

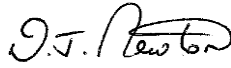


Test Report



Report No	2380/7779214	This Report consists of 12 pages
Licence/Certificate No	CE 59716	
Client	JSP Limited Worsham Mill Minister Lovell Whitney Oxford OX29 0TA United Kingdom	
Authority & date	BSI: Service Management Order No 7779214 dated 9 th December 2011 Equipment Record No 10132803	
Items tested	Model: PowerCap Active	
Specification	Limited Certification testing to:- BS EN 12941: 1998 + A2: 2008 Respiratory protective devices – Powered filtering devices incorporating a helmet or a hood See Assessment Summary	
Results	See Assessment Summary Issue 2 of this report supersedes all previous issues. The amendments on all pages causing this raise of issue can be ascertained by application to the authorising signatory	
Prepared by	S Kundi 	Technician Engineer
	A Harding 	Technical Expert
Authorized by	D J Newton 	Senior Engineer
Issue Date	16 April 2012	
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, 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.	

SPECIFICATION: Limited Certification testing to BS EN 12941: 1998 + A2: 2008
Respiratory protective devices – Powered filtering devices incorporating a helmet or a hood
(see Assessment Summary for details)

CLIENT/MANUFACTURER: JSP Limited, Worsham Mill, Minster Lovell,
Whitney, Oxford, OX29 0TA, United Kingdom

MODEL: PowerCap Active

NUMBER OF SAMPLES: 2 complete systems plus 6 additional filters

ER NO: 10132803.

DATE RECEIVED: 12th December 2011

DATE STARTED: 3rd January 2012

MANUFACTURER'S CLAIMED EQUIPMENT PERFORMANCE:-

Device classification: TH1 with SL classified re-usable filters

Minimum design flow rate (MMDF): 140 l/min

Design duration: 8 Hours

INTRODUCTION

The samples detailed above were submitted by the Client for limited certification testing to clauses

6.4, 6.11.2.3, 6.11.2.4.1, 6.14 and 6.17 of BS EN 12941: 1998 + A2: 2008

This Report was reissued at the request of the Client to incorporate change of model name from Powercap to PowerCap Active and to include photographs of the items tested.

This Report should be read in conjunction with the Specification referenced above.

ASSESSMENT SUMMARY

An Assessment Summary is presented on pages 3 and 4.

ASSESSMENT SUMMARY

CLAUSE NO AND TITLE	ASSESSMENT	LOCATION
6 REQUIREMENTS	-	-
6.1 Materials	-	-
6.1.1 General	N/As(1)	-
6.1.2 Compatibility with skin	N/As(1)	-
6.1.3 Cleaning and disinfection	N/As(1)	-
6.1.4 Surface finish	N/As(1)	-
6.2 Resistance to temperature	Pass(2)	-
6.3 Helmets and hoods	-	-
6.3.1 General	N/As(1)	-
6.3.2 Head harness	N/As(1)	-
6.3.3 Visor	N/As(1)	-
6.3.3.1 Distortion	N/As(1)	-
6.3.3.2 Field of vision	N/As(1)	-
6.3.3.3 Additional protection	N/As(1)	-
6.3.3.4 Damage	N/As(1)	-
6.4 Inward leakage	(3)	Page 5
6.5 Breathing resistance	N/As(1)	-
6.6 Air supply	-	-
6.6.1 Clause deleted	-	-
6.6.2 Manufacturers design duration	N/As(1)	-
6.6.3 Switch off air supply	N/As(1)	-
6.6.4 Change in air supply	N/As(1)	-
6.7 Checking and warning facilities	-	-
6.7.1 Checking facility	N/As(1)	-
6.7.2 Re-check facility	N/As(4)	-
6.7.3 Correct function of warning facility	N/As(1)	-
6.7.4 Operation of the facility	N/As(1)	-
6.8 Clogging	N/As(1)	-
6.9 Electrical components	N/As(1)	-
6.10 Breathing hose	N/As(1)	-
6.10.1 Free movement	N/As(4)	-
6.10.2 Air flow under load	N/As(4)	-
6.10.3 Strength of hoses and couplings	N/As(4)	-
6.10.4 Strength of coupling to hood	N/As(4)	-

N/As: Not Applicable

N/As: Not Assessed

(1) Not required by BSI Product Certification.

(2) Where assessed.

(3) The limited testing conducted on four TIL subjects was acceptable. An overall assessment to this Clause can only be made when a complete panel of ten subjects is tested.

(4) Not applicable to device type.

