



BRAZILIAN NAVY

MARINE CORPS MATERIAL COMMAND

TECHNICAL SPECIFICATIONS FOR GROUND TROOPS BALLISTIC HELMET LEVEL III-A

SUBJECT: BALLISTIC HELMET FOR GROUND TROOPS (MULTI-LAYER HIGH PERFORMANCE HELMET) - Level of Protection IIIA, according to NIJ Standards

Helmet Styles



ACH Standard



ACH Mid-Cut



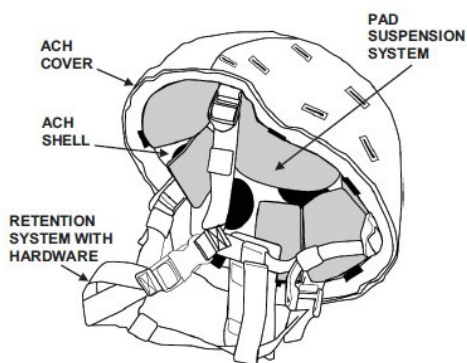
ACH High-Cut

1. GENERAL

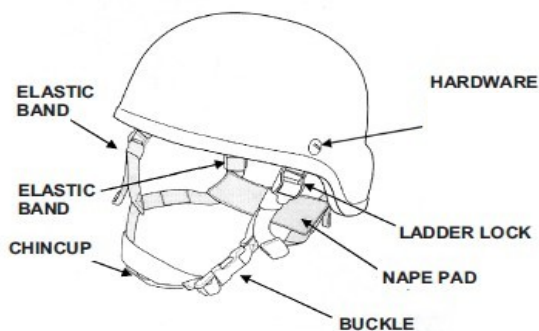
1.1 - These specifications define the technical requirements for the manufacturing of a helmet to protect the user's head against impact and ballistic hazards, for use by ground troops units of the Brazilian Navy.

1.2 - The helmet shell is made of a multi-layer construction. The layers are a combination of high-tenacity ballistic aramid fiber.

1.3 - The helmet includes a ACH shell, pad suspension system, retention system with hardware, all designed to reduce the effect of impact, to enable proper ventilation to the user's head and can be adjustable and replaceable.



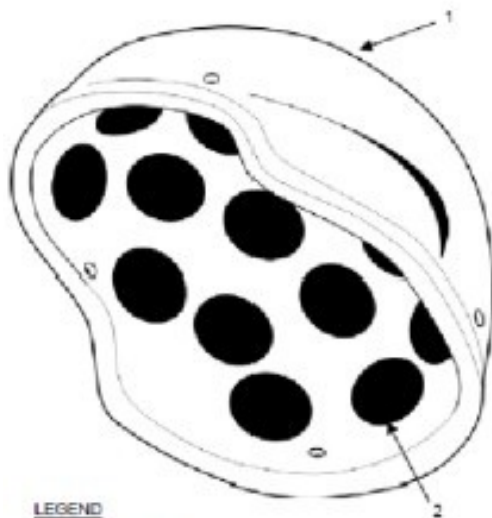
Major Components



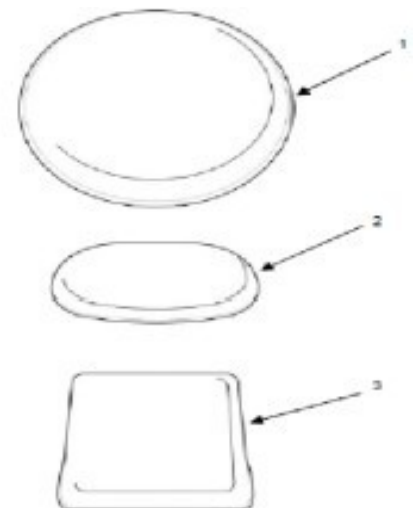
Retention System

1.4 - The pad suspension system is fully adjustable, provides space for deformation caused by projectiles and to allow increased ventilation. Alternate pad configurations are allowed to obtain a better fit or more comfort. The system pad must provide the following:

