



Designation: F590 – 22

Standard Consumer Safety Specification for Non-Powder Gun Projectiles and Propellants¹

This standard is issued under the fixed designation F590; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This consumer safety specification covers projectiles and propellants manufactured for use with non-powder guns intended for target shooting, educational, and recreational purposes and is to be used in conjunction with Consumer Safety Specification F589. Non-powder guns are commonly identified as BB guns, air guns, or pellet guns.

1.2 The projectiles and propellants covered by this consumer safety specification are BB cal, .177 cal (4.5 mm), .22 cal (5.5 mm), and .25 cal (6.4 mm) air gun shot of various materials; .177 cal (4.5 mm), 5 mm, .22 cal (5.5 mm), .25 cal (6.4 mm) pellets and .177 cal (4.5 mm), 5 mm, .22 cal (5.5 mm), and .25 cal (6.4 mm) darts and propellants identified as 8 and 12-g type CO₂ cylinders with both small and standard-sized necks as well as refillable CO₂ or compressed air cylinders and reservoirs.

1.3 This consumer safety specification does not cover propellants such as dichlorodifluoromethane or projectiles that are propelled by a combustible release of energy; non-powder gun projectiles used with products identified as blow guns, sling shots, cork guns, toy guns, or archery cross bows and other such devices; projectiles designed for adult use in obsolete non-powder guns, custom-made non-powder guns, and non-powder guns designed for and used by law enforcement, scientific, veterinary or military use; paint ball markers, ammunition for airsoft/softair guns and shot used with shotguns in the firearm classification. Test methods for refilling cylinders do not purport to address all of the safety issues, if any, associated with the safe handling and transfilling of small cylinders. It is the responsibility of the user of this standard to establish appropriate safety practices and determine the applicability of regulatory limitations, such as but not limited to DOT, CGA and OSHA, prior to use.

1.4 The following precautionary caveat pertains only to the test method portion, Section 7, 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 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:²

F589 Consumer Safety Specification for Non-Powder Guns
F2030 Specification for Paintball Cylinder Burst Disk Assemblies

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

Projectiles

3.1.1 *air-gun dart*—a .177 cal, 5 mm, .22 cal, or .25 cal non-powder gun projectile having a pointed configuration on one end and tufts on the other (see Fig. 1).

3.1.1.1 *tuft*—the material that is added to the body of a dart.

3.1.2 *air-gun shot*—a BB, .177, .22 cal, or .25 cal ball-shaped, non-powder gun projectile made primarily of lead, lead alloy, or steel (see Fig. 2).

3.1.2.1 *air-gun shot, lead*—a shot made of lead or lead alloy which may or may not have a protective finish.

3.1.2.2 *air-gun shot, lead-coated*—a shot made of steel that has a thin, uniform coating of lead or lead alloy. It may or may not have a protective finish.

3.1.2.3 *air-gun shot, steel*—a shot made of steel that is coated with a protective finish.

3.1.2.4 *dimension across flats*—the diameter of an air-gun shot, as measured across the flats.

3.1.2.5 *maximum spherical diameter*—the largest diameter of an air-gun shot, as measured with a ring gauge.

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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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.

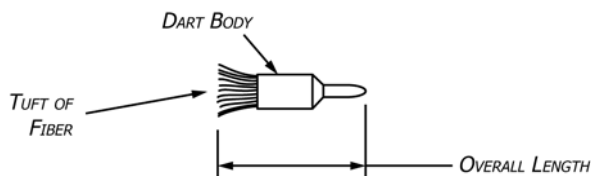


FIG. 1 Air-Gun Dart

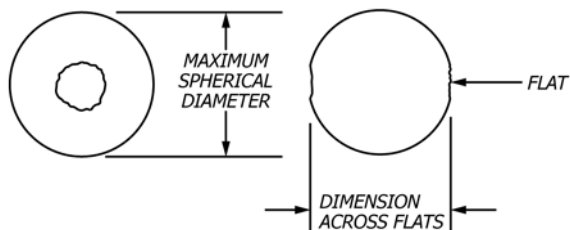


FIG. 2 Air-Gun Shot

3.1.3 *caliber*—the nomenclature used to indicate the bore size of a non-powder gun and the compatible projectile intended for use with that bore size.

3.1.4 *non-powder gun projectile*—a projectile that is designed for and intended to be discharged from a non-powder gun.