ASSESSMENT SUMMARY (CONTINUED)

CLAUSE NO AND TITLE	ASSESSMENT	LOCATION
6 REQUIREMENTS (continued)		
6.11 Filters	-	-
6.11.1 Types and classification	-	-
6.11.1.1 Particle filters	Pass	Page 2
6.11.1.2 Gas filters	N/Ap(2)	-
6.11.1.3 Combined filters	N/Ap(2)	-
6.11.2 Design and performance	N/As(1)	-
6.11.2.1 Construction	N/As(1)	-
6.11.2.2 Materials	N/As(1)	-
6.11.2.3 Mechanical strength	Pass	Page 6
6.11.2.4 Protection efficiency/capacity	-	
6.11.2.4.1 Particle filters	Pass	Pages 7,8,9
6.11.2.4.2 Gas filters type A,B,E,K & combined filters	N/Ap(2)	-
6.11.2.4.3 Special filters	N/Ap(2)	-
6.11.2.4.4 AX filters	N/Ap(2)	-
6.11.2.4.5 SX filters	N/Ap(2)	-
6.11.2.4.5.1 Sorption	N/Ap(2)	-
6.11.2.4.5.2 Desorption	N/Ap(2)	-
6.11.2.4.5.3 Penetration	N/Ap(2)	-
6.11.2.4.6 Multiple filters	Pass	Pages 7,8,9
6.12 Noise level	N/As(1)	-
6.13 Carbon dioxide content of the inhalation air	N/As(1)	-
6.14 Resistance to flame	Pass	Page 10
6.15 Exhalation means	N/As(1)	-
6.16 Mass	N/As(1)	-
6.17 Practical performance	Pass	Page 10
8 Marking	N/As(1)	-
9 Information supplied by the manufacturer	N/As(1)	-
APPENDIX A: Test panel data.	N/As(1)	Page 10

N/Ap: Not Applicable

N/As: Not Assessed

(1) Not required by BSI Product Certification.

(2) Not applicable to device type.

EXAMINATION AND TESTING (CONTINUED)

CLAUSE	REQUIREMENT	ASSESSMENT
6.4	<p>Inward leakage</p> <p>When tested at the manufacturer's minimum design flow rate the inward leakage of the test substance for each of the exercises shall not exceed the levels given in the appropriate class from column 5 of Table 1 of the Standard, for each of the 10 test subjects.</p> <p>Test in accordance with clause 7.3 of the standard.</p>	<p>See Comment 1) below</p> <p>(See Table A & Appendix A for test panel data)</p>

Table A: Total Inward Leakage results (%)

Test Panel Member	Pre-test condition	Sample description	Fans	Inward Leakage				
				Walking (%)	Walking with head side to side (%)	Walking with head up & down (%)	Walking and talking (%)	Walking (%)
MM2	AR	Powercap	Rear	0.6656	1.0195	1.1008	3.0397	0.6907
LC1	AR	Powercap	Side	0.8770	1.1465	1.1710	2.5873	0.8602
SH1	TC	Powercap	Front	0.2628	0.4500	0.5433	3.1373	0.6369
MT2	TC	Powercap	All	0.3882	0.3938	0.4274	3.7087	0.4548
					0.3959	0.4075		0.3727
					0.4404	0.4014		0.3755

AR: As Received

TC: Temperature conditioned

Comment:-

- (1) The limited testing conducted on four TIL subjects was acceptable. An overall assessment to this Clause can only be made when a complete panel of ten subjects is tested.

EXAMINATION AND TESTING (CONTINUED)

CLAUSE	REQUIREMENT	ASSESSMENT
6.11 6.11.2	Filters (continued) Design and Performance	
6.11.2.3	Mechanical Strength After testing in accordance with clause 7.11 of the standard filters shall show no mechanical defects. After a visual inspection they shall meet the performance requirements given in clause 6.11.2.4 of the standard.	Pass
6.11.2.4	Protection efficiency / capacity	
6.11.2.4.1	Particle filters	
	When tested in accordance with clauses 7.14.1 and 7.14.2 of the standard, particle filters shall comply with the requirements given in columns 6, or 6 and 7, of Table 1 in the Standard.	Pass See Table B & C
	Filters for use against solid and liquid aerosols shall be tested against sodium chloride and paraffin oil.	-
	Filters only for use against solid and water-based aerosols shall be tested against sodium chloride only.	-
	Filters not meeting the requirements after the storage test of EN 13274-7: 2008 shall be classified as single shift use only.	Pass See Tables D, E & F

EXAMINATION AND TEST (CONTINUED)

Summary of test procedure described in BS EN 13274-7: 2008, Test Clause 5.3

Test the filter until it has been exposed to 120 mg of Sodium Chloride unless the penetration shows a continued decline over a 5 minute period or over 5 sampling intervals, whichever is the greater.

Table B. Maximum sodium chloride penetration

	Sample 1	Sample 2	Sample 3
Pre-test condition	Mechanical strength and Temperature Conditioning		
Flow through filter	97.5l/min (1)	97.5l/min (1)	97.5l/min (1)
Elapsed Time in Minutes	Actual Penetration % (Maximum permitted penetration 10%)		
5	0.839819	0.713212	0.954032
10	0.753690	0.627756	0.839234
15	0.679803	0.573741	0.721813
20	0.613451	0.514636	0.641305
25	0.545900	0.465382	0.570739
30	0.495216(1)	0.411777(1)	0.510458(1)
35			
Assessment:	Pass	Pass	Pass

Comments.

(1) The initial flow rate was 195l/min. This was divided by the number of filters used by the device and the penetration test conducted on individual filters once Clause 6.11.2.4.6 'Multiple filters' had been assessed.

