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Standard Specification for Youth-Resistant Firearms Containers (YRFCs)[1]

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1. Scope

1.1 This specification covers youth-resistant firearms containers (YRFCs), which are lockable containers that completely contain firearm(s) (2.2.1) to prevent unauthorized access to firearm(s). This specification:

1.1.1 Establishes a moderate security level for firearms storage intended to prevent youths from gaining unauthorized access to firearm(s); and

1.1.2 Establishes a consistent standard for testing and compliance certification.

1.2 This specification contains functional, operational, safety, and performance requirements for YRFCs.

1.3 This specification does not apply to transport-type weapons carrying cases (WCCs), full-sized light gun cabinets (LGCs), gun safes (GSs), or high security gun safes (HSGSs).

1.4 This specification is intended to prevent unauthorized access to children up to and including age eleven.

1.5 This specification is not intended to:

1.5.1 Ensure theft resistance of the YRFC or the contents of the YRFC; or

1.5.2 Ensure quick access to a firearm or assure long-term reliability of the YRFC operation to provide quick access to a firearm.

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

1.7 The following precautionary caveat pertains only to the test method portions 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 practices and to determine the applicability of regulatory limitations prior to use.*

2. Terminology

2.1 *Definitions:*

2.1.1 *combination lock, n*—mechanical locking device designed to provide controlled opening of an YRFC by entry of a combination known only by an authorized user(s).

2.1.2 *compromised, adj*—circumstance in which the opening element may not be disabled, yet allows removal of the firearm block from the container by hand without the use of tools.

2.1.3 *digital lock, n*—electromechanical lock that provides controlled opening of a YRFC by entry of a combination known only by an authorized user(s), or provides a means to read and validate a unique user attribute (as in biometric recognition devices), or both.

2.1.4 *disable, v*—defeating and opening the YRFC so as to allow removal of the firearm block, which is classified as a failure to comply.

2.1.5 *fail secure, adv*—rendering the YRFC inoperable (unable to open) as a result of damage caused by testing, thus preventing access to the firearm(s).

2.1.6 *key, n*—object intended by the manufacturer to be inserted into the keyway as a means to lock or unlock the container.

2.1.7 *key lock, n*—mechanical or electromechanical locking device that requires a unique key or token to provide controlled opening of a YRFC.

2.1.8 *keyway, n*—opening in a lock cylinder that is shaped to accept a key bit, blade, or other unique device used to lock or unlock the device.

2.1.9 *manipulation, n*—process of code testing a combination-locking device in an attempt to cause the lock to open.

2.1.9.1 *Discussion*—Manipulation can represent random or methodical code entry attempts or mechanical interpretation of lock reaction to code entry, or both, in which the lock may provide measurable or tactile feedback to code input.

2.1.10 *opening element, n*—component of the container that is opened (door, lid, and so forth) to access and remove the firearm contained inside.

2.1.11 *plug, n*—part of a lock cylinder that contains the keyway.

2.1.12 *properly installed, v*—YRFC is installed according to the instructions that accompany the YRFC and are provided by the manufacturer.

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2.1.13 *token, n*—small portable key-like electronic device that provides a unique digital serial number or signature and acts as a suitable secure substitute for conventional mechanical keys.

2.1.13.1 *Discussion*—Tokens can transmit a signature by direct electrical connection or via wireless communications techniques (light transmission, radio frequency transmission, vibration, magnets, and so forth).

2.1.14 *youth-resistant firearms container (YRFC), n*—lockable security container designed to contain firearm(s) completely and to prevent youths from gaining access to firearm(s).

2.2 *Definitions of Terms Specific to This Standard:*

2.2.1 *firearm, n*—limited to firearms not to exceed a length of 508 mm (20 in.).

2.2.2 *youth, n*—child eleven years old or younger.

3. General Qualification and Testing Requirements

3.1 Removal of the contents of the YRFC shall be prevented, except by use of a qualified lock or other unique qualified methods, or both, as defined by the instructions accompanying the YRFC.

3.2 All YRFC locks shall meet the following minimum requirements and pass the testing section of this specification (see Section 4).

3.3 Key locks shall be constructed to operate when the intended key(s) are used and pass testing procedures described in Section 4.

3.3.1 Key locking devices shall have a minimum of 130 actual key codes.

3.3.2 The operability of each YRFC shall be limited to only one key code.

3.3.3 Master keying is prohibited, as it provides more than one key code to operate the key lock.

3.4 A combination lock or digital lock shall meet the following additional requirements and pass testing procedures in Section 4.

3.4.1 A qualified combination lock dialing or input of a combination shall provide a minimum of 1000 possible combinations with at least three numbers or keys.

3.4.2 A qualified digital lock that requires the dialing or input of a combination shall provide a minimum of 1000 possible combinations with at least four numbers or keys.

3.4.2.1 Digital locks that support multiple users shall provide 1000 possible combinations per user.

3.4.2.2 Digital locks shall provide a penalty lockout feature to prevent rapid code testing. The minimum penalty lockout period is 2 min for every five incorrect entry attempts.

3.4.2.3 Token locks shall provide a minimum of 10 000 possible codes or signatures.

3.4.2.4 Biometric recognition locks shall provide ample identification data points or resolution to allow access to no more than 1 in 10 000 possible users.

3.4.2.5 Digital locks may provide a “back door” for service, but this combination shall provide a minimum of 1 in 100 000 possible combinations.

3.5 When used in the manner designed and intended by the manufacturer, the YRFC shall be capable of repeated use and shall pass the cycle testing procedures described in this specification.

3.6 All tests shall be conducted within the following tolerances as applicable:

3.6.1 All tests shall be conducted at temperatures between 16 and 27°C (61 and 81°F).

3.6.2 All tests shall be conducted with relative humidity between 30 and 95 %.

3.7 Test specimens shall mechanically represent the exact product intended for sale to the public.

3.7.1 Cosmetic product modifications or changes are allowed, provided they do not alter the product’s mechanical attributes.