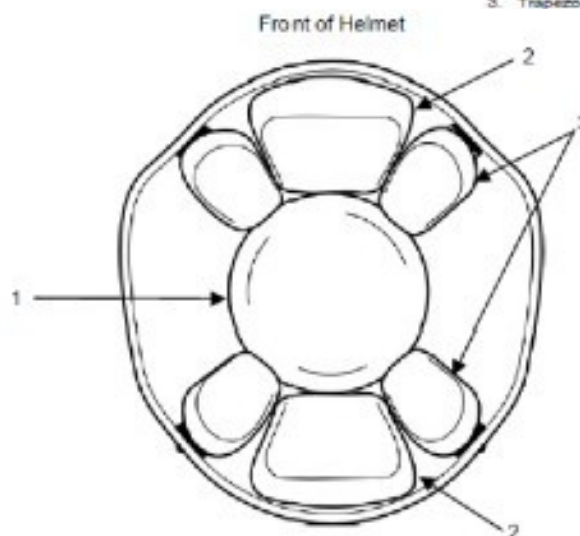
- Replacement pads fit all FAST, Sentry and ACH style helmets;
- Easily secures with VELCRO brand fasteners into the helmet shell;
- Lightweight EPP pads are:
 - layered with LDV closed-cell comfort foam, which seals out air, dust and moisture;
 - wrapped in breathable, moisture-wicking outer fabric, ensuring low moisture absorbency in a dual-density comfort material that is simple to clean;
 - unaffected by temperature, altitude, or moisture;
 - pre-molded to the shape of a head;
 - repositionable to suit individual comfort; a full coverage layer ensures protection, regardless of pad configuration.



LEGEND
 1. Helmet Shell
 2. Hook Disks

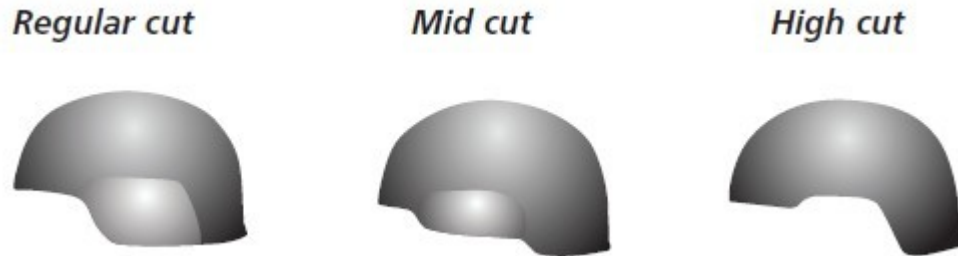


LEGEND
 1. Circular Crown Pad (1 per helmet)
 2. Oblong/Oval Pad (4 per helmet)
 3. Trapezoidal Pad (2 per helmet)



LEGEND
 1. Circular crown pad (1)
 2. Trapezoidal pads (2)
 3. Oval/oblong pads (4)

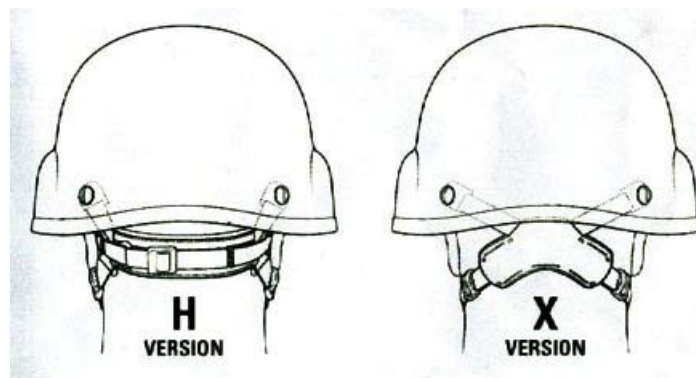
1.5 - The helmet has three models: LOW CUT, MID CUT, HIGH CUT. The helmet designed with low center of gravity and configuration which extends protection to the neck and ears areas (according to model).



1.6 - The size and harness of the helmet should allow flexibility in the head size to facilitate the adjustment for all users.

1.7 - Helmet should have system compatible with current night vision goggles (NVGs) and communication packets.

1.8 - Chinstrap retention system with a four-point design in order to provide improved stability (the retention system shall be colored the same color as the exterior of the shell - **NATO Green**). There are two models of Armor Nape Pad: H-version of Nape Pad and X-version of Nape Pad, as shown below. The model to be supplied is the H-version of Nape Pad.



1.9 - The photos below present the standard ballistic helmet for the Brazilian Navy.



2 - THE HELMET AND ITS COMPONENTS

2.1 - The shape of the helmet is U.S. ACH, in accordance with MIL-H-44099A (latest revision).

