Test Report

Report No	253/8524498 Issue 2	This Report consists of 12 pages
Client	Centurion Safety Products Limited 21 Howlett Way Fison Way Industrial Estate Thetford Norfolk IP24 1HZ	
Authority & date	BSI Service Management Order No 8524498 dated 22 April 2016	
Items tested	Industrial Helmets Model: NEXUS Safety Helmet (Type 1 Class E) Thirty (30) samples submitted	
Specification	Type testing to ANSI/ISEA Z89.1-2014 American National Standard for Industrial Head Protection – Type 1E See Assessment Summary for details	
Results	See Assessment Summary Issue 2 of this Report supersedes all previous Reports. The amendment causing this raise of issue can be ascertained by application to the authorizing signatory and/or reference to page 2	
Prepared by	S Macdonnell	Test Engineer
Authorized by	S C Hamon	Senior Engineer
Issue Date	23 August 2016	
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of EMCP 100 '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.	

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SPECIFICATIONS:- Type testing to ANSI/ISEA Z89.1-2014 American National Standard for Industrial Head Protection (see Assessment Summary for details)

CLIENT/MANUFACTURER: Centurion Safety Products Limited

MODEL: NEXUS Safety Helmet (Type 1 Class E)

MODEL VARIANT PRODUCT CODE NAMES: S16 (Unvented)

MANUFACTURING DATE: Not stated

NUMBER OF SAMPLES: Thirty (30)

ER NO: 10163038 DATE RECEIVED: 22 April 2016

DATE STARTED: 30 June 2016

HELMET DESIGN DATA (taken from submitted samples and supporting documentation):-

SHELL: ABS material, White (Unvented version)

HARNESS ASSEMBLY attached to shell comprising:
HEADBAND: (marked LDPE material), slip ratchet adjustment, S33/30 (standard)
CRADLE: Six point attachment, Terylene, fine weave, textile webbing, 20mm wide.
COMFORT / SWEAT BAND: Grey, elasticated spacer fabric, woven polyester, 1.9mm thick.

CHIN STRAP: None supplied

OPTIONAL REQUIREMENTS: lower temperature tests: -40°C (see Introduction below)
Electrical insulation tests – Class E

PHOTOGRAPHS OF MODEL: See page 11

INTRODUCTION

This submission was required by the Client for a Type Test programme. All samples submitted were unvented variant claiming Type 1 Class E requirements without option for reverse testing. The Client also claimed a lower temperature requirement of -40°C which is outside the scope of the standard lowest optional requirement of -30°C. This lower temperature requirement of -40°C has been assessed in this Report.

The Client also claimed an optional Electrical insulation tests to Class E which is subcontracted by Intertek, results of which are incorporated in separate Report; SMO 8524499 refers.

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

AMENDMENT RECORD

Issue 2 was required to at the request of the Client to include additional markings supplied separately by the Client to address outstanding non-compliances within this Report. Pages within this Report have been amended accordingly.

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ASSESSMENT SUMMARY

SECTION NO AND TITLE		ASSESSMENT	DETAIL LOCATION
6	**INSTRUCTIONS AND MARKING**	Pass (4)	Pages 9-11
7	**PERFORMANCE REQUIREMENTS**		
7.1	**Requirements for Type I and Type II Helmets**		
7.1.1	Flammability	Pass (3)	Page 4
7.1.2	Force Transmission	Pass	Pages 5 and 6
7.1.3	Apex Penetration	Pass	Page 7
7.1.4	**Electrical Insulation Requirements**		
7.1.4.1	General	N/As (1)	Page 8
7.1.4.2	Class G Requirements	N/Ap (2)	Page 8
7.1.4.3	Class E Requirements	N/As (1)	Page 8
7.2	**Additional Requirements for Type II Helmets**		
7.2.1	Impact Energy Attenuation	N/Ap (2)	-
7.2.2	Off-centre Penetration	N/Ap (2)	-
7.2.3	Chin strap	N/Ap (2)	-
7.3	**Requirements for Optional Features**		
7.3.1	Reverse Wearing	N/Ap (2)	-
7.3.2	High-Visibility	N/Ap (2)	-

N/As: Not Assessed N/Ap: Not Applicable

(1) Assessment subcontracted to Intertek, see Introduction on page 3 for further details.
(2) Assessment not required for the model type submitted by the Client.
(3) Refer comment 2 on page 4 for further details.
(4) Additional photocopies of information was supplied separately by the Client; Email from Client dated 16 August 2016 refers.

