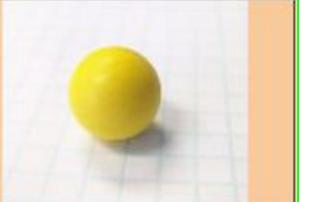


ATOM6 (Production)				ATOM6 (Prototype)				Paintball				Reball			
															
Atomic Pickle Industries				Atomic Pickle Industries				Valken Infinity .68				Reball USA			
Muzzle Velocity (fps)	Energy (ft lb)	Velocity @ 15' (fps)	Energy (ft lb)	Muzzle Velocity (fps)	Energy (ft lb)	Velocity @ 15' (fps)	Energy (ft lb)	Muzzle Velocity (fps)	Energy (ft lb)	Velocity @ 15' (fps)	Energy (ft lb)	Muzzle Velocity (fps)	Energy (ft lb)	Velocity @ 15' (fps)	Energy (ft lb)
296	1.86	182	0.70	267	2.22	199	1.23	292	8.70	280	8.00	274	7.20	253	6.14
264	1.48	170	0.61	264	2.17	195	1.18	292	8.70	278	7.89	274	7.20	252	6.09
263	1.46	166	0.58	251	1.96	188	1.10	292	8.70	276	7.77	274	7.20	251	6.04
258	1.41	159	0.53	248	1.91	177	0.97	291	8.64	276	7.77	274	7.20	250	5.99
247	1.29	159	0.53	245	1.87	169	0.89	290	8.58	272	7.55	273	7.14	247	5.85
247	1.29	156	0.51	237	1.75	169	0.89	289	8.52	272	7.55	272	7.09	247	5.85
238	1.20	154	0.50	230	1.64	166	0.85	288	8.46	269	7.38	271	7.04	247	5.85
229	1.11	150	0.47	228	1.62	166	0.85	288	8.46	267	7.27	270	6.99	247	5.85
225	1.07	147	0.45	224	1.56	158	0.77	286	8.35	262	7.00	270	6.99	247	5.85
224	1.06	122	0.31	224	1.56	157	0.76	284	8.23	261	6.95	269	6.94	240	5.52
246 fps	1.30 ft lb	157 fps	0.52 ft lb	240 fps	1.81 ft lb	173 fps	0.91 ft lb	289 fps	8.50 ft lb	271 fps	7.59 ft lb	272 fps	7.05 ft lb	248 fps	5.92 ft lb
Max Effective Range: 50 ft (approx)				Max Effective Range: 60 ft (approx)				Max Effective Range: 100 ft (approx)				Max Effective Range: 80 ft (approx)			
Weight (g)	Diameter	Height		Weight (g)	Diameter	Height		Weight (g)	Diameter			Weight (g)	Diameter		
0.7	16.78 mm / .660 in	15.20 mm / .598 in		1.0	17.38 mm / .684 in	16.56 mm / .652 in		3.0	17.16 mm / .675 in			2.8	17.05 mm / .671 in		
0.7	16.75 mm / .659 in	15.18 mm / .597 in		1.0	17.22 mm / .678 in	16.41 mm / .646 in		3.0	17.15 mm / .675 in			2.8	16.94 mm / .667 in		
0.7	16.69 mm / .657 in	15.17 mm / .597 in		0.9	17.13 mm / .674 in	16.36 mm / .644 in		3.0	17.07 mm / .672 in			2.8	16.94 mm / .667 in		
0.6	16.68 mm / .656 in	15.16 mm / .597 in		0.9	17.06 mm / .671 in	16.36 mm / .644 in		3.0	17.06 mm / .671 in			2.8	16.93 mm / .666 in		
0.6	16.52 mm / .650 in	15.15 mm / .596 in		0.9	17.02 mm / .670 in	16.33 mm / .643 in		3.0	17.03 mm / .670 in			2.8	16.93 mm / .666 in		
0.6	16.50 mm / .649 in	15.09 mm / .594 in		0.9	17.01 mm / .670 in	16.28 mm / .641 in		3.0	17.01 mm / .670 in			2.8	16.88 mm / .664 in		
0.6	16.44 mm / .647 in	15.09 mm / .594 in		0.9	16.97 mm / .668 in	16.26 mm / .640 in		3.0	17.00 mm / .669 in			2.8	16.87 mm / .664 in		
0.6	16.43 mm / .647 in	15.09 mm / .594 in		0.9	16.97 mm / .668 in	16.23 mm / .639 in		3.0	16.99 mm / .669 in			2.8	16.86 mm / .663 in		
0.6	16.42 mm / .647 in	14.95 mm / .588 in		0.9	16.94 mm / .666 in	16.11 mm / .634 in		2.9	16.96 mm / .668 in			2.8	16.82 mm / .662 in		
0.6	16.41 mm / .646 in	14.90 mm / .568 in		0.9	16.90 mm / .665 in	16.02 mm / .631 in		2.9	16.86 mm / .663 in			2.8	16.78 mm / .660 in		
0.62 g	16.55 mm / .651 in	15.11 mm / .594 in		0.91 g	17.04 mm / .670 in	16.29 mm / .641 in		2.98 g	17.03 mm / .670 in			2.80 g	16.91 mm / .665 in		

