

HEADQUARTERS
PHILIPPINE ARMY
OFFICE OF THE ARMY CHIEF QUARTERMASTER
Fort Andres Bonifacio, Metro Manila

PA SPECIFICATION

QM SPEC NR 1E-22PABH

SEP 08 2017
(INTERIM)

PHILIPPINE ARMY BALLISTIC HELMET

1. GENERAL:

1.1. Scope - This specification covers the Ballistic Helmet which is primarily designed to provide ballistic and non-ballistic protection to the user's head from injuries caused by bullets and shrapnel. The protective helmet consists of a ballistic protective shell, suspension pad system, and retention system. Also, it has an eyewear to protect the eyes.

1.2. Grade - The finished Ballistic Helmet shall be of the quality and grade of product prescribed by this specification.

1.3. Type - This specification covers only one (1) type of helmet which is a protective equipment designed to provide ballistic and non-ballistic protection to the user's head caused by bullets and shrapnel. It is composed of three (3) sub-parts: a) Ballistic Shell; b) Suspension Pad System; and c) Retention System. It also has a Night Vision Goggles (NVG) mounting system and an eyewear.

1.4. Overall Weight

Maximum Overall weight of the Ballistic Helmet	Small	Medium	Large	X- Large
	1.33 kgs	1.38 kgs	1.5 kgs	1.75 kgs
	• The Overall weight includes the basic shell, retention system and suspension pad system			

2. REQUIREMENTS:

2.1. First Article – A sample of Philippine Army Ballistic Helmet shall be subjected to first article inspection and for approval to determine the conformance on the specification.

2.2. Capability Requirements

2.2.1. The Philippine Army Ballistic Helmet must be capable of providing the individual soldier the necessary protection within the National Institute of Justice (NIJ) 0106.01 standard level of protection and as provided by this specification that can significantly reduce or eliminate the likelihood of fatal injury caused by a penetrating bullet, shrapnel and blunt trauma.

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2.2.2. The ballistic helmet must not restrict the movement of an individual soldier especially during tactical situations. It should not give discomfort to the wearer when worn. It must be able to allow mobility and maneuverability without unnecessarily compromising the area of protective coverage.

2.2.3. Its materials and construction must be ergonomically designed for increased comfort especially during prone position and it shall not reduce the peripheral vision of the soldier. Likewise, it must be able to minimize stress and fatigue in the head especially during prolonged use in a typical operational environment. Among the important factors that should be considered are the following: weight; ease of use/operation; comfort, and stability.

2.2.4. The PA Ballistic Helmet must be compatible with any type of PA individual field uniform and equipment particularly the armor vest, the latest type of Battle Dress Uniform and the night vision goggles (NVG).

2.3. Functional, Operational and Other Technical Requirements

2.3.1. Ballistic Shell

2.3.1.1. Design and Construction

2.3.1.1.1. Advance Combat Helmet (ACH); Full Cut type design (Similar to the attached illustration, Figure 1)

2.3.1.1.2. The outer and inner surfaces of the shell, including the bottom edge, shall be finished smooth and even.

2.3.1.1.3. Both the inside and outside surfaces of the shell shall be free from any hole, void, delamination, blister, cracking, crazing and dry spot.

2.3.1.2. Protection

2.3.1.2.1. Ballistic Protection: it shall provide a minimum level of ballistic protection provided in this specification that is in accordance to NIJ 0106.01 standard and procedure.

2.3.1.2.2. The ballistic helmet shall resist penetration on the following type of ammunition:

Bullet type	Specified Mass	Velocity
9mm FMJ RN	8g/124 gr	426 m/s ± 15 m/sec
.357 SIG FMJ FN	8.1g/125 gr	430 m/s ± 15m/s
.45x23mm, Ball FMJ (M1911)	14.9g/230 gr	282 m/s ± 15m/s

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2.3.1.2.3. Fragment Protection: Compliant with MIL-STD-662F or STANAG 2920 (17 grain; .22 Cal FSP; V50-720 m/s).

2.3.1.2.4. In addition, at least one helmet fitted with an NVG mounting system shall be tested and there shall be no penetration and the Ballistic Transient Deformation (BTD) shall not exceed 25.0 mm.

2.3.1.2.5. Ballistic Transient Deformation (BTF): BTF of the shell shall not cause a deformation in clay in excess on the requirement herein against the projectile mentioned on 2.3.1.2.2 at under the required environmental conditions.

