

Test Report

EN 397 : 2012 + A1:2012 Industrial safety helmets

Report no: 2.13.08.03

Client: INSPEC Certification Services
56 Leslie Hough Way
Salford
Greater Manchester
M6 6AJ
United Kingdom

Client order: TA13/0067A

Order received: 09 July 2013

Manufacturer: Pangolin Safety Products Co., Ltd

Model: Pangogard 9000A

Dates of tests: 13 July 2013 to 2 August 2013

Signed:



Steven Sum, Laboratory Manager

Issued: 7 August 2013

Page 1 of 10

Conditions

This report may be reproduced and distributed to your clients, provided that it is reproduced and distributed in full.

Specimens will be disposed of four weeks from the date of this report, unless otherwise instructed.

Opinions, comments and interpretations expressed in this report are shown in italics.

Copies of INSPEC interpretations referenced in this report are available upon request.

Tests marked are not included in our ACLASS Scope of Accreditation.

This report has been provided in accordance with our standard Terms of Business, which can be viewed at, and printed from:

<http://inspec-international.com/ToB.pdf>

If you have difficulty accessing the Terms of Business, you may contact us for a copy.

Summary of assessment*

Clause	Requirement	Assessment
4.1	Materials and construction	Ltd
4.2	External vertical distance	Pass
4.3	Internal vertical distance	Pass
4.4	Internal vertical clearance	Pass
4.5	Horizontal distance	Pass
4.6	Wearing height	Pass
4.7	Harness	Pass
4.7.1	Headband/nape strap	Pass
4.7.2	Cradle	Pass
4.7.3	Comfort band or sweatband	Pass
4.8	Chin strap	Pass
4.9	Ventilation	Pass
4.10	Accessories	NAP
5.1.1	Shock absorption	Pass
5.1.2	Resistance to penetration	Pass
5.1.3	Flame resistance	Pass
5.1.4	Chin strap anchorages (1)	Pass
5.1.5	Label	Pass
5.2.1	Very low temperature (-20°C or -30°C) - optional	Ltd
5.2.2	Very high temperature (+150°C) – optional ☒	
5.2.3	Electrical properties – optional	
5.2.4	Lateral deformation – optional	
5.2.5	Molten metal splash – optional ☒	
7	Marking	

Key

	Shading shows the clauses requested. Any other clauses were not requested.
Pass	Requirement satisfied.
Ltd	Testing requested was insufficient completely to verify compliance with the clause. Refer to the “Result details” section for more information.
Fail	Requirement not satisfied. Refer to the “Result details” 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 specimens which were tested and are the subject of this report.

(1) INSPEC Interpretation applies.

Stated product characteristics

Clause ref.	Option	Claim (relevant to testing requested)
5.2.1	Very low temperature	-20°C and -30°C

Submission details

Product	Quantity	Date Received	INSPEC specimen no. (2A063+)
Industrial safety helmet, model Pangogard 9000A	20	8 July 2013	01 to 20

Procedures

The specimens detailed within the submissions above were used for the tests covered by this report.

Testing was performed in accordance with EN 397 : 2012 + A1:2012 unless otherwise specified below. Reference should be made to the standard when reading this report.

Unless stated otherwise, specimens were tested in the condition as received by INSPEC.

All testing was performed at INSPEC's laboratory in Kunshan, China.

Result details**4.1 Materials and construction**

Specimens 2A06301 and 2A06302 were assessed.

The helmet did include at least a shell and a harness. **Pass**

The effects of any materials which would come into contact with the wearer when worn were not assessed. Manufacturer to certify. **NAs**

No parts of the specimens assessed had sharp edges, roughness or projections likely to cause injury to the wearer when the specimens were worn. **Pass**

All of the adjustable or replaceable parts of the specimens could be adjusted or removed and attached without the use of tools. **Pass**

The adjustable parts of the specimens were designed so that, when in normal use, inadvertent adjustment was not possible. **Pass**

4.2 External vertical distance

Specimen	External vertical distance (mm)	
	Headform 525	Headform 585
01	45	46
02	45	47
Limit	≤ 80	

Pass**Pass****4.3 Internal vertical distance**

Specimen	Internal vertical distance (mm)	
	Headform 525	Headform 585
01	35	34
02	35	34
Limit	≤ 50	

Pass**Pass****4.4 Internal vertical clearance**

Specimen	Internal vertical clearance (mm)	
	Headform 525	Headform 585
01	35	34
02	35	34
Limit	≥ 25	

Pass**Pass**

4.5 Horizontal distance

Specimen	Horizontal distance (mm)			
	Headform 525		Headform 585	
	Front	Sides	Front	Sides
01	27	33	16	26
02	28	32	15	27
Limit	≥ 5			

Pass

Pass

4.6 Wearing height

Provision was made for the wearing height to be adjustable.