Nerf Rival				Nerf Dart			
<i>Nerf (Hasbro)</i>				<i>Nerf (Hasbro) - Elite Dart</i>			
Muzzle Velocity (fps)	Energy (ft lb)	Velocity @ 15' (fps)	Energy (ft lb)	Muzzle Velocity (fps)	Energy (ft lb)	Velocity @ 15' (fps)	Energy (ft lb)
91	0.54	88	0.51	60	0.16	<i>Chronograph unable to register</i>	
91	0.54	84	0.46	58	0.15		
90	0.53	79	0.41	57	0.14		
88	0.51	79	0.41	54	0.13		
87	0.49	78	0.40	50	0.11		
85	0.47	76	0.38	48	0.10		
85	0.47	75	0.37	48	0.10		
79	0.41	72	0.34	44	0.08		
75	0.37	71	0.33	44	0.08		
68	0.30	71	0.33	41	0.07		
85 fps	0.48 ft lb	76 fps	0.39 ft lb	50 fps	0.11 ft lbs		
Max Effective Range: 50 ft (approx)				Max Effective Range: 40 ft (approx)			
Weight (g)	Diameter			Weight (g)	Diameter	Length	
2.0	22.07 mm / 0.869 in			1.4	12.42 mm / 0.489 in	73.93 mm / 2.911 in	
2.0	22.04 mm / 0.868 in			1.4	12.24 mm / 0.482 in	73.43 mm / 2.891 in	
2.0	22.04 mm / 0.868 in			1.3	12.03 mm / 0.474 in	72.84 mm / 2.868 in	
1.9	22.04 mm / 0.868 in			1.3	11.83 mm / 0.466 in	72.31 mm / 2.847 in	
1.9	22.02 mm / 0.867 in			1.3	11.81 mm / 0.465 in	71.39 mm / 2.811 in	
1.9	22.02 mm / 0.867 in			1.3	11.81 mm / 0.465 in	71.39 mm / 2.811 in	
1.9	22.02 mm / 0.867 in			1.3	11.81 mm / 0.465 in	71.39 mm / 2.811 in	
1.9	21.97 mm / 0.865 in			1.3	11.73 mm / 0.462 in	70.84 mm / 2.789 in	
1.9	21.97 mm / 0.865 in			1.3	11.73 mm / 0.462 in	70.81 mm / 2.788 in	
1.8	21.92 mm / 0.863 in			1.3	11.53 mm / 0.454 in	69.06 mm / 2.719 in	
1.92 g	22.01 mm / 0.866 in			1.31 g	11.87 mm / 0.467 in	71.80 mm / 2.827 in	

Test Equipment		
Spyder Fenix		.68 / Co2 / Gavity fed hopper
Nerf Rival Apollo XV-700		
Nerf Zombie Strike Doublestrike Blaster		
Caldwell Ballistic Precision Chronograph		Primary Chronograph
Evike Advanced Compact Chronograph 2		Supplementary Chronograph
Tanita 1479 Digital Scale		Capacity 120g; Resolution 0.1g
VINCA DCLA-0605 Digital Caliper		Accuracy: ±0.001"/0.02mm; Resolution: 0.0005"/0.01mm, 1/128"

Chronograph Calibrations

The test marker used for chronograph testing was a **Spyder Fenix** in semi-auto mode using Co2 and basic gravity fed hopper. Step one was to **adjust the marker's velocity** so a standard paintball had a **muzzle velocity between 285-300 fps** (see table above). Once the marker velocity was set it was **not changed, and was used in the exact same position for all projectiles** tested here.