Bullet type	Crown & sides	Front & Back
9mmx19mm FMJ RN	16.0mm	25.0 mm
.357 SIG FMJ FN	16.0mm	25.0 mm
.45 cal x 23mm, Ball FMJ (M1911)	16.0mm	25.0 mm

2.3.1.2.6. Flame Resistance: The flame resistance of the helmet shell should comply EN397 standard or ASTM D6413.

2.3.1.2.7. Compression Resistance: The shell shall be resistant to repeated compression in the top to bottom direction and side to side direction in accordance to AR/PD 10-02 clause 4.9.14.11 & 4.9.14.12.

2.3.1.2.8. Seawater Resistance: There shall be no structural, visible, or operational degradation to the finished shell when subjected to immersion in seawater as per AR/PD 10-02 clause 3.12.1 & 4.9.14.1.

2.3.1.2.9. High and Cold Temperature storage: All helmet components including the shell, pads, retention system and hardware shall exhibit no structural, visible or operational degradation or physical damage when subjected to elevated and low temperature exposure as per EN 397 or AR/PD 10-02 clause 4.9.14.5. (hot) & AR/PD 10-02 clause 4.9.14.6 (cold).

2.3.1.2.10. Blunt Impact Protection: The finished helmet shall provide non-ballistic protection to the wearer by reducing acceleration of head during low velocity blunt impact events at various temperature not to exceed 150 G (gravitational constant) conforming to AR/PD-10-04, clause 4.9.13 or FMVSS 218.

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2.3.1.2.11. Head Protection Coverage: covers the front, back, sides, and crown/top of the head. It shall be measured using a 3D white light scanning device. It shall conform to the following dimension and coverage of the outer shell:

Sizes	Length, mm (min)	Width, mm (min)	Height, mm (min)	Circum, mm	Outer Shell Coverage Area (sq. cm)
Small	228	210	157	530 – 550	1025 ± 50
Medium	237	217	157	550 – 570	1090 ± 50
Large	248	225	160	570 – 590	1150 ± 50
X-Large	262	237	168	590 – 610	1250 ± 50

2.3.1.2.12. Sizes:

Small (cm)	Medium (cm)	Large (cm)	X- Large (cm)
53 – 55	55 – 57	57 – 59	59 – 61

2.3.1.3. Other Requirements

2.3.1.3.1. The color of the basic shell shall be Olive Drab.

2.3.1.3.2. The edge of the shell shall be finished with rubber trim.

2.3.2. Retention System

2.3.2.1. Design and Construction

2.3.2.1.1. It shall consist of a 4-point chinstrap, black in color, nape pad (H - type) and ratchet system. It shall be designed for one-handed operation (closure and adjustment). The adjustment should be done in one direction. It should have provision for a quick-release mechanism. It shall have load bearing capacity of 20 ± 5.0 kg when tested as per EN397.

2.3.2.1.2. The chin strap shall have an Open Chin Cup and Side Release Buckle.

2.3.2.1.3. The attachment of retention system to the helmet, shall not affect the impact protection and performance of the helmet.

2.3.2.1.4. Webbing must have a minimum breaking strength of 500N when tested as per ASTM D 6775-13.

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2.3.2.1.5. Materials used in the retention system shall be suitable and comfortable for use, even during prolonged skin contact. The components of the retention system shall not pose any health hazard or skin irritation and allergies.

2.3.3. Suspension Pad System

2.3.3.1. Design and Construction

2.3.3.1.1. The Helmet shall utilize a multi-layered pad suspension system consisting of 7 pads: one circular, two trapezoidal, and four oblong/oval pads.

2.3.3.1.2. The pads shall possess means of easy attachment, removal, and reattachment to the inside helmet shell. The pad shall attach, remove, and reattach to the helmet shell via hook tape disks permanently adhered to the inside of the helmet shell. The pads shall remain firmly in place when attached.

2.3.3.2. Durability

2.3.3.2.1. The pads shall be constructed such that they can withstand multiple compressions without failing. Each pad shape and thickness shall be subjected to repeated ¼-inch compressions and show no signs of degradation. The test is in accordance to AR/PD 10-02, clause 4.9.8.3

2.3.3.2.2. The water absorbency shall not exceed more than 3% as per AR/PD 10-02, clause 4.9.8.4 or in accordance to AATCC TM 79-2010.

2.3.3.2.3. The inner material that contacts the wearer's head shall wick moisture away from the wearer's head and absorb in accordance with AR/PD 10-02, clause 4.9.8.5 or AATCC TM 198-2011.

2.3.4. NVG Mounting System

2.3.4.1. Design and Construction

2.3.4.1.1. The shroud/mounting system should fit any size of helmet.

2.3.4.1.2. The attachment to the shell shall have a maximum of single bolt and shall not require any modification or additional drill holes. The bolt shall not pose secondary hazards/fragments to the user.

