

## Big Green Magnum Pro Field Point



**P**oly-Green Foam, LLC located in Lamar, Missouri, creates products that most would assume have little relation to the archery industry. These products consist of material used in drainage underlayment on playgrounds, football fields and other construction sites. One of the company's core competencies is utilization of material that would normally be considered waste. The company is able to take foam that is destined for landfills and turn it into final products.

The newly formed archery division of Poly-Green Foam, known as Big Green Targets, is building targets from their core product, closed cell foam. The fate of this foam has changed considerably because of the ingenuity of the company. The sensible and practical use of foam has resulted in the creation of targets that present a green message. Big Green Targets uses the foam to create high density boards. These boards form the core of targets designed for broadheads and they form the frame of targets designed for field points. The core of the long-lasting field point models like the one tested is formed of fabric scraps, which also are diverted from landfills. For the final steps, a high definition foam face is applied to both the front and back of the target. The edges are wrapped with polyethylene shrink wrap, sealing them for more weather resistance.

### The Test

Generally I see very few target tests, which has made developing test parameters a little difficult. With that said, these uncharted territories sparked my interest and I am hopeful these type of tests will help all of us gain a better understanding of targets and the product that is spotlighted in this article. The test methods used and presented in this article are similar in nature to other tests I have done. Moreover, I have considered more recent philosophies on testing archery products as it relates to industry standards.

The test equipment used is as follows: an automated drawing/shooting machine, compound bow (setup at 60 pounds, 29 inches), carbon arrow, AMS fiberglass arrow (with chisel tip point, without outsert), load cell, hydraulic lift and high tensile rope.

The compound bow and arrow combination are measured for velocity during the test and included in this article. In addition, the target's distance from the bow is standardized. The distance from the target is measured by taking the vertical projection of the bows

pivot point, to the approximate path of the arrow, and measuring 10 feet (+/- 1 inch) to the front of the target.

The testing is split into three parts, namely: Penetration Test, Arrow Removal Test and Durability Test.

### Target Specifications/Information

Product Information	
Manufacturer	Big Green Targets
Model	Magnum Pro Field Point
Measured Weight	35.4 lbs
Advertised Dimensions	24"X24"X13"
Big Green MSRP	\$84.99

### Penetration Test (Hole in Hole)

The purpose of this test is to evaluate the design integrity and "stopping" characteristics of the Big Green Magnum Pro. As mentioned, the target is 10 feet away from the compound bow. The fast speeds of the arrow and close distance to the target is an extreme scenario as compared to normal shooting, but this was done with a purpose. The target is close to the bow to assure that the arrow is shot in the same hole as previous. Otherwise, a small change in



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Bow Setup and Distance from Target		Weight (lbs)	Draw Length (inches)	Arrow Weight (grains)	Velocity (fps) *	Kinetic Energy (lb-ft)	Momentum	Distance to Target (ft)
	Compound Bow		60	29	1142	170	73.30	27.68

\* The rating velocity is measured per ATA/BOW-104-2008

point of impact will invalidate the results.

The arrow is measured utilizing ATA Guidelines (ATA/ARR-201-2008). The actual arrow length used in this portion of the test is 29 inches. The arrow is marked 18.625 from the leading end of the arrow shaft, which is approximately 64 percent of the total arrow length. The distance from the front of the shaft is not derived arbitrarily. The remaining 10 or so inches of arrow gives an archer enough room to grip the arrow without making contact with the fletching as the arrow is pulled from the target.

The Magnum Pro is mounted to a hydraulic lift table. The table allows the target to be raised and lowered and moved left/right if needed; this permits the bow to remain in a single position. The bow is mounted to a rigid, sophisticated automated shooting machine. The bow is shot multiple times with an identical arrow at the same location until the arrow reaches 18.625 inches or greater in penetration.

Penetration Test	
Parameter (Shot)	Front of Target
1	6
2	6
3	6
4	6
5	6
6	6
7	7
8	8
9	5
10	6
11	6
12	7
13	4
14	6
15	7
16	6
17	6
18	8
19	6
20	6
Average Shots*	6

\* The average calculation does not consider the highest and lowest measurements

In some cases, the arrow will exceed the 18.625 inch threshold, which is tallied only if the previous shot did not reach the threshold mark. The test is repeated several times and the results are recorded. The average measurement represents the amount of shots it takes to meet or exceed the threshold marking.

The results shown at left illustrate the target's ability to "endure" heavy hits from an arrow at close range. On average, it takes 6 shots placed in the same location to reach 18.625 inches or greater of penetration based on the bow and arrow setup mentioned in this portion of the test.