Pass

Specimen	Wearing height (mm)			
	Headform 525		Headform 585	
	Front	Sides	Front	Sides
01	103	104	103	105
02	102	105	104	104
Limit	≥ 80 (front or sides)		≥90 (front or sides)	

Pass

Pass

4.7 Harness

Specimens 01 and 02 were assessed.

The harness of the helmet included a headband and a nape strap.

Pass

4.7.1 Headband/nape strap

The nape strap was adjustable in increments as follows:

Specimen	Increment (mm)
01	2.5
02	2.5
Limit	≤ 5

Pass

Pass

4.7.2 Cradle

The cradle did incorporate textile tapes, with dimensions as follows:

Textile tape dimensions

Specimen	Individual width (mm)	Total width (mm)
01	26	156
02	26	156
Limit	≥ 15	≥ 72

Pass

Pass

4.7.3 Comfort band or sweatband

A sweatband was provided with coverage as follows:

Coverage

Specimen	Length from centre, each side (mm)
01	118
02	119
Limit	≥ 100

Pass

Pass

The sweatband had a width not less than that of the headband over the length which it covered.

Pass

4.8 Chin strap

Provision was made for fitting a chin strap to the shell.

Pass

A chin strap was provided fitted to the shell.

Pass

Specimen	Chin strap width (mm)
08	20
Limit	≥ 10

Pass

4.9 Ventilation

Specimen	Total vent area (mm ²)
01	171
02	171
Limit	≥ 150 : ≤ 450

Pass

Pass

4.10 Accessories

One fixing slot at each side of the helmet was provided.

No accessories, or information regarding accessories, were supplied.

NAp

5.1.1 Shock absorption

Specimen	Headform	Condition	Maximum force transmitted (kN)
01	585	-10°C	2.72
02		WET	2.61
03		UV	2.56
04		+50°C	2.45
Limit			≤ 5.0

Pass

Pass

Pass

Pass

5.1.2 Resistance to penetration

Specimen	Headform	Condition	Impact position	Contact with headform?
05	585	-10°C	Left	No
06		WET	Back	No
07		UV	Centre	No
08		+50°C	Right	No

Pass

Pass

Pass

Pass

5.1.3 Flame resistance

Specimen 04 was assessed

The materials of the shell did not burn with the emission of flame after a period of 5 seconds following removal of the flame.

Pass

5.1.4 Chin strap anchorages

INSPEC interpretation applies.

Specimen	Headform	Force to release jaw (N)
08	585	169
Limit		$\geq 150 : \leq 250$

Pass

The left side anchorage released from the shell.

Pass

5.1.5 Label

Specimens 2A06101 to 2A06112 were assessed.

A self adhesive label, in accordance with 7.2.2, was provided which remained attached and legible on each specimen following the appropriate conditioning.

Pass

5.2.1 Very low temperature**Force transmitted**

Specimen	Headform	Condition	Maximum force transmitted (kN)
09	585	-20°C	2.88
11	585	-30°C	2.87
Limit			≤ 5

Pass

Pass

Resistance to penetration

Specimen	Headform	Condition	Impact position	Contact with headform
10	585	-20°C	Left	No
12	585	-30°C	Right	No

Pass

Pass

Assessment of clause 7.2.2 was not requested.

NAs

Estimates of the uncertainty of measurement

Clause	Test	Uncertainty
4.1	Materials and construction	Not applicable
4.2	External vertical distance	±1.5%
4.3	Internal vertical distance	±1.5%
4.4	Internal vertical clearance	±1.5%
4.5	Horizontal distance	±0.8%
4.6	Wearing height	±1.5%
4.7	Harness	Not applicable
4.7.1	Headband/nape strap	Dimensions ±0.59mm
4.7.2	Cradle	Dimensions ±0.59mm
4.7.3	Comfort band or sweatband	Dimensions ±0.59mm
4.8	Chin strap	Dimensions ±0.59mm
4.9	Ventilation	Dimensions ±0.83mm ²
4.10	Accessories	Not applicable
5.1.1	Shock absorption	±3.4%
5.1.2	Resistance to penetration	See Note 1
5.1.3	Flame resistance	See Note 1
5.1.4	Chin strap anchorages	±4.2%
5.1.5	Label	Not applicable
5.2.1	Very low temperature (-20°C or -30°C) – optional	Shock absorption ±3.4%
		Penetration See Note 1
5.2.2	Very high temperature (+150°C) – optional	See report
5.2.3	Electrical properties – optional	±3.6%
5.2.4	Lateral deformation – optional	±4.1%
5.2.5	Molten metal splash – optional	See report
7	Marking	Not applicable

Note 1 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.

Note 2 The uncertainty value is based on a standard uncertainty multiplied by a coverage factor $k = 2$, which provides for a confidence level of approximately 95%. 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.

ANNEX

This Annex comprises one section.

1. Photographs of the product tested. (1 page)

Pangolin Safety Products Co., Ltd – Industrial safety helmet,
model Pangogard 9000A

