



# Standard Specification for Projectiles Used in the Sport of Paintball<sup>1</sup>

This standard is issued under the fixed designation F1979; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## INTRODUCTION

This specification sets forth a set of guidelines and testing procedures for the manufacturing of common calibers and types of paintball. The goal is to provide paintball manufacturers with a specification that promotes safety in the sport of paintball.

### 1. Scope

1.1 This specification establishes testing procedures and critical characteristics for projectiles, which define whether they are suitable for use in the sport of paintball. Furthermore, the specification establishes minimum warning and package labeling requirements to help ensure that the paintballs are used in a safe manner and that the risk of injury is reduced.

1.2 This specification does not cover non-recreational paintballs, for example, those used by law enforcement, scientific, military, or theatrical entities.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

#### 2.1 *ASTM Standards*:<sup>2</sup> **F2272 Specification for Paintball Markers**

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee F08.24 on Paintball and Equipment.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

### 3. Terminology

#### 3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *caliber, n*—the term used to refer to the size of a paintball projectile. Related to the measurement of the diameter of the paintball.

3.1.2 *cubic centimeter, n*—commonly used unit of volume extending the derived SI-unit cubic meter and corresponding to the volume of a cube measuring  $1 \times 1 \times 1$  cm.

3.1.2.1 *Discussion*—The mass of one cubic centimeter of water is approximately equal to 1 g.

3.1.3 *fill material, n*—liquid inside of a paintball.

3.1.4 *paintball, n*—a projectile designed to be expelled from a paintball marker meeting the requirements of Specification **F2272**.

3.1.4.1 *spherical paintball, n*—a round projectile, with a diameter and weight as defined in **Table 1**, comprised of a shell and a fill material, and designed to be expelled from a paintball marker.

3.1.4.2 *shaped paintball, n*—non-spherical cylindrical shaped projectile with a hemispherical front surface, and a diameter, length, and weight as defined in **Table 2**, comprised of a shell and a fill material, and designed to be expelled from a paintball marker most commonly with a magazine style feed.

3.1.5 *paintball marker, n*—device specifically designed to discharge paintballs which conforms to Specification **F2272**.

3.1.6 *shell*—rigid to semi-rigid frangible material (generally of gelatin) that encapsulates or contains the fill material of a projectile used in the sport of paintball.

### 4. General Requirements

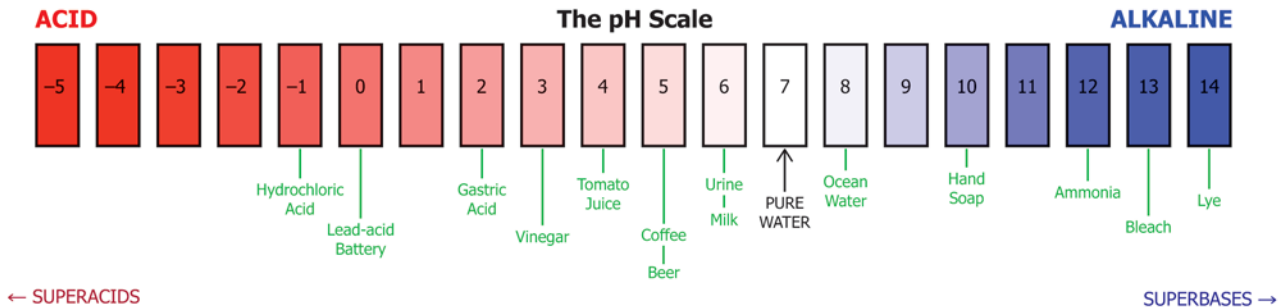
4.1 *pH of Fill Material*—The pH of the fill material used in all paintballs shall measure between 4.0 and 8.0 as measured using a 10 % solution of the fill in distilled water. Measurements shall be made using a properly calibrated pH meter. See **Fig. 1** for the pH scale and pH levels for some common items.

**TABLE 1 Calibers of Spherical Paintballs with Minimum and Maximum Diameter and Maximum Weight**

	68 Caliber 18 mm	43 Caliber 11 mm	50 Caliber 13 mm	55 Caliber 14 mm	62 Caliber 16 mm
Min (mm) Diameter	16.5	10.43	12.13	13.34	15
Max (mm) Diameter	18	11.39	13.24	14.56	16.42
Min (in.) Diameter	0.65	0.41	0.47	0.52	0.59
Max (in.) Diameter	0.709	0.448	0.521	0.573	0.646
Weight (g) Maximum	3.5	0.9	1.4	1.7	2.5
Weight (oz) Maximum	0.123	0.032	0.049	0.06	0.088

**TABLE 2 Calibers of Shaped Paintballs with Minimum and Maximum Diameter, Length and Maximum Weight**

	68 Caliber 18 mm	43 Caliber 11 mm	50 Caliber 13 mm	55 Caliber 14 mm	62 Caliber 16 mm
Min (mm) Diameter	16.5	10.43	12.13	13.34	15
Max (mm) Diameter	18	11.39	13.24	14.56	16.42
Min (in.) Diameter	0.65	0.41	0.47	0.52	0.59
Max (in.) Diameter	0.709	0.448	0.521	0.573	0.646
Min (in.) Length	0.65	0.41	0.47	0.52	0.59
Max (in.) Length	0.709	0.448	0.521	0.573	0.646
Weight (g) Maximum	3.5	0.9	1.4	1.7	2.5
Weight (oz) Maximum	0.123	0.032	0.049	0.06	0.088



**FIG. 1 The pH Scale**

4.2 *Paintball Fill Compatibility With Polycarbonate*—When tested in accordance with Section 5, no more than one of the three polycarbonate tensile bars exposed to the fill material shall develop a visible crack that is greater than 6.5 mm (0.256 in.) in length.

4.3 *Maximum Weight*—A paintball shall not weigh more than as defined in Table 1 and Table 2 based on the caliber and type of the paintball.

4.4 *Fill Color Limitations*—A paintball shall not contain fill material with a color mimicking that of human blood.

4.5 *Diameter of a Spherical Paintball*—The diameter of a spherical paintball shall be measured around both the polar axis and seam; both measurements shall be within the minimum and maximum range as defined in Table 1, based on the caliber of the paintball.

4.6 *Diameter of Shaped Paintball*—The diameter of a shaped paintball as measured around the largest section of the

cylinder of the sample shall measure within the minimum and maximum range as defined in Table 2 based on the caliber of the shaped paintball.

4.7 *Length of Shaped Paintball*—The length of the shaped paintball as measured along the overall length of the object shall measure within the minimum and maximum range as defined in Table 2 based on the caliber of the shaped paintball.

4.8 *Impact Breakage*—The impact breakage of the paintball shall be tested in accordance with Section 6. All ten of the paintballs that impact the target shall break upon impact.