Test Conditions	89° F, 29.80in, Humidity 59% / ATOM6 & Nerf tested indoors / Paintball & Reball tested outside: Wind calm
Calculated Averages	Averages calculated using 'truncated mean' where the highest and lowest value of the set were dropped
Energy Formula & Calculator	http://www.1728.org/energy.htm



Production ATOM6 Physical Specifications

The ATOM6 are smaller than standard .68 paintballs. The primary reason is to support the high flexibility of the projectile. The ATOM6 changes shape in the barrel as it accelerates and its effective diameter during this time increases. The smaller static diameter of the ATOM6 provides clearance for this expansion. *More on diameter and production below...*

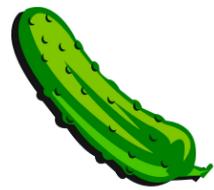
1st Production Samples	2nd Production Samples
<p>These ATOM6 were produced at 17.27 mm (0.680 in) diameter and did not fire well since this size did not permit for any expansion when being fired. Some projectiles lodged in the barrel.</p> <p>Additionally, with production variances (+/-) some projectiles from this first mold version exceeded 17.27 mm (0.680 in) which was simply too large.</p>	<p>The mold was re-worked to produce smaller ATOM6 Projectiles and produced the second production sample batch. It is these projectiles that were used for the testing documented here. Average diameters are 16.55 mm (.651 in) and these projectiles test fired very well. Be sure to See the video of these ATOM6 being successfully fired from an Axe Pro.</p> <p>Our official target ATOM6 diameter with the factory is 16.90 mm (.665 in). We have specified an acceptable range criteria of 16.40 mm (.645 in) to 17.00 mm (.669 in). Backers can expect their ATOM6 projectiles to be in line with these specs.</p>

Did you know? The Average Diameter of a Human Hair is: 0.10 mm / .004 in



ATOM6 Diameter vs Height

The ATOM6 Projectile is not a perfect sphere. Diameter measurements are taken at the hemisphere of the projectile. The “polar regions” are designed with circular openings. For the prototype this served primarily as a way to **reduce weight**. For the production ATOM6 these openings now also serve a function during the molding process and have been enlarged. As a result of this shape we also published “height” measurements for the ATOM6.



Smell

We promised you a detailed report :)

When you open a new jar of ATOM6 it has the scent of the glossy clear coat. It smells similar to nail polish. The smell quickly fades after the projectiles are aired out or fired once or twice. *We also tossed around the idea of having the jar smell like real pickles, but this is something to revisit later (or not).*

ATOM6 Material & Finish

Material: Thermoplastic Rubber (TPR) / **Flexibility:** High

Finish: High Gloss - Clear



Oil Never Required

The high gloss finish on the ATOM6 sufficiently reduces friction and allows it to be fed as needed into your paintball marker. No oil is required and should never be used with the ATOM6.



Durability / Wear & Tear

The Finger Smashing Test

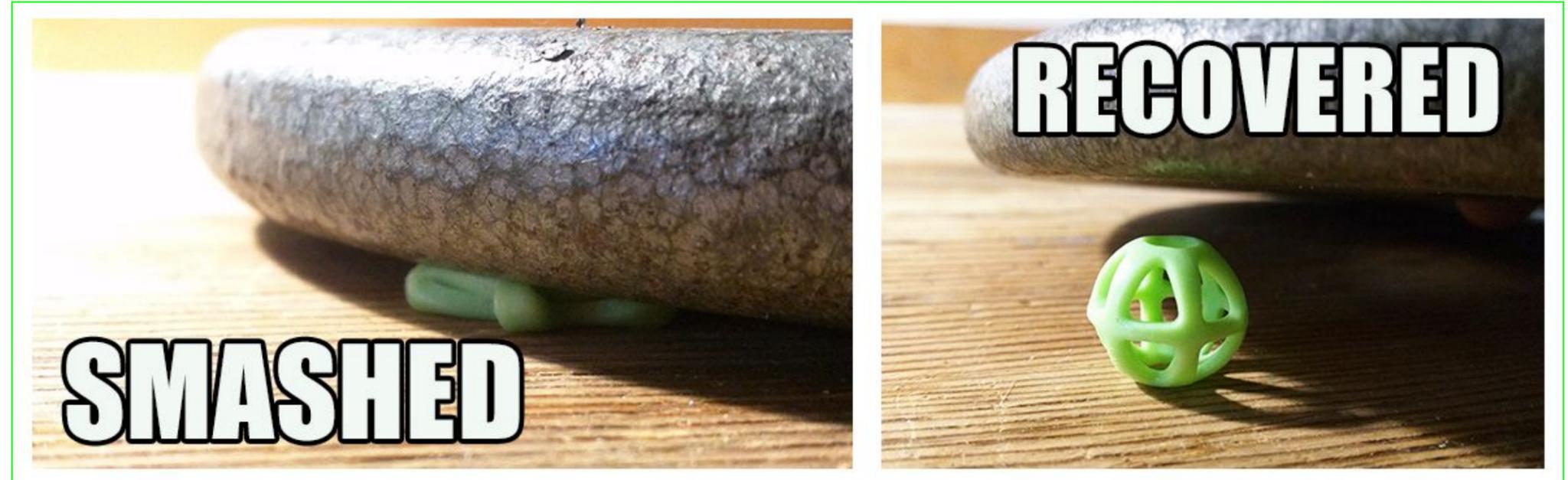
An ATOM6 was smashed repeatedly using my pointer finger and thumb. Repeated this for 3-4 hrs continuously. Approx 12,000 total compression cycles.

