



Impact Test Equipment for Athletic, Gymnastic and Trampoline Mats, Pads, and Pits

# Protective Padding Performance Testing



PROTECTIVE PADDING - MORE THAN JUST LOOKS

FACTS

## We're Working with Padding Manufacturers to Develop Safer Systems and Differentiate Products

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ASET is working with manufacturers to help them develop safer systems and to differentiate their products in the marketplace. We currently offer standardized tests for the following pad, mat and landing pit systems: We are also working with owners and architects to make sure that safety is actually delivered to the athlete.

### Example Applications

- Wall Padding
- Trampoline (Gymnastic) Padding
- Backboard Padding
- Wrestling Mats
- Pole Vault Pits
- Climbing Wall Padding

### Protective Systems Should Do More Than Look Good

In working with our clients, we learned that many organizations, like the NCAA, USATF, High School Rules and the IAAF establish rules for the shape of padding

systems but not for their impact protection levels.

### ASTM Performance Standards

ASTM has been active in developing injury prevention standards for sports pad and mat systems. All of the ASTM impact standards are focused on preventing head injuries and concussions. ASTM standards are widely recognized within North America. Long term effects of head trauma and concussions are making these standards more relevant and significant to buyers.

### Other International Standards

We currently offer EN 913 testing for foam padding. This standard is used for padding on backboards and for some gymnastic equipment padding. We are working to develop the missiles needed to conduct additional EN impact tests. EN 12503 contains impact standards for pole vault and high jump pits, judo mats, and a variety of other mats.

Head injuries are currently a priority in the sports industry, we help manufacturers quantify and specify the safety mats they already provide.

We're based in the USA, providing companies with a domestic partner for performance testing.

Lab and on-site test programs are available, this includes product testing in our lab, or at on-site for new products as well as forensic testing.

Padding and fall protection is one of our new emerging services, we have worked to develop tests and methods for padding at extreme obstacle courses and even training applications.

## Introduction to G-max, HIC, and Head Injury Prevention

Many segments of the sports surfacing market are familiar with these terms, but the terms and properties measured may be new concepts for many in the pad and mat industry. This section is provided as a very brief introduction:

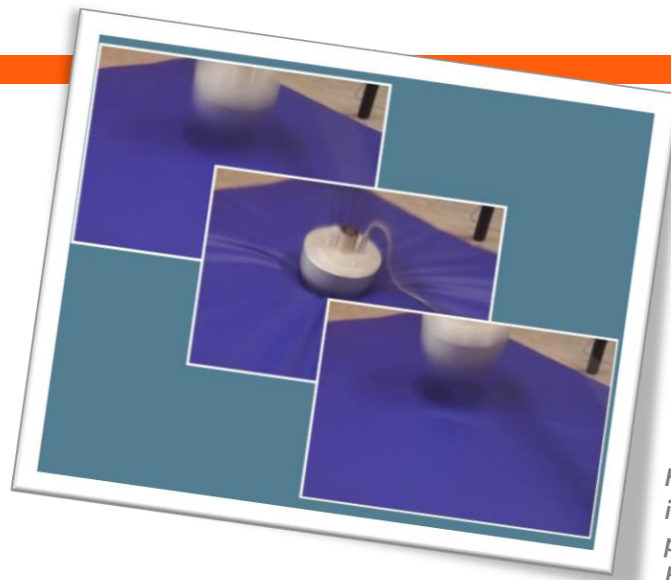
- ➔ **G-max:** This term refers to the maximum deceleration of the impacting mass during an impact. It's exactly like the 'G-forces' you hear pilots and racers refer to.
- ➔ **HIC(Head Injury Criteria Index):** This is a unitless number calculated during some G-max tests. Higher values are associated with greater risks of head injury
- ➔ **A-Missile:** The A missile is a cylindrical 20 lb. impact mass used to test turf and other sports products.
- ➔ **E-Missile:** The E missile is a hemispherical 10 lb. missile used to

test playgrounds and other sports products.

- ➔ **For Reference:** Synthetic Turf and Playground surfacing allow G-max  $\leq 200$  and HIC  $\leq 1000$ .
- ➔ **Pole Vault Pits:** Must produce a G-max below 25 for a 12' 5 1/2" fall. Playgrounds allow impacts that are 8 times more severe.
- ➔ **Trampoline Padding:** Must produce a G-max below 100 for a 4' fall height. Turf Systems allow G-max levels that

are 2 times higher from a lower fall height.

- ➔ **Wrestling Mats:** Must maintain G-max levels below 100 or they must be reconditioned or replaced.
- ➔ **Wall Padding:** Must produce a G-max of less than 200 and a HIC of less than 1000.
- ➔ **Backboard Padding:** Must produce G-max less than 50 using EN 913. Important for exported pads and mats.



*Headform missile impacting foam padding: ASTM F1162*

## Contact Us

We provide impact testing of padding systems to a wide variety of materials. Our testing services can be used to evaluate new product designs and to certify that existing mats still provide required injury protection. This is a partial list of the standards we use to evaluate products:

- ASTM F2970 (Trampoline and Gymnastics)
- F1091 (Wrestling)
- F1162 (Pole Vault)
- F2250 (Wall Padding)
- EN 913 (backboard, and gymnastic equipment)
- Proposed ASTM Standard for Outdoor Climbing Wall Padding
- Developing
  - EN 12503
  - FIG Testing for 10 and 20 cm mats

Our clients include manufacturers, owners, and even users. Because of that no one solution is right for every client. We develop custom solutions for every client's needs. Test programs may involve:

- ➔ **Lab Based Tests:** Some products are easily shipped and sometimes your R&D efforts will require preliminary tests to develop final designs.
- ➔ **On-Site Tests:** Manufacturers may also opt to have us conduct testing at their facility. Sometimes this is nearly as economical as Lab Testing.
- ➔ **In-Situ Tests:** This may involve testing new mats to ensure that they meet specifications, or testing existing mats to ensure that they continue to provide adequate protection.

**For Information on 'True Performance' Specifications visit:**

[www.aset-true-performance.com](http://www.aset-true-performance.com)

**For General Information visit:**

[www.aset-services.com](http://www.aset-services.com)

**To Contact Us Directly:**

**Phone: 812.528.2743**

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### No Surface can Prevent Every Injury

Injuries will happen, and no surface or equipment can prevent every injury. However, modern surfaces and padding are safer than ever when they perform as designed and specified.