2.2 - The **weight** of the complete helmet will not exceed 1,500 grams (ACH shell, pad suspension system, retention system with hardware).

2.3 - The **color** is **NATO Green** non reflective (helmet must be painted with this color, without any type of cover). The following covers are available for the ACH: a universal camouflage, reversible woodland/desert cover and a white (Arctic) cover, which WILL BE PROVIDED ONLY UPON REQUEST.

Materials

Item	Material
Helmet shell	Composite Aramid and/or UHMWPE
Edge profile	Neoprene rubber
Pad suspension system	Item 1.4
Webbing chinstrap	Polyester/Nylon tape + leather chincup
Side buckle	PP & TPR
Bolts	Stainless steel

3 - CONSTRUCTION OF THE SHELL

3.1- The shell is manufactured by carefully arranged shaped cuts of the materials according to the shell's shape.

3.2- The shell is made of hybrid materials and Ballistic aramid fibers in a composite matrix.

3.3- The helmet has only four holes for fixing the Chinstrap retention system.

4 - PROCESSING THE SHELL

4.1- The shells edge will be cut as an integral part of the molding process.

4.2- The edge profile, made of neoprene rubber (the edging shall be colored the same color as the exterior of the shell - NATO Green), will be adhered in a form that it will enable coupling in the middle of the rear side.

5 - PROTECTION AND DURABILITY OF THE HELMET

Certification

Ballistic performance should be tested and approved by a recognized Laboratory, in accordance with NIJ Standards 0108.01, 0106.01 and 0101.06 / 0101.07 Level III-A. The helmet must stop .357 SIG FMJ FN, 125 grain, and 0.44 Magnum SJHP, 240 grain. Ballistic performance should be tested and approved test laboratory (which must have NIJ approval letter and must be listed in: <https://www.iustnet.org/compilant/NIJ-approved-labs.html>).

A Certificate paper must be presented to ensure that the helmet was tested and approved according to NIJ Standards.

5.1 - Ballistic performance:

The ballistic helmet is designed to stop the following bullets in accordance to the referred NIJ Standards:

NIJ LEVEL	Bullet	Bullet weight (grains)	Max. Velocity ft/sec (m/sec)	No. of strikes
III-A	.357 SIG FMJ FN	125	1470 (448)	4
III-A	.44 Mag. SJHP	240	1430 (436)	4

5.2 - Fragmentation performance:

The ballistic helmet is designed to offer, at least, protection in accordance with NIJ / STANAG-2920 / MIL-STD 662 (latest revision) as follows:

Fragment Simulated Projectile weight (grains)	V 50 ft/sec (m/sec)
17	2.200 (670)

5.3 - Low velocity shock absorption:

The ballistic helmet is designed to offer low velocity impact protection in accordance with EN 397 (latest revision), from the European Committee for Standardization:

Striker shape	Striker mass (kg)	Drop height (mm)	Residual force (kg)
50mm Hemisphere	5.0	1000	Less than 5.0

6 - WARRANTY

It is requested a ten (10) years warranty for the helmet's ballistic performance and the shell. The harness and the non-ballistic components should be warranted for at least two (2) years.

7 - QUALITY ASSURANCE OF INDUSTRIES

Certificate ISO 9001:2015 and fully complies with its standards.

8 - HEAD/HELMET SIZING CHART AND PROPORTION TO OBTAIN

Size	Head circumference (inches)	(cm)	Proportion to obtain
MEDIUM (M)	22.05 to 22.83	56 a 58	40%
LARGE (L)	22.83 to 24.02	58 a 61	40%
X-LARGE (XL)	24,02 to 25.98	61 ,a 66	20%

9 - IDENTIFICATION

A tag must be attached to the internal face of the helmet to inform, at least: name of manufacturer, Local of manufacturer, part number, model, level of protection, serial number, size and date of fabrication (month and year).



NIJ Standard-0101.06

10 - SAMPLE

If requested a sample of the helmet must be presented for appreciation about fully conformity with those specifications.

11 - MANUAL

A technical manual will be requested in both languages Portuguese and English, which must be delivered together with the sample / first delivery, providing at least the following informations:

- General information;
- Equipment description;
- Major components;
- Theory of Operation;
- Storage and Maintenance Instructions; and
- NSN and Part Number of each part.