt and mechanical damage by a shroud.

Pass

The product satisfied leakage requirements. See 7.9 for results.

Pass

There were no observed problems when assessing operation after high exhalation flow. See 7.16 for results.

Pass

The valve housing withstood 10N applied for 10s. Samples 432 (A.R.), 433 (T.C.) and 434 (M.S.) were tested.

Pass

7.16 Breathing resistance

Model: 5802

Ltd

Model: 5002				
Sample	Condition	Inhalation resistance (mbar)		Exhalation resistance (mbar)
		At 30 l/min	At 95 l/min	At 160 l/min
311	A.R.	Not requested		2.14
312				2.12
313				1.02
317	T.C.	Not requested		1.74
318				2.09
319				1.05
320	S.W.	Not requested		2.04
321				2.01
322				2.20
Maximum permitted				3.0

Model: 5803

Pass

Model: 5009				
Sample	Condition	Inhalation resistance (mbar)		Exhalation resistance (mbar)
		At 30 l/min	At 95 l/min	At 160 l/min
411	A.R.	0.40	1.27	1.47
412		0.43	1.32	1.64
413		0.42	1.33	1.67
417	T.C.	0.36	1.16	1.41
418		0.41	1.27	1.50
419		0.37	1.17	1.42
423	S.W.	0.33	1.16	1.38
424		0.40	1.36	1.55
425		0.34	1.23	1.37
438	A.R. + F.C.	0.32	1.16	1.24
439	T.C. + F.C.	0.32	1.15	1.17
440		0.32	1.12	1.26
Maximum permitted		0.7	2.4	3.0

7.18 Demountable parts

Model: 5803

No demountable parts were used.

NAp

9 Marking**All models****9.1 Packaging**

The samples were submitted in cardboard boxes.

The marking on the packaging was clear and durable.

Pass

The markings required by the Standard were assessed as follows.

9.1.1 The manufacturer's identification was not present.

Fail

9.1.2 Type identification was marked.

Pass

9.1.3 The classification was not given.

Fail

9.1.4 The number and year of the standard were not given.

Fail

9.1.5 The end of shelf life was not given.

Fail

9.1.6 Neither the required statement nor pictogram relating to manufacturer's information were present.

Fail

9.1.7 The recommended storage requirements were not given.

Fail

9.1.8 The letter "D" was neither appropriate nor marked.

NAP**9.2 Particle filtering half mask**

The particle filtering half mask was clearly and durably marked.

Pass

The markings required by the Standard were assessed as follows.

9.2.1 The manufacturer's identification was present.

Pass

9.2.2 Type identification was marked.

Pass

9.2.3 The number and year of the standard were given.

Pass

9.2.4 The classification was marked.

Pass

9.2.5 Resistance to clogging was not claimed, and the letter "D" was not marked.

NAP

9.2.6 There were no sub-assemblies or components to mark for identification.

NAP

10 Information to be supplied by the manufacturer

INSPEC Testing Services has not assessed these instructions with respect to claims made by the manufacturer outside of the requirements of the Standard, and therefore accepts no responsibility for the legitimacy of any such claims.

The information specified by the Standard was assessed as follows.

Models: 5801 and 5803

10.1	The information was provided with the smallest package.	Pass
10.2	Were in the official language (English).	Pass
10.3	Contained all necessary information for trained and qualified persons apart from:-	Pass
	- colour codes were neither used or explained;	NAp
	- maintenance information was not given, the mask was designated single use;	NAp
10.4	Were clear and comprehensible.	Pass
10.5	Required warnings were given against various problems likely to be encountered.	Pass
10.6	Discard information was provided.	Pass
10.7	The product was not marked with R or NR, manufacturer to certify regarding reuse of the device.	NAs

ANNEX

This Annex comprises two sections.

1. Estimates of the uncertainty of measurement. (1 page)
2. Photographs of the products tested. (4 pages)

EN 149 : 2001 + (A1 : 2009)**Estimates of the uncertainty of measurement**

Clause	Test	Uncertainty
7.4	Packaging	-
7.5	Material	*
7.6	Cleaning and disinfecting	-
7.7	Practical performance	*
7.8	Finish of parts	-
7.9.1	Total inward leakage	$\pm 4.7\%$
7.9.2	Penetration of filter material - Sodium chloride	$\pm 4.7\%$
7.9.2	Penetration of filter material - Paraffin oil	$\pm 5.0\%$
7.10	Compatibility with skin	-
7.11	Flammability	*
7.12	CO ₂ content of the inhalation air	$\pm 4.0\%$
7.13	Head harness	-
7.14	Field of vision	*
7.15	Exhalation valve(s)	*
7.16	Breathing resistance	$\pm 1.8\%$
7.17.2	Breathing resistance after clogging	$\pm 3.5\%$
7.17.3	Filter penetration after clogging - Sodium chloride	$\pm 4.7\%$
7.17.3	Filter penetration after clogging - Paraffin oil	$\pm 5.0\%$
7.18	Demountable parts	-

* The acceptance criterion for this test is a straightforward "Pass/Fail", rather than a numerical value. Consequently, as there is no value to be reported, uncertainty has not been reported either.

Values expressed as a percentage (%) are relative.

It should be noted that the above values have not been taken into account when making assessment to the pass/fail criteria