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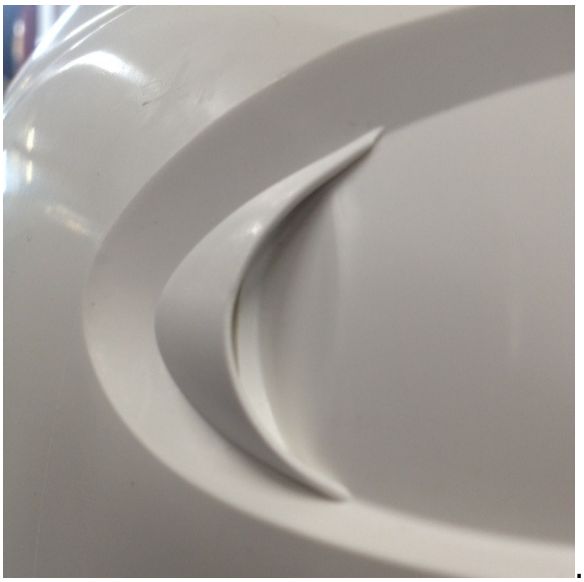
SECTION 7 PERFORMANCE REQUIREMENTS

Section 7.1.1 Flammability (1)

SECTION	REQUIREMENT	ASSESSMENT
7.1.1	**Flame resistance** Sample No: 12	Pass (2)

(1) Tested in accordance with Clause 10.1 methods.
(2) Samples met requirements and flame did not remain visible after 5 seconds removal of test flame. However on further testing it was observed that an area adjacent to vents had a thin shell edge that was susceptible to continuous burn and considered on the limit of acceptability. The Client has acknowledged this concern and confirms future manufacturing of samples will be addressed to further reduce this risk (refer pictures below).



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SECTION 7 PERFORMANCE REQUIREMENTS (CONTINUED)

Section 7.1.2 Force Transmission (1)

Sample No./ Shell Colour (2)	Claimed size / range (4) Actual size / range (3)	Pre-conditioning	Transmitted Force (max. 4450N)
1 / White	64-50cm / 630-520mm	+49°C	1810
2 / White	64-50cm / 630-520mm	+49°C	1900
3 / White	64-50cm / 630-520mm	+49°C	1920
4 / White	64-50cm / 630-520mm	+49°C	1950
5 / White	64-50cm / 630-520mm	+49°C	1910
6 / White	64-50cm / 630-520mm	+49°C	1920
7 / White	64-50cm / 630-520mm	+49°C	1840
8 / White	64-50cm / 630-520mm	+49°C	1850
9 / White	64-50cm / 630-520mm	+49°C	1830
10 / White	64-50cm / 630-520mm	+49°C	1900
11 / White	64-50cm / 630-520mm	+49°C	1870
12 / White	64-50cm / 630-520mm	+49°C	1850
		Average (max 3780N)	1879

(1) Tested in accordance with Section 10.2 methods.
(2) Only recorded for plastics helmets.
(3) Helmet set to greatest possible wearing height.
(4) No claimed size marked on helmet, size taken from harness.

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SECTION 7 PERFORMANCE REQUIREMENTS (CONTINUED)

Section 7.1.2 Force Transmission (1)

Sample No./ Shell Colour (2)	Claimed size / range (5) Actual size / range (3)	Pre-conditioning	Transmitted Force (max. 4450N)
13 / White	64-50cm / 630-520mm	-40°C (4)	2570
14 / White	64-50cm / 630-520mm	-40°C (4)	2390
15 / White	64-50cm / 630-520mm	-40°C (4)	2270
16 / White	64-50cm / 630-520mm	-40°C (4)	2340
17 / White	64-50cm / 630-520mm	-40°C (4)	2360
18 / White	64-50cm / 630-520mm	-40°C (4)	2080 (6)
19 / White	64-50cm / 630-520mm	-40°C (4)	2080 (6)
20 / White	64-50cm / 630-520mm	-40°C (4)	2330
21 / White	64-50cm / 630-520mm	-40°C (4)	2310
22 / White	64-50cm / 630-520mm	-40°C (4)	2390
23 / White	64-50cm / 630-520mm	-40°C (4)	2330
24 / White	64-50cm / 630-520mm	-40°C (4)	2350
		Average (max 3780N)	2317

(1) Tested in accordance with Section 10.2 methods.
(2) Only recorded for plastics helmets.
(3) Helmet set to greatest possible wearing height.
(4) Clause 8.5.5 Lower temperature option claimed by Client, see Introduction for further details.
(5) No claimed size marked on helmet, size taken from harness.
(6) Right hand side harness attachment broke away on impact.