Results: ATOM6 projectile displayed no degradation and recovered to its original spherical shape after each cycle.

Repeated Firing

Our 50 sample ATOM6 were fired over and over during several days for testing. Each projectile was fired approximately 50-100 times. Some rounds were fired more than others depending on if we used the entire batch for a particular test or just some over and over.

Results: The majority of ATOM6 projectiles displayed no noticeable wear and tear from repeated firings.



We did however, observe 4 projectiles that after being shot displayed some degree of post impact slant distortion (see image).

Of these, **all but one could be trained back to its original spherical shape** by a corrective finger compression. The ATOM6 that was not able to be put back to its original shaped impacted a hard surface at very close range and the slanting deformity appears to be permanent. We found that projectiles with some degree of slant deformity could still be fired again, **although they were more at risk for bolt chops** (see below).

Useful Product Lifetime? We do not have enough data over a long enough period with the production ATOM6 to currently estimate an expected total number of uses. Factors including the hardness of the surfaces the ATOM6 impacts and at what velocities will also play a role. We are continuing to test, and along with your reports we will be able to publish a spec for ATOM6 lifetime expectancy soon.

Additional: Clear Coat Wear

The ATOM6 Projectiles have a protective glossy clear coat that reduces friction. Normal use and temperature cycles have the potential to wear down sections of this gloss coat over time. Which will serve to increase the projectile's friction coefficient.

The “Step on ‘em” Test

Stepping on an ATOM6 sitting on the floor is going to be a common occurrence.

Results: Stepping on an ATOM6 even multiple times resulted in the projectile recovering back to its original shape without deformations or other damage. Long duration compressions (8-24 hours or more) however can produce slanted deformations. The longer the compression the more likely the deformation could become permanent.

Environmental Tests

Our backers live all around the world and in all climates so we did the following tests...

HOT

ATOM6 left inside a vehicle in the sun (windows up) for 3 consecutive days during the summer in San Diego when the ambient high temperatures exceeded 100° F each day.

Results: The projectile retained strength and flexibility. No adverse issues observed.



COLD

We stuck an ATOM6 in the freezer overnight...

Results: The projectile never froze solid, and retained flexibility even when frozen overnight. No adverse issues observed after thawing or otherwise.



Take Away: For longevity, we would still suggest keeping your ATOM6 at room temperature when possible and not subjecting them repeated temperature cycles.

Detent Roll Tests

Test marker used again was the **Spyder Fenix** which features **dual detents**. The barrel was angled downward and an ATOM6 was then dropped into the breech by hand from above.

Success = Detent held the projectile back	Total Attempts	50
Failure = Projectile rolled past the detent and out the barrel	Total Fails	4 (8%)

- Markers with a **single detent will see higher occurrences** of rolling past the detent.
- A projectile rolling past the detent can lead to a **double shot** or worse a **bolt chop** (*more details below*).

Tested Equipment & Compatibility

Prototypes

The ATOM6 3D printed prototypes endured a rigorous private beta where they were sent to approximately 30 testers from the PbNation community. These prototypes performed well in a wide range of markers. You can [review that thread here](#).



Production ATOM6

Markers: We have had the production version of the ATOM6 for a shorter amount of time and they have been successfully tested using:

- **Empire Axe Pro**
- **Spyder Fenix**
- **Tippmann Cronus**

Loaders / Hoppers: The production ATOM6 has tested successfully in Virtue Spire loaders, as well as standard gravity fed hoppers, and those with basic agitator impellers. The ATOM6 **does not work with any force fed loaders** including the Dye Rotor, HK Army TFX loaders, as well as magfed. No other loaders have been formally tested.

