

G-1

G1 Airsoft Safety Standard

Overview

This standard is designed to improve the level of safety at Airsoft fields. During ballistic testing, I've found that the existing safety rules are counter-productive if the goal is to be safe. This standard can work indoors and outdoors, at any distance, with any type of airsoft gun.

Under this standard, airsoft guns are sorted into types: Type 0, Type 1, Type 2 and Type 3. An airsoft gun's type is determined by its muzzle energy, which is calculated by chronograph results. Airsoft guns that are Type 0, Type 1, or Type 2 have a terminal energy limit of 0.8 Joules. Type 3 airsoft guns are those that cannot fit into the other categories, whether it is because their muzzle energy is too high, or if they use projectiles that are not standard 6mm plastic BBs. In these cases, a Minimum Engagement Distance (MED) is calculated so it can conform to the 0.8 Joule terminal energy limit.

This standard does not have any limitations on fire modes, so full-automatic and burst modes can be used. Instead of restricting fire modes, this standard uses a rate of fire limit of 2 rounds per second, or 120 rounds per minute.

Implementation

Some common methods of showing that an airsoft gun is checked for safety include affixing stickers or tying zip-ties to the checked airsoft gun. While these can work for simple velocity checks, the airsoft gun's type should be noted to aid with spot checks after testing. One possible way to mark an airsoft gun's Type is to use a sticker like the example below:

<input type="checkbox"/> Type 0	<input checked="" type="checkbox"/> Type 1	<input type="checkbox"/> Type 2	<input type="checkbox"/> Type 3	MED: _____ ft.
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All Type 3 airsoft guns need to have its calculated MED present

<input type="checkbox"/> Type 0	<input type="checkbox"/> Type 1	<input type="checkbox"/> Type 2	<input checked="" type="checkbox"/> Type 3	MED: <u>93</u> ft.
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General Rules

All airsoft guns must have a maximum rate of fire (ROF) of 2 rounds per second or 120 rounds per minute.

Type 0 Airsoft Guns

All Type 0 airsoft guns use 6mm BBs and fire individual BBs at a time. Type 0 airsoft guns have no Minimum Engagement Distance (MED). The muzzle velocity limits are based on BB weight and conform to a 0.8 Joule terminal energy limit. The table below lists maximum muzzle velocities.

	0.20g	0.25g	0.28g	0.30g	0.32g	0.40g	0.48g
ft/s	293	262	248	239	231	207	189
m/s	89.3	79.8	75.5	72.8	70.4	63.0	57.6

Type 1 Airsoft Guns

All Type 1 airsoft guns use 6mm BBs and may fire multiple BBs at once. Type 1 airsoft guns have a MED of 10 feet (or 3 meters). Airsoft guns that cannot be categorized as a Type 0 airsoft gun are categorized as Type 1. The muzzle velocity limits are based on BB weight and conform to a 0.8 Joule terminal energy limit. The table below lists maximum muzzle velocities for common BB weights.

	0.20g	0.25g	0.28g	0.30g	0.32g	0.40g	0.48g
ft/s	334	292	272	262	253	222	201
m/s	101.8	89	82.9	79.5	77.1	67.6	61.5

Type 2 Airsoft Guns

All Type 2 airsoft guns use 6mm BBs and may fire multiple BBs at once. Type 2 airsoft guns have a MED of 50 feet (or 16 meters). Airsoft guns that cannot be categorized as a Type 1 airsoft gun are categorized as Type 2. The muzzle velocity limits are based on BB weight and conform to a 0.8 Joule terminal energy limit. The table below lists maximum muzzle velocities for common BB weights.

	0.20g	0.25g	0.28g	0.30g	0.32g	0.40g	0.48g
ft/s	562	444	399	374	353	293	255
m/s	171.2	135.3	121.6	113.9	107.5	89.3	77.7

G-1 Type 3 Airsoft Guns

Type 3 airsoft guns are all airsoft guns that cannot fit into the other categories. Airsoft guns that don't use 6mm plastic BBs are Type 3 airsoft guns. Rather than using a velocity table to determine if an airsoft gun is safe, a mathematical formula is used to calculate the airsoft gun's MED. The formula used is an iterative formula that is best calculated with a computer; A calculator is available for use at:

<https://zillo7.github.io/TerminalEnergyCalculator>

In order to ensure safety, players that use a Type 3 Airsoft gun must also carry a Type 0 or Type 1 Airsoft gun. Players using Type 3 Airsoft guns must also use a rangefinder to ensure that they are shooting at targets beyond their calculated MED.