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SECTION 7 PERFORMANCE REQUIREMENTS (CONTINUED)

Section 7.1.3 Apex Penetration (1)

Sample No./ Shell Colour (2)	Claimed size / range (5) Actual size / range (3)	Test headform size (ISO)	Pre-conditioning	Penetration (No contact striker-headform)
25 / White	64-50cm / 630-520mm	J	+49°C	Pass
26 / White	64-50cm / 630-520mm	J	+49°C	Pass
27 / White	64-50cm / 630-520mm	J	+49°C	Pass
28 / White	64-50cm / 630-520mm	J	-40°C (4)	Pass
29 / White	64-50cm / 630-520mm	J	-40°C (4)	Pass
30 / White	64-50cm / 630-520mm	J	-40°C (4)	Pass

(1) Tested in accordance with Section 10.3 methods.
(2) Only recorded for plastics helmets.
(3) Helmet set to greatest possible wearing height.
(4) Clause 8.5.5 Lower temperature option claimed by Client, see Introduction for further details.
(5) No claimed size marked on helmet, size taken from harness.

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SECTION 7 PERFORMANCE REQUIREMENTS (CONTINUED)

Section 7.1.4 Electrical Insulation Requirements

SECTION	REQUIREMENT	ASSESSMENT
7.1.4.1	**General** Class G and Class E helmets shall meet their appropriate performance requirements as listed below. Class C helmets are not tested for Electrical insulation.	N/As (1)
7.1.4.2	**Class G Requirements** Class G helmets shall be tested in accordance with Section 10.7 (of this standard) and shall withstand 2,200 volts (root mean square) AC, 60 Hertz, for 1 minute. Leakage shall not exceed 3 milliamperes.	N/Ap (2)
7.1.4.3	**Class E Requirements** After first passing the force transmission test specified in Section 7.1.2, Class E helmets shall be tested in accordance with Section 10.7 (of this standard) and shall withstand 20,000 volts (root mean square) AC, 60 Hertz, for 3 minutes. Leakage shall not exceed 9 milliamperes. At 30,000 volts, the test sample shall not burn through.	N/As (1)

N/As: Not Assessed N/Ap: Not Applicable

(1) Assessment conducted separately, see Introduction on page 2.
(2) Assessment not required for the model type submitted by the Client.

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SECTION 6 INSTRUCTIONS AND MARKING

SECTION	REQUIREMENT	ASSESSMENT
6.1	Each helmet shall be accompanied by manufacturer's instructions explaining the application(s) of use, proper method of size adjustment and fitting (including, if applicable, reverse wearing) and, guidelines for care and useful service life.	Pass (1)
6.2	Each helmet shall bear permanent markings in at least 1.5mm (0.06in) high letters stating the following information:	
a)	Name or identification mark of the manufacturer;	Pass
b)	the date of manufacture;	Pass (1)
c)	the American National Standard Designation, ANSI/ISEA Z89.1-2014;	Pass (2)
d)	the applicable Type and Class Designations, followed by applicable optional criteria markings;	Pass
e)	the approximate head size range (refer table 2 of Standard);	Pass (1)
6.3	If optional performance features are satisfied, the appropriate marking below shall be applied in the sequence as specified below:	
	 - Reverse donning	N/Ap (3)
	LT – Lower temperature	Pass (4)
	HV – High Visibility	N/Ap (3)
	HT – Higher temperature	N/Ap (3)
	Note – the size of the reverse donning symbol shall be large enough to be legible.	

N/Ap: Not Applicable

(1) Information was not provided initially with samples submitted. The Client subsequently provided additional information including samples that met requirements; see pages 10 and 11 for further details.
(2) Helmet marked 'ANSI/ISEA Z89.1-2009'.
(3) Option not claimed for this model of helmet.
(4) Lower temperature was stated as -40°C, see Introduction on page 3 for further details.