*After the Actual Penetration readings shown with suffix (1) the reading at 5 subsequent sampling intervals showed a decline and the testing was terminated without the 120mg exposure limit being reached as permitted by BS EN 13274-7: 2008, Test Clause 5.3.

EXAMINATION AND TEST (CONTINUED)

Summary of test procedure described in BS EN 13274-7: 2008, Test Clause 5.3

Test the filter until it has been exposed to 120 mg of Paraffin Oil.

Table C. Maximum paraffin oil penetration

	Sample 4	Sample 5	Sample 6
Pre-test condition	Mechanical strength and Temperature Conditioning		
Challenge concentration (mg/m ³)	20.0	20.0	20.0
Flow through filter	97.5l/min (1)	97.5l/min (1)	97.5l/min (1)
Elapsed Time in Minutes	Actual Penetration % (Maximum permitted penetration 10%)		
3	1.15	1.40	1.05
5	1.15	1.35	1.10
10	1.10	1.40	1.15
15	1.15	1.40	1.15
20	1.20	1.40	1.15
25	1.15	1.40	1.10
30	1.20	1.35	1.15
35	1.20	1.35	1.15
40	1.20	1.35	1.20
45	1.25	1.40	1.20
50	1.30	1.40	1.20
55	1.30	1.45	1.30
60	1.20	1.50	1.30
61.54	1.20(2)	1.45(2)	1.35(2)
Assessment:	Pass	Pass	Pass

Comments.

(1) The initial flow rate was 195l/min. This was divided by the number of filters used by the device and the penetration test conducted on individual filters once Clause 6.11.2.4.6 'Multiple filters' had been assessed.

(2) A loading of 120 mg was achieved after a period of 61 minutes, 32 seconds had elapsed.

EXAMINATION AND TEST (CONTINUED)

CLAUSE	REQUIREMENT	ASSESSMENT
6.11	Filters (continued)	
6.11.2	Filter requirements (continued)	
6.11.2.4	Protection efficiency / capacity	
6.11.2.4.1	Particle filters (Continued)	

Table D: Storage test to EN 13274-7: 2008, Clause 5.4

Filter Samples	Pre-test condition	Ambient conditions		Duration (hrs)	Condition of samples
		Temperature (°C)	Humidity (%RH)		
1	MS/TC	22.8	43.2	23.1	Normal
2	MS/TC	22.1	43.5	23.1	Normal
3	MS/TC	22.5	44.4	23.1	Normal
4	MS/TC	22.5	43.4	23.1	Normal
5	MS/TC	21.2	41.6	23.1	Normal
6	MS/TC	21.7	41.0	23.1	Normal

Table E: NaCl Penetration post storage test to EN 13274-7: 2008, Clause 5.4

Filter Samples	Pre-test condition	Flow through filter (l/min)	Max Specified Penetration (%)	Actual Penetration (%)	ASSESSMENT
1	MS/TC	97.5	10.0	0.468181	Pass
2	MS/TC	97.5	10.0	0.400485	Pass
3	MS/TC	97.5	10.0	0.497641	Pass

Table F: Paraffin Oil Penetration post storage test to EN 13274-7: 2008, Clause 5.4

Filter Samples	Pre-test condition	Flow through filter (l/min)	Max Specified Penetration (%)	Actual Penetration (%)	ASSESSMENT
4	MS/TC	97.5	10.0	1.25	Pass
5	MS/TC	97.5	10.0	1.60	Pass
6	MS/TC	97.5	10.0	1.25	Pass

EXAMINATION AND TESTING (CONTINUED)

CLAUSE	REQUIREMENT	ASSESSMENT
6.14	<p>Resistance to flame</p> <p>No part of the device shall continue to burn after removal from the flame. Test in accordance with clause 7.15 of the standard.</p> <p>The device is not required to meet the other requirements of this standard after being subjected to this test.</p>	Pass
6.17	<p>Practical performance</p> <p>The device shall undergo practical performance tests under realistic conditions. These general tests serve the purpose of checking the device for imperfections that cannot be determined by the tests described elsewhere in the Standard.</p> <p>Where practical performance tests show the device has imperfections related to wearer acceptance, the test house shall provide full details of those parts of the practical performance tests which revealed these imperfections. This will enable other test houses to duplicate the tests and assess the results thereof. Test in accordance with clause 7.16 of the standard.</p>	Pass See Table G DC1 and PN1
		-

Table G: Practical performance

Headtop sample	Blower unit sample	Filter sample	Pre-test condition	Subject	ASSESSMENT
Powercap	Internal	AR	TC	PN1	Pass
Powercap	Internal	AR	AR	DC1	Pass

FACIAL DIMENSIONS (mm)						
Initials	Length of face	Width of face	Face depth	Width of mouth	Head Circumference	Sex
LC1	106	128	116	60	550	F
SH1	125	150	125	50	580	M
MT2	119	150	130	51	570	M
MM2	126	143	144	50	580	M

Note: All persons were clean shaven.



Left hand side view of PowerCap Active



Rear view of PowerCap with battery cap



Right hand side view of PowerCap Active



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Component parts of PowerCap Active

END OF REPORT