2.3.4.1.3. The bolt shall be rust resistant in accordance to ASTM B117.

2.3.4.1.4. It shall be Olive Drab in Color.

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2.3.4.2. Integration and Compatibility

2.3.4.2.1. The shroud shall fit to the existing NVG equipment of the Philippine Army, particularly the A100 monocular, PVS – 7B and PVS – 14 Generation II and III.

2.3.4.2.2. When worn together with the helmet, the NVG should be well fitted with superior NVG stability and shall have no unnecessary movement/displacement.

2.3.4.2.3. The shroud shall be detachable and easy to fit.

2.3.5. Ballistic Eyewear

2.3.5.1. Design and Construction

2.3.5.1.1. The helmet shall have a Ballistic eyewear.

2.3.5.1.2. The eyewear shall have high anti-fogging performance and scratch resistance.

2.3.5.1.3. The eyewear shall have a flexible strap end for custom fit either with the helmet or simply with the head.

2.3.5.2. Protection

2.3.5.2.1. It shall provide protection against shrapnel and fragments in accordance with either of the following standards:

- a. ANSI Z87.1 – 2010
- b. MCEPS GL-PD 10-12
- c. EN166

2.3.5.2.2. Must provide UV A-B-C protection in accordance with standards specified in 2.3.5.2.1

2.3.6. HELMET COVER

2.3.6.1. Basic Material

Parameters	Requirements
Material	Polyester
Type of Weave	Ripstop Design
Abrasion Resistant	2000 (minimum)
Colorfastness To:	
Laundering (5 cycles)	4
Daylight (Xenon Arc)	4

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2.3.6.2. Design and Construction

2.3.6.2.1. The helmet shall be fitted with various cover corresponding to each sizes.

2.3.6.2.2. The helmet cover shall be securely in place on the helmet.

2.3.6.2.3. It shall cover the entire surface of the outer coverage area of the helmet. The mounting system shall be placed or attached over the helmet cover.

2.3.6.2.4. Color: PHILARPAT or the latest PA color and design of Battle Dress Uniform (BDU).

2.4. Label

2.4.1. The following minimum data shall be indicated on the label and adhered into the inner portion of each Ballistic Helmet:

- i. Name, address, and logo of the manufacturer
- ii. Rated level of protection in accordance with NIJ standard
- iii. Size
- iv. Date Manufacture
- v. Model Designation
- vi. Lot number or production batch number

2.4.2. It shall be provided with a Helmet Bag with a name tag, PHILARPAT in color/design. The helmet bag shall have the same material as the helmet cover.

2.5. Other Requirements

2.5.1. Each set of Ballistic Helmet and Eyewear must be provided with a manual (or brochure) on the equipment's proper use and maintenance (available in hard and e-copy).

2.5.2. There shall be an appropriate tool kit to be provided in detaching the NVG mounting system, if applicable.

2.5.3. Five (5) years warranty coverage for the Ballistic Helmet.

2.5.4. Product Liability Insurance coverage for five (5) years upon acceptance of the Ballistic Helmet.

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2.5.5. The ballistic helmet and eyewear must be brand new and never been used.

2.5.6. Minimum shelf life of the shell and all components shall be five years. The components and materials shall suffer no degradation in performance after storage for a period of five (5) years.

3. VERIFICATION

3.1 First Article Inspection – The first article submitted in accordance with para 2.1 shall be subjected to first article inspection and approval during the post qualification stage. The samples shall be subjected to tests and examination to verify if the requirements in specification are satisfied.

3.2 Sampling

3.2.1 Samples of finished items of PA Ballistic Helmet shall be taken at random by PA inspectors during acceptance for the purpose of examination and test to determine compliance with the requirements of this specification

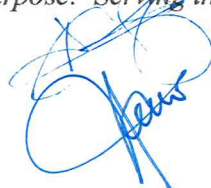
4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection – Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this document where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.4 Certification of Compliance. When the certificate of compliance is submitted, the government reserves the right to inspect such items to determine the validity of the certification. The certification (In English Translation) shall be provided by the manufacturer from authorized organization/agency such as but not limited to ISO9001:2008 with specific scope in the manufacture or design of ballistic products or items.

5. PACKAGING AND PACKING

5.1 Packing – the packing for the PA Ballistic Helmet shall be in accordance with the best method currently being employed by the contractor.



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6. MISCELLANEOUS

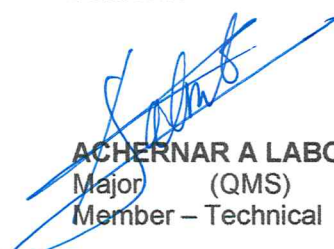
6.1 Any point not covered by this text shall be governed by the attached illustration which shall be followed in every detail.

