



Designation: F589 – 23

Standard Consumer Safety Specification for Non-Powder Guns¹

This standard is issued under the fixed designation F589; 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 (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

This consumer safety specification is intended to address the primary causes of injuries involving non-powder guns and projectiles. Information concerning these injuries was obtained from data collected by the Consumer Product Safety Commission, hereinafter referred to as the Commission, consumer sounding boards, and the manufacturers' knowledge of the product and experience with consumer injuries.

The subcommittee regularly conducts comprehensive reviews from data provided by the Commission and has determined that carelessness, intentional misuse, or lack of adequate adult supervision, or a combination thereof, were factors in the shooting injuries examined.

To perform as intended, a non-powder gun requires a level of power which, if misused, can cause serious injury. This consumer safety specification is intended to reduce the hazards associated with non-powder gun use. This specification cannot control careless use or eliminate all hazards of misuse, but does provide for warnings of specific hazards and instructions for proper handling, use, and storage. Terminology is standardized in this specification, so that conforming products will be identified in the same manner, and critical dimensions are standardized to assure safe interchangeability of projectiles and propellants in all conforming non-powder guns. Product performance hazards are identified and requirements are established to minimize these hazards.

This consumer safety specification is written within the current state-of-the-art of non-powder gun technology. The intent is to revise this consumer safety specification whenever substantive information becomes available which justifies revising existing requirements or adding new requirements.

1. Scope

1.1 This consumer safety specification covers non-powder guns, commonly referred to as BB guns, air guns, and pellet guns, which propel a projectile by means of energy released by compressed air, compressed gas, mechanical spring action, or a combination thereof, and is to be used in conjunction with Specification F590.

1.2 Special-purpose match precision and adult guns, as defined in 3.1 and classified in 8.1 and 8.2, are exempt from the performance requirements for trigger mechanisms (see 4.3), safety mechanisms (see 4.4), and drop tests (see 4.5).

1.3 Special-purpose training guns, as defined in 3.1 and classified in 8.3, are exempt from the performance requirements for the safety mechanism (see 4.4).

1.4 *Limitations*—This consumer safety specification does not cover the following categories of gun products: custom-made non-powder guns (see 3.1.2.6); or replica guns (see 3.1.2.15); tranquilizer dart guns; toy products such as rubber-band guns, cork guns, pop guns, rubber-tip dart guns, or pea and bean shooters; other recreational-type guns such as blow guns, spear guns, catapult guns (also identified as sling shots), bows, crossbows, paintball markers, air soft or soft air guns, or carbide guns; nonrecreational guns such as those used by law enforcement, scientific, or military agencies; nor industrial and consumer tools such as paintball guns, staple guns, or conduit guns.

1.5 The values stated in inch-pound units are to be regarded as the standard; the SI units in parentheses are provided for information only.

1.6 The following precautionary caveat pertains only to the test method portion, Section 9, of this specification: *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*

¹ This consumer safety specification is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.06 on Safety Standards for Non-Powder Gun Products.

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environmental practices and determine the applicability of regulatory limitations prior to use.

1.7 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:²

F590 Consumer Safety Specification for Non-Powder Gun Projectiles and Propellants

2.2 ANSI Standard:³

ANSI Z535 Product Safety Signs and Labels

2.3 NIST Standard:⁴

NIST Special Publication 811 Physical Constant-Standard Acceleration of Gravity, Conversion Factors in Appendix

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 Propellant System Terms:

3.1.1.1 CO₂ (carbon dioxide)—a propulsion system in which the energy is provided by CO₂ (carbon dioxide) usually stored in a removable cylinder. The release of the CO₂ gas provides the energy to propel the projectile.

3.1.1.2 combination system—a propulsion system in which a combination of spring, spring-piston, pneumatic, and CO₂ systems can be used to provide the energy to propel the projectile.

3.1.1.3 pneumatic—a propulsion system in which compressed air is stored under pressure and, when released, provides the energy to propel the projectile. A pneumatic gun normally has a pump system to provide the compressed air.

3.1.1.4 pre-charged pneumatic—a propulsion system in which the energy is provided by compressed gas, normally compressed air, stored in a refillable cylinder charged by an external source. The release of the compressed gas provides the energy to propel the projectile.

3.1.1.5 spring-piston (also known as a spring-air or adiabatic system)—a propulsion system in which the projectile is propelled by air pressure that is created by a piston moved by a spring.

3.1.1.6 spring-type—a propulsion system in which the projectile is placed into motion by direct contact with a spring or a carrier moved directly by a spring.

3.1.2 Non-Powder Gun Terms:

3.1.2.1 adult gun—a non-powder gun that meets the design characteristics of 8.2 and is so designated by the manufacturer.

3.1.2.2 antique air gun—a non-powder gun that is more than 50 years of age.

3.1.2.3 backstop—an object intended to stop a projectile.

3.1.2.4 barrel—that portion of a non-powder gun through which the projectile is discharged.

3.1.2.5 cocking mechanism—a device that allows the user to store manual energy.

3.1.2.6 custom gun—a non-powder gun designed or made to the specifications of an individual consumer.

3.1.2.7 feed mechanism—a mechanism that stores, transports, and loads projectiles. It may be manual, repeater, or automatic in its actions.

3.1.2.8 hammer—a device which, when released, discharges the stored energy.

3.1.2.9 magazine—a device used in a gun to store projectiles.

3.1.2.10 non-powder gun—a device specifically designed to discharge BB's, pellets, or darts by the release of energy stored by compressed air, compressed CO₂, mechanical springs, or a combination thereof.

3.1.2.11 piercing assembly (CO₂ gun)—a device that is used to release gas from the CO₂ cylinder after the CO₂ cylinder has been correctly positioned in the gun.

3.1.2.12 pumping mechanism (pneumatic gun)—a mechanical device used to compress air.

3.1.2.13 match precision gun—a non-powder gun that meets the performance characteristics in 8.1 and is so designated by the manufacturer.

3.1.2.14 receiver—the main body of a rifle, shoulder gun, or long gun that houses all or most of its operating mechanisms.

3.1.2.15 replica gun—a functional non-powder gun manufactured to duplicate an antique non-powder gun.

3.1.2.16 ricochet—rebound or deflection of a projectile from a surface.

3.1.2.17 safety, automatic—a safety mechanism that is activated when the cocking mechanism is operated in a normal manner and must be manually deactivated by an independent action of the shooter to allow the gun to be fired by the movement of the trigger.

3.1.2.18 safety, manual—a safety mechanism that must be activated by an independent and deliberate action of the shooter and must be similarly released to allow the gun to be fired by the movement of the trigger.

3.1.2.19 safety mechanism—a device which, when activated either automatically or manually, locks a part of the non-powder gun, usually the trigger, to prevent unintentional firing in normal use. The device is sometimes referred to as a safety, safety button, or safety lever.

3.1.2.20 sear—the catch that holds the mechanism in the ready-to-fire position until released by the user, through trigger movement.

3.1.2.21 shot-start force—the force that is required to insert a non-powder gun projectile into a cavity of standard size for a given caliber.

3.1.2.22 single-shot gun—a gun that requires individual manual loading for each shot.

3.1.2.23 striker—see hammer.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.