Arrow Removal Test	
Average (lbs) *	25.5

\* The average calculation does not consider the highest and lowest measurements

### Arrow Removal Test (Pull Test)

Many of us have probably wondered how much force it takes to remove an arrow from a target. That seems like a difficult thing to quantify when dealing with many variables. So after much thinking, I developed a test that allows me to measure the amount of force it takes to remove an arrow with some of the mentioned equipment.

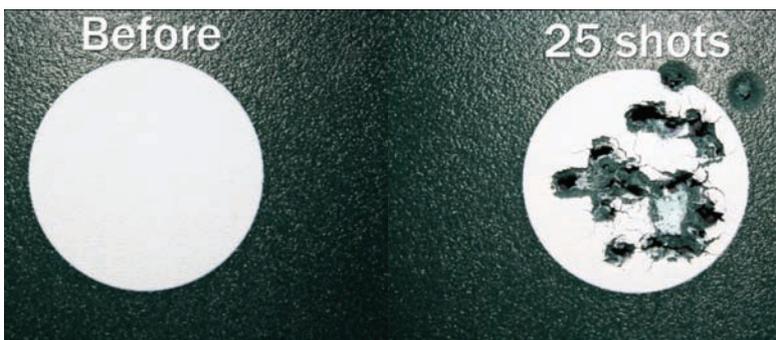
An AMS fiberglass arrow is modified by removing the outsert and incorporating a chisel tip only onto the shaft. The modification of the arrow creates a similar profile as compared to a typical hunting/target arrow. The fiberglass arrow is used because it has a stopping device and an AMS safety slide, which allows me to retract the arrow from the target. The fiberglass arrow is significantly heavier than most hunting arrows. But do not be put off because of this difference. The typical penetration of the fiberglass arrow into the Magnum Pro is approximately 1 inch or so deeper than the other hunting arrow used in this test. The variation in penetration is mostly attributable to the differences in momentum. In addition, the friction coefficients of dry/clean fiberglass and carbon surfaces are very similar; therefore, it is difficult to say those differences in arrows create a large disparity.

As mentioned, the target is mounted to a heavy duty hydraulic lift table. The bow fires an arrow at the target, and a machine retracts the arrow with use of weight measuring equipment. The bow is shot at various locations on the target, but never in the same hole as previously shot. The force measurements are recorded and averaged.

The results shown at the top of this page confirm that it takes on average 25.5 pounds of peak force to remove an arrow from the Magnum Pro. The test represents data from 30 shots, and the results are based on the bow and arrow setup mentioned in this segment of the test as detailed in the chart above.

Bow Setup and Distance from Target		Weight (lbs)	Draw Length (inches)	Arrow Weight (grains)	Velocity (fps) *	Kinetic Energy (lb-ft)	Momentum	Distance to Target (ft)
	Compound Bow		60	29	360	290	67.24	14.88

\* The rating velocity is measured per ATA/BOW-104-2008



### Durability Test

A compound bow is fired at approximately 10 feet away from the target. The bow is shot 25 times and is oriented so the arrow hits within a two inch circle. The target is photographed before and after the bow is shot. The test revealed no pass-throughs, and only cosmetic damage to the surface.

### Pros/Cons

The company has done a great job building an affordable target that should last for several thousand shots. The screen printed foam has a clean look, and includes a nice color combination and numerous reference points (i.e. deer and turkey). The appearance of the target is what I believe separates this product from some of the competition. In addition, the Magnum Pro's dimensions are ideal for most shooters. The target's base, measuring 13 inches, is large and creates a solid platform that would make it difficult for the target to tip over.

There are two negatives I came across with this target. I found the handle to be uncomfortable for carrying. A larger handle with cushioning would be more agreeable to most archers. In addition, the 6 Mil polyethylene sheeting, which is wrapped around the target, is a good feature for weather-proofing the target. However, the



sheeting is not extremely durable and can be penetrated by sticks or other sharp objects.

### Summary

Big Green Targets is doing something that others are not by producing targets that are made of 100 percent recycled material. The Big Green Magnum Pro is a product that I would give high ratings in both the performance and features category. The Magnum Pro would be a good choice for almost any archer.

Special Thanks: I would like to thank the manufacturer and sponsor who supported this event; without them and their support, this evaluation would never have been possible.

AMS Bowfishing is one the finest producers of bowfishing gear in the country. They offer reels, bows, arrows and accessories, which are all essential to success in the field. Their fiberglass arrows proved to be vital in my testing and survived hundreds of shots without failure.



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## Smooth The Launch Cycle

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