6.2 Slight manufacturing differences may be allowed but they must not be jeopardized or affect the proper functionality.

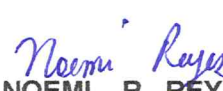
By: Technical Working Group for Quartermaster Items


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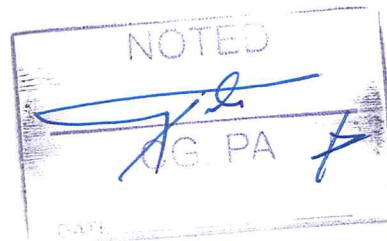

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NOTE: All images in this specification are for illustration purposes and reference only. It does not depict the actual design of the item. The technical requirements specified in the specification must always prevail in all aspect of the Philippine Army Ballistic Helmet.



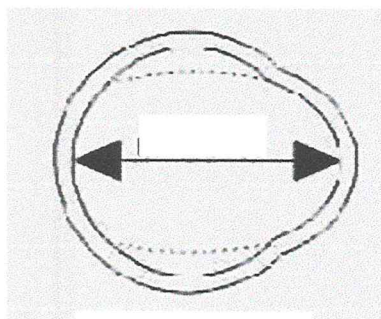
Figure 1: Shape & design of the shell

Dimension of the Ballistic Helmet

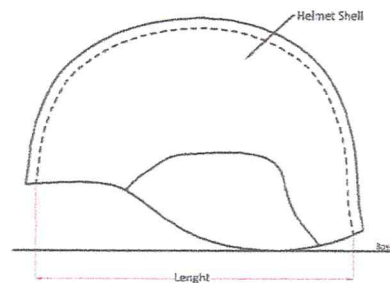
Sizes	Length, mm (min)	Width, mm (min)	Height, mm (min)	Circum, mm
Small	228	210	157	530 – 550
Medium	237	217	157	550 – 570
Large	248	225	160	570 – 590
X-Large	262	237	168	590 – 610

Figure 3: Dimension of the shell

LENGTH



Bottom View



Side View

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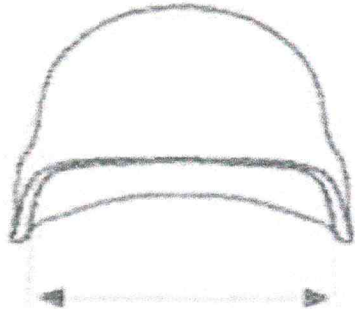
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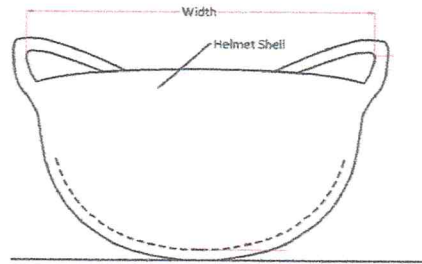
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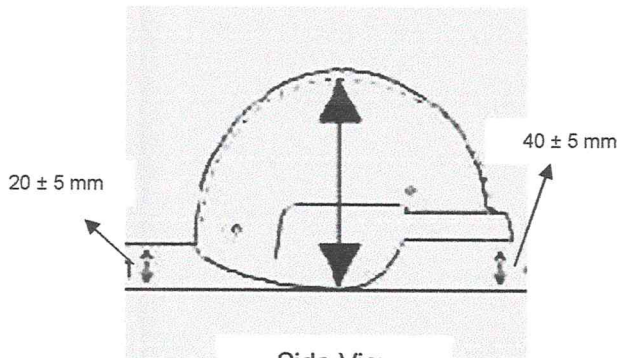
WIDTH



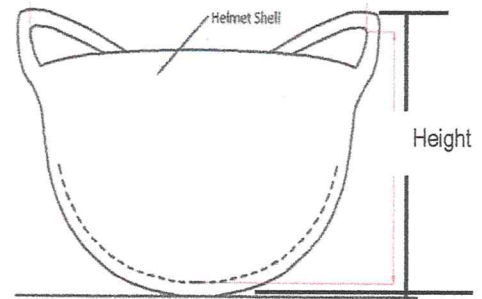
Front View



HEIGHT



Side View

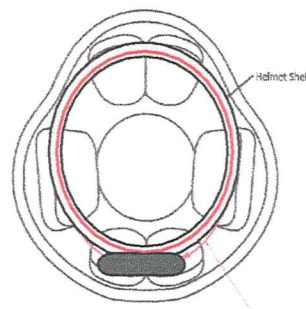


Front View

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Inner View



Note: Measuring of circumference after the attachment of suspension pad and ratchet system (retention system)

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