3.1.5 *pellet*—a .177 cal, 5 mm, .22 cal, or .25 cal nonspherical, semihollow non-powder gun projectile made of lead, lead alloy, or other material, or a combination thereof. Typical examples are shown in Fig. 3.

3.1.5.1 *nose of pellet*—the forwardmost portion of a pellet.

3.1.5.2 *overall length of pellet*—the maximum dimension of a pellet as measured parallel to the axis.

3.1.6 *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.

3.1.7 *CO₂ (carbon dioxide) cylinder non-refillable*—a cylinder that holds carbon dioxide in a liquid-gas combination and consists of a main body or container and a neck containing the cap and seal (see Fig. 4) for use in non-powder guns.

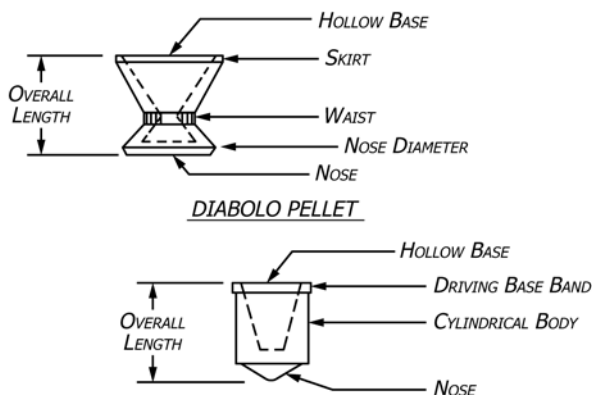


FIG. 3 Air-Gun Pellets

3.1.7.1 *cap, CO₂ cylinder*—the section of the cylinder neck containing the seal that is punctured to release CO₂ for use in the non-powder gun.

3.1.7.2 *neck diameter, CO₂ cylinder*—the outside diameter of the neck of a CO₂ cylinder.

3.1.7.3 *neck length, CO₂ cylinder*—the distance the neck of a cylinder enters into a hole equal to the maximum allowable neck diameter (see Fig. 5).

3.1.7.4 *overall length, CO₂ cylinder*—the length measured parallel to the longitudinal axis of the cylinder.

3.1.7.5 *outside diameter, CO₂ cylinder*—the diameter of the main body of the CO₂ cylinder.

3.1.8 *CO₂ (carbon dioxide) cylinder refillable*—a cylinder that holds carbon dioxide in a liquid-gas combination consisting of a cylinder and a self-activating on/off valve assembly for use on non-powder guns.

3.1.9 *propellant, CO₂ (carbon dioxide)*—a propellant in which the energy source is obtained from compressed carbon dioxide gas.

3.1.10 *propellant, compressed*—a propellant in which the energy source is obtained from compressed air or other nonflammable gas.

3.1.11 *propellant, refillable removable*—also known as *removable CO₂ cylinders refillable*, a cylinder and valve assembly which is removed from the non-powder guns to be refilled.

3.1.12 *propellant, refillable non-removable*—a reservoir contained within the non-powder guns which by its design is not easily removable however is refillable with a nonflammable gas.

3.1.13 *propellant, non-refillable*—also known as *CO₂ cylinders, non-refillable*, generally referred to as disposable cartridges which are discarded after use and are not refillable for use in non-powder guns.

Fill Stations

3.1.14 *fill station*—a device designed to attach to a CO₂ or compressed air cylinder and to a refillable non-powder guns cylinder to facilitate transfilling of the non-powder gun's cylinder or a device designed to attach a CO₂ or compressed air cylinder to a non-powder gun to facilitate the transfilling a non-removable reservoir contained within the non-powder guns.

3.1.15 *authorized retester*—a facility registered with and approved by DOT for the re-qualification of refillable CO₂ cylinders.

3.1.16 *blow-down valve*—a valve which is part of a fill station assembly for refilling CO₂, which is intended to vent gas from the cylinder and fill station.

3.1.17 *DOT*—Department of Transportation.

3.1.18 *TC*—Transport Canada.

3.1.19 *valve twist test*—a test done by hand whereas the user grasps the valve with one hand and the bottle with the other and attempts to turn the valve by hand in a counter-clockwise direction (left).

3.1.19.1 *Discussion*—If the valve does move, the valve and bottle should not be filled and should be repaired or serviced,