



GETEC
DEPARTMENT OF TESTS AND EVALUATIONS
ENVIRONMENTAL TESTING LABORATORY

Laboratory report N° LEA 04-1545/25

Applicant: Gran Marc.
Address: Churruca 9631. Location: Loma Hermosa Province: Buenos Aires
Application date: February 4, 2025. Date of realization: From February 9 to February 25, 2025.
Element to be tested: Head Guard.
Brand: Top Ten y Gran Marc. Model: Check Note 1.
Test of: Impact absorption in sports protection elements.
Measurement of: deceleration.
Standard to apply: Normal operating procedure PON LEA 12. Revision 1.

1- Samples:

Five heads guards to practice martial arts (especially Tae-kwondo).

NUMBER	MODEL
1	TopTen
2	Primus
3	Invuctus 1
4	Sparring
5	Invuctus 2

2- Goal of the trials: (registered with the number LEA 543/17)

Submit the samples presented for impact under some conditions simulating a punch on a normalized head in order to compare the behavior between them and determine their action to cushion those impacts.

3- Equipment and instruments used:

- Pend of impact.
- Ariete Simulating a fist.
- Support with standard head.
- Signal Spectrum Analyzer Dactron LDS 4546556.
- RT Pro Photon Program (LDS).
- Sampling frequency: 24,000 Hz.
- Famplifier Bruel & Kjaer 2635 N° 6.
- Acelerometer 4335. Bruel & Kjaer 4335 Serie 320498.
- Measuring tape HF 319 of 3 mts.





4- Description of the test:

a. Description of the test:

Following the guidelines of the PON 12 standard (Conducting Impact Tests on personal protective sports articles), a series of blows without gloves (metal against wood) are made to define the test impact (defined by the pendulum's bowstring). Next, sample number 2 - GRAMARC PRIMUS Headgear - presented by the applicant is mounted on the wooden head and a glove marked GRAN MARC -Model High Pro- is adjusted, closing it at the chin area to ensure a frontal blow.

Subsequently the whole procedure is repeated for the other samples and the values are compared.

b. Test characteristics:

- Length of the pendulum: 238 cm.
- Mass of the fist: 6,6 Kg.
- Diagram head: 165 mm.
- Mass of the mounted head: 5,1 Kg.
- Height height: 225 mm.
- Height of the point of impact: 200 mm.
- Head Support: dole 10 mm diameter steel rod.
- Impact rope: 83 cm.

5- Results obtained

Sample Number	Sample	Acceleration	% acceleration	Energy absorption
Without Sample	-----	1158	-----	-----
1	TopTen	70,8	6.11	93.88
2	Primus	70,7	6.56	93.56
3	Invictus 1	70,4	6.85	93.14
4	Sparring	75	6.78	93.21
5	Invictus 2	71	6.79	93.20

6- Conclusions

From the values obtained and indicated in table 1, it is observed that there are no substantial differences between the protectors provided by the client, so that they are of equivalent behavior.