Limitations of Tested Equipment: While we anticipate the ATOM6 should work normally with almost any .68 marker, **please be aware we have not tested every setup out there**. Different markers have different detents and characteristics, all of which can affect the performance of the ATOM6. It is also worth noting we have not tested with any pump guns.



Chopping & Jamming

The ATOM6, just like a standard paintball can occasionally and unfortunately be “chopped”

How does it happen? Known as a “bolt chop,” it happens when the next ATOM6 projectile “on deck” fails to remain above the bolt as it comes forward. The projectile then becomes jammed in the bolt.

There is no paint in the ATOM6 so there is no mess to clean post chop, however the projectile often gets one or more of its support structures **cut by the bolt**, and the user must clear the lodged projectile before continuing to fire.

How Frequent Are Bolt Chops?

We observed **zero chops** when using the **Empire Axe Pro** and **Tippmann Cronus**. All chops observed occurred on the **Spyder Fenix** which was used for chronograph testing. Of approximately 1000 total shots using the Fenix: **5 Chops Occurred**.



Probable Causes: When the projectile in the breech rolls past the detent(s), or rolls **forward enough into the detent** that enough space is then created for the “on deck” projectile to fall below the upper boundary of the bolt. The “on deck” round is then too low into the breech to be pushed up and out of the path of the bolt as it comes forward.

“Breakbeam” Eye Systems:

Markers with electronic eye systems were **designed to prevent paintball chops**. Unfortunately, the production **ATOM6 is such an open design that eye systems are not seeing them when they are properly seated**. The black prototype ATOM6 were slightly more closed in design and worked with eyes on most of the time. But with the **production ATOM6, we advise turning eye systems off**.

Minimizing Chops - Ways to Improve: Preventing chops centers on **keeping the projectile in the breech in place** so it continues to provide enough support to the projectile above it “on deck.” This means making the dentent(s) as effective as possible at holding back the ATOM6. But detents are effectively trying to stop a ball full of large holes. Here are ways to minimize chops:

- **Using markers with dual detents, avoid downward pointed barrels, and fire at high rates of speed**
- **Atomic Pickle can work to increase average ATOM6 projectile diameters (targeting 16.90 mm)**
- **Atomic Pickle (or a marker mfg) could design specialized detents that could be optimized for firing the ATOM6**

Warnings & Guidelines For Safe Use

- All humans within range of the ATOM6, including the individual operating the paintball marker, must wear appropriate eye protection at all times
- Appropriate eye protection is defined at a minimum as being ANSI high-velocity z87+ rated with side protection or a full mask rated for paintball use
- Do not fire ATOM6 Projectiles above 300 FPS
- Never shoot anyone or anything with the ATOM6 at point blank range
- Never shoot anyone or anything with the ATOM6 closer than 10 feet (3m)
- Never shoot pets or animals
- The ATOM6 will damage houseplants
- The ATOM6 Projectile is not a toy and is for users age 18+
- Warning Choking hazard (!) Small parts, keep the ATOM6 away from young children and infants
- Be aware that paintball markers are loud and those nearby may not be able to differentiate the report of your paintball marker from an actual firearm

The ATOM6 Projectile was designed to be low mass and to absorb as much impact energy as possible. Typically an accidental ATOM6 strike to an object such as a TV will produce no damage. However, by the nature of high-velocity projectiles at short ranges there is always the possibility for damage to occur. As a result we also state:

- **ATOM6 users should never shoot sensitive objects (including but not limited to) TVs, computer screens, windows, artwork, light fixtures, plants and fire sprinklers**
- **Atomic Pickle Industries LLC is not responsible for damaged property due to the use or misuse of the ATOM6 Projectile**

Please be safe and have fun!





ATOM6 Backer Group - We want your feedback!

You and your fellow campaign backers are the first to receive the production ATOM6 and we want to hear your feedback. **Please tell us your experience with the ATOM6 as well as how we can make it even better.** Together we all can continue to make this product even more fun...



Future Products?

Also... Together we can come up with **other cool product ideas** like...

- **ATOM6 "Stiffies"** *For the Magfed heads*
- **Atomic Pickle-Upper:** *Push it around to pick up ATOM6 off your floors*
- **Atomic Pickle Marker:** *With noise suppression technology*
 - *Do you have a product idea?*



Please reach out directly with your feedback, comments or questions: Adam.Pollock@AtomicPickleIndustries.com