

TOP 2 Market Players for Cranium Impact Protection HITT-PG, LLC “Hitt Shield” vs. 2nd Skull

INTRODUCTION:

This following report's objective is to describe and present the impact tests conducted at the Centro Tecnológico do Calçado (CTCP) in Portugal (see background in report below). The tests include the material developed by Polyanswer S.A. -as exclusive marketing & distribution in NorthAmerica / United States entity “HITT-PG, LLC” and another cranium protection marketed as “2nd Skull” These tests studied the comparison of energy transmitted through two samples in this case a yellow sample of the company 2nd Skull and a green developed by the Polyanswer / HITT-P “H.I.T.T. Shield” The samples were tested according with the standard EN ISO20344-5.17-2011. * The following figure presents the samples tested.



Figure. 1 Yellow component 2nd Skull

“Green” component Polyanswer.

* Report was initiated by Polyanswer at independent ISO rated lab: (CTCP) in Portugal.

RESULTS:

According to the standard ISO EN 20344 the amount of load transmitted allowed is 10KN. In the following figure, it's presented the results of the transmitted energy.

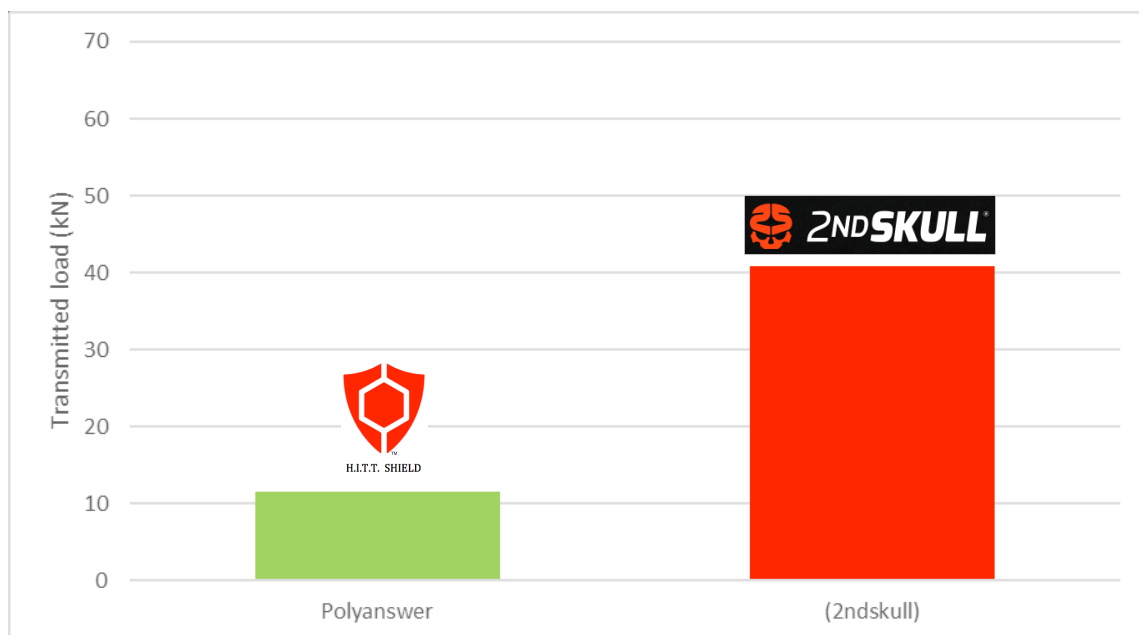


Figure 2: transmitted energy according with the standard EN 1621-2:2012

- *Higher the number the higher the impact*
- *Lower the number, the lower the impact*

The samples were tested only once. The sample that were taken from the 2nd Skull product allowed to pass **40.9 kN** of load. The sample developed by Polyanswer transmitted only **11.5 kN**. These results represent an impact-transmitted velocity to the brain in the case of 2nd skull of **1.51 m/s** and in the case of Polyanswer a velocity of **0.5 m/s**. For these tests were used and anvil with a **weight of 5 kg**. In the following table, will be presented the conversion of the impact velocities.