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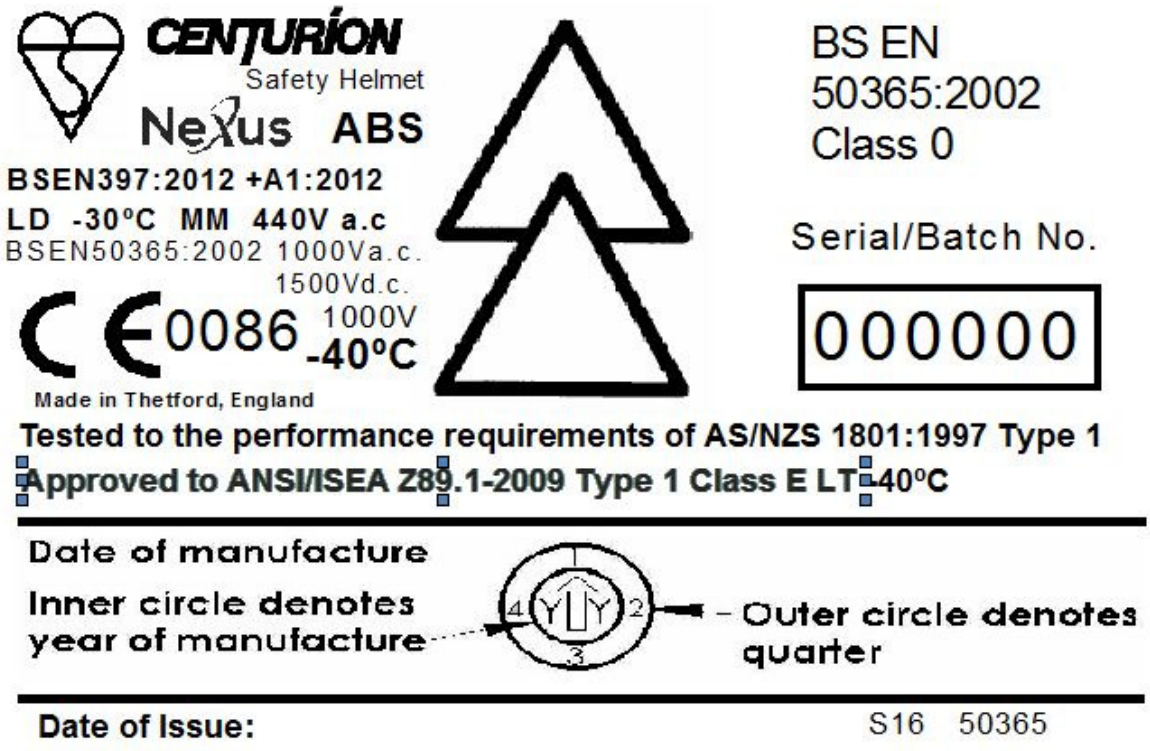
PHOTOCOPIES OF SECTION 6 MARKING

Photocopies of information supplied for these samples



Information supplied separately by the Client

Evidence of Information supplied on sample submitted

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PHOTOCOPIES OF SECTION 6 MARKING (CONTINUED)

Centurion Helmet Product Codes: S08, S09, *S12, *S12 Plus, S16E, S20

INDUSTRIAL SAFETY HEADWEAR
STANDARDS & MARKINGS

Refer to the label inside the helmet for the applicable standard options.
EN 397:2012 +A1:2012 Industrial Safety Helmets
LD Lateral Deformation
-30℃ & -40℃ Low Temperature Performance
MM Molten Metal
440V a.c. & 1000V a.c. Electrical Insulation
-40℃ & 1000V a.c. (Currently outside the scope of EN 397)
ANSI/ISEA Z89.1-2009 Type 1 American Industrial Safety Helmets
Class C No Electrical Insulation
Class E 20,000V a.c. Electrical Insulation
LT Low Temperature Performance
All helmets perform to +50℃.

USER ADVICE

The product is made to absorb the energy of a blow by partial destruction or damage to the shell and the harness and even though such damage may not be readily apparent any product subjected to severe impact should be replaced. Do not modify or remove any of the original component parts of the product, other than those recommended by the manufacturer. Products should not be adapted for the purpose of fitting attachments in any way not recommended by the manufacturer. Do not apply paints, solvents, adhesives or self-adhesive labels except in accordance with instructions from Centurion. Any product may be adversely affected by certain chemicals. For further information contact the manufacturer.

FITTING & ADJUSTMENT

For adequate protection the products must fit or be adjusted to the size of the user's head. For a secure fit adjust the headband at the rear of the product. *The highest headband adjustment position must only be used for small head sizes up to 550mm.

WEAR & CARE

Clean and disinfect with warm tap water (known to not have any adverse effects to the wearer) and soft cloth, taking care to avoid scratching. Commercial solvents or organic compounds are not recommended as they cause surface softening and stress relieving with a loss of physical properties. Materials used in the production of these products, which come in contact with the wearers skin, could cause allergic reactions to susceptible individuals. Check daily all parts are operational and undamaged. Store and transport in original closed packaging (between 0℃ & +30℃) for up to five years avoiding direct sunlight. The product has an in-use life of up to five years. The date of manufacture is moulded into the helmet (quarter/year).

HELMET ACCESSORIES

Replacement harnesses (except for S12 & S12 Plus), chin straps, ear defenders, sweatbands and visors are available from Centurion with fitting instructions. Contact our sales desk for information.

SPECTRUM OVER SPECTACLES

Scratched or damaged oculars must be replaced. **THE OVER SPECTACLES ARE AN INTEGRAL PART OF THE DESIGN-THE HELMET MUST ONLY BE USED WITH THE OVER SPECTACLES FITTED.** The Spectrum Over Spectacles (S576) meets the requirements of EN 166:2001 1 (optical class) B (medium energy impact) 'T' resistance to high speed particles/Extremes of temperatures (-5℃ & +55℃), EN 170:2002 2C-1,2 UV filter with good colour recognition and ANSI/ISEA Z87.1-2010 Z87+ High mass and high velocity impact. Eye protection that is worn over standard ophthalmic spectacles may transmit impact from high speed particles, hence creating a hazard to the wearer.

INFORMATION TO USERS EN 50365:2002
This is an Electrically Insulated Helmet

The double-triangle symbol means that this helmet is electrically insulated for use working live or close to live parts on installations not exceeding 1000V a.c. or 1500V d.c. This helmet has been designed to protect the wearer against electrical shocks by preventing passage of dangerous current through the body via the head. It should not be used alone, other insulating protective equipment should also be used according to the risks involved in the work. This helmet should not be used in situations where there is a risk which may partially reduce its insulating properties. If the helmet becomes dirty or contaminated (oil, tar, paint etc..) particularly the external surface, it should be carefully cleaned in accordance with Centurion's wear & care instructions. Before each use a careful visual examination should be made. If mechanical or chemical damage or slight cracks are evident then the helmet must not be used. If in any doubt destroy the helmet. Check that the electrical limits of the helmet correspond with the nominal voltage likely to be encountered during helmet use.
Storage conditions are very important in conserving the helmet's electrical and mechanical properties. The helmet should be stored in a suitable box or container between uses and avoid compressing or storing close to any heat source. Recommended storage temperature is +5℃ to +35℃.

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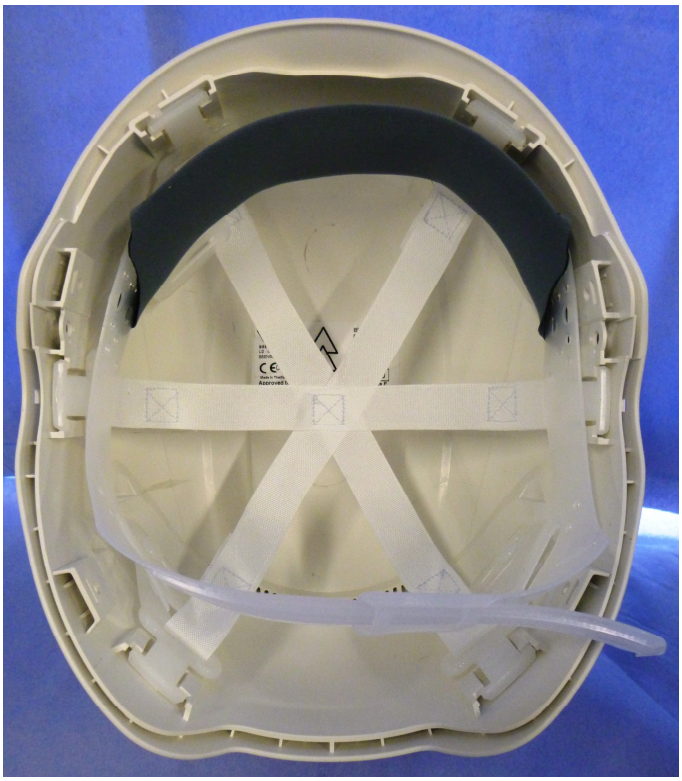
PHOTOGRAPHS OF MODEL



END OF REPORT