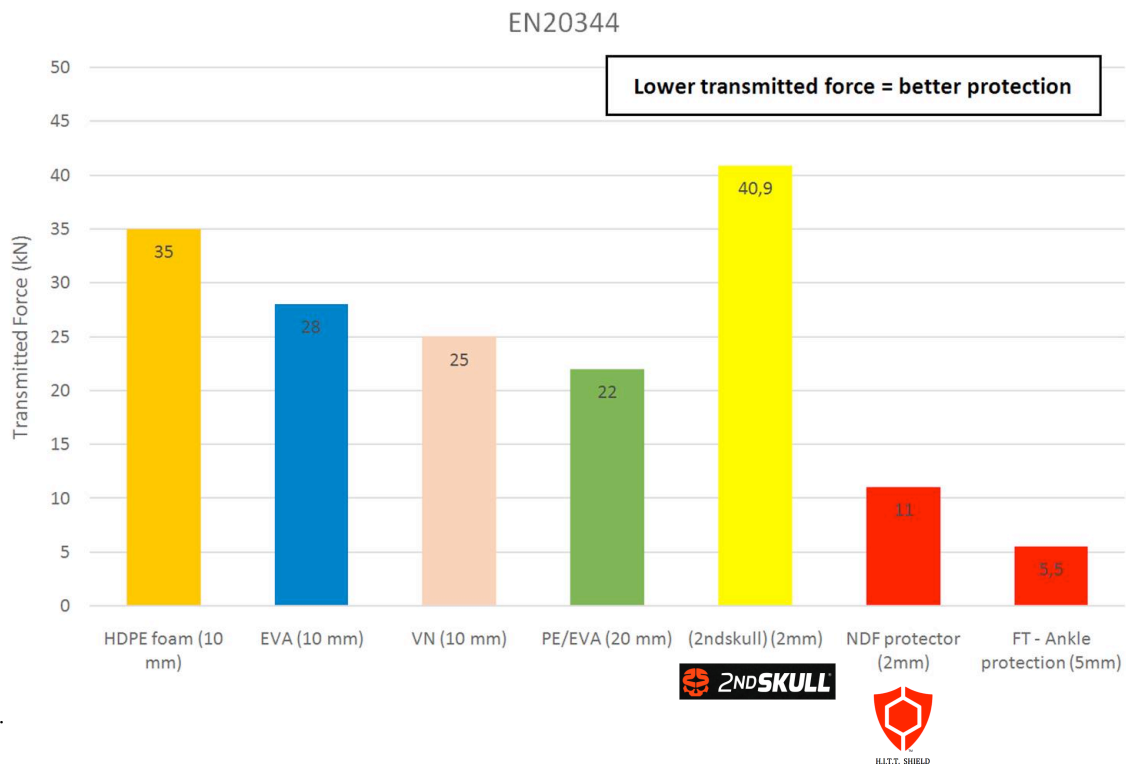
Table- 1 conversion table

	Foot/s	Mile/h	Km/h
Polyanswer - HITT Shield	2.65	1.81	2.92
2nd Skull	4.96	3.38	5.44

CONCLUSION:

The Standard ISO EN 20344 was used in the above test protocol. The standards were used to show what occurs when a sample receives an impact load of 70 kN (10 J). The tests results showed that the HITT Shield solution absorbed and dissipated **at least 80%** of the impact. Without the gel/foam, these forces pass through the helmet's shell into the player's skull and brain, possibly causing traumatic brain injuries. **The HITT Shield solution absorbs four (4X) times more energy when compared to the 2nd Skull solution.**

The below is report / graph comparing other concussion solution materials. The NDF product based HITT Shield came in #1 for head protection.

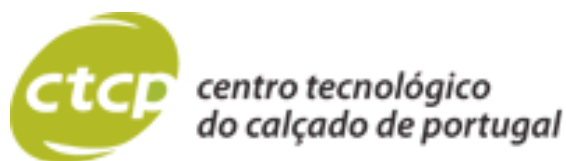


Explaining the graphic

We tested several materials, with different thicknesses, each material was hit with a block of steel with a weight of 5,4 kg. The steel block was “launched” – (dropped) from a height of 0.20 m. the results you see were obtained from these tests.

HDPE has a transmission force of 35 Kilo-newton; the EVA with a thickness of 10 mm has a transmission force of 28 Kilo newton. Compared to the NDF HITT Shield and 2nd Skull at 2MM

Independent Lab Background;



<http://www.ctcp.pt>

CTCP is a non-profit private organization founded in 1986 with the incorporation of a footwear quality control laboratory created in 1981. CTCP was created by Component and Leather Goods Manufacturers Association (APICCAPS) and two Governmental Institutes of the Portuguese Ministry of Economy (IAPMEI and INETI).

Main objectives:

- . To support technique and technologically
- . To promote technique and technological training of the human resources of the companies;
- . To promote the industrial improvement of the product quality and processes;
- . To prepare and spread technical information to the industry;
- . To carry out and stimulate works of investigation, its development and demonstration.

CTCP executes its objectives through the following activities:

- . Physical and Chemical laboratory tests of raw materials and final products;
- . Products certification;
- . CE Marking;
- . Research into new materials, equipment and processes;
- . Fitting and Comfort Analysis;
- . Leather utilization;
- . Test Methods and standards;
- . Environmental and Safety Consulting;
- . Production and Manufacturing Consulting;
- . Quality Certification schemes (ISO 9000, 14000, 18000);

CTCP - Centro Tecnológico do Calçado de Portugal

Headquarter:

Rua de Fundões - Devesa Velha

3700-121 S. João da Madeira

Telefone: 256830950

Fax: 256832554

Web: www.ctcp.pt