3.8 One technician conducts testing for any single test.

3.9 The testing technician or laboratory staff, or both, shall not open the test specimens for inspection before any testing.

3.10 The testing technician shall not consult with other laboratory staff or observers as it relates to the techniques and methods used in the testing.

3.11 Test specimens shall not be anchored, clamped, or otherwise immobilized to conduct testing, except where specified.

3.12 A wooden firearm block shall be used to represent a firearm for placement inside the YRFC. The manufacturer shall produce and install these blocks in each specimen before submission for testing.

3.13 Test specimens shall be delivered to the testing laboratory in a locked condition with a firearm block inside each specimen.

3.14 Forces to cause the YRFC to be disabled or compromised shall be limited to not more than 220 N (50 lb).

3.15 If a test results in disabling or compromising a test specimen, the testing technician shall not inspect the failed specimen to gain knowledge for use in subsequent tests.

3.16 Retesting of a single failed test is allowed to complete a certification of compliance. Retesting does not require rerunning tests previously resulting in a passing result.

4. Test Methods

4.1 *Cycle Test:*

4.1.1 One YRFC shall be subject to a cycle test intended to cause the specimen to become inoperable.

4.1.2 The test specimen shall be provided with the key, token, digital code, or combination for cycle testing.

4.1.3 The container shall be opened and closed fully 100 times without failure to open or lock.

4.1.4 Failure occurs if the YRFC does not open or lock according to the manufacturer’s intended means of operation.

4.2 *Picking Test:*

4.2.1 One YRFC shall be subject to a picking test intended to cause the specimen to become disabled by disabling the lock.

4.2.2 This test does not apply if the YRFC does not have a keyway or access point(s) that provide tool insertion.

4.2.3 The lock shall resist picking with the use of paper clips (jumbo size), paper clips (#1 size), and a small screwdriver that fits in the keyway or opening.

4.2.4 The test duration is 2 min.

4.2.5 Time shall be counted only while tools are in contact with the lock.

4.2.6 The total time for this test shall not exceed 5 min.

4.2.7 Failure occurs if the lock mechanism is disabled, causing the YRFC to open and allowing removal of the firearm block.

4.3 *Plug Torque Test:*

4.3.1 One YRFC shall be subject to a plug torque test, intended to cause the specimen to become disabled by disabling the lock by means of twisting the key lock plug.

4.3.2 This test does not apply if the YRFC does not have a keyway or access point(s) that provide tool insertion.

4.3.3 The test specimen may be immobilized by any means, provided the anchoring technique shall not distort, deform, or reinforce the container in any way.

4.3.4 A torque of 10 N-m (89 lbf-in.) is to be applied along the center axis of the lock cylinder using a flat-blade screwdriver or similar instrument.

4.3.4.1 The blade of the torque instrument shall be sized to fit snugly in the keyway and not slip or twist within the keyway.

4.3.5 Failure occurs if the lock mechanism is disabled, causing the YRFC to open and allowing removal of the firearm block.

4.4 *Manipulation Test:*

4.4.1 One YRFC shall be subject to a manipulation test, intended to cause the specimen to become disabled by causing the lock to open by means of code testing and apparent techniques.

4.4.2 This test does not apply if the YRFC does not have a combination or digital lock mechanism.

4.4.3 Manipulation is limited to the combination locking mechanism.

4.4.4 No tools shall be used to aid in manipulation testing.

4.4.5 The YRFC shall resist manual manipulation for 2 min.

4.4.6 The total time for this test shall not exceed 5 min.

4.4.7 Time shall be counted only while hands are manipulating the lock.

4.4.8 Failure occurs if the combination lock is disabled during the 2 min of manipulation, causing the YRFC to open and allowing removal of the firearm block.

4.5 *Handle Torque Test:*

4.5.1 One YRFC shall be subject to a handle torque test, intended to cause the specimen to become disabled by forcing the handle to bypass or break the lock and disable the container.

4.5.2 This test does not apply if the YRFC does not have a handle.

4.5.3 The test specimen may be immobilized by any means, provided the anchoring technique will not distort, deform, or reinforce the container in any way.

4.5.4 A torque of 10 N-m (89 lbf-in.) shall be applied along the center axis of the handle using pliers or a similar instrument.

4.5.5 Failure occurs if the lock mechanism is disabled, causing the YRFC to open and allowing removal of the firearm block.

4.6 *Drop Test:*

4.6.1 One YRFC shall be subject to drop tests intended to cause the specimen to become disabled by dropping the test specimen, causing damage to the opening element or the body element to the extent that it can be opened by hand.

4.6.2 Products that weigh more than 25 kg (55 lb) shall not be subject to drop testing.

4.6.3 The YRFC shall be dropped from a height of 1.0 m (39.4 in.) onto a slab of concrete. The drop distance shall be measured from the lowermost portion of the YRFC to the top surface of the slab.

4.6.4 The YRFC shall be dropped from a fixture or by hand ten times on varying faces and edges. Drops shall be conducted on each of six faces (six drops) and on four corners (four drops).

4.6.5 Failure occurs if the YRFC is disabled or compromised, or can be opened or compromised without tools (by hand) within 1 min after the test is completed and the drop fixture is removed.

4.7 *Tensile Strength Test:*

4.7.1 One YRFC shall be subject to a tensile strength test intended to cause the specimen to become disabled by pulling the opening element open or damaging the opening element to the extent that it can be opened by hand.

4.7.2 The YRFC is exempt from tensile strength testing if the opening entity has no points of attachment or exposed lips to pull upon.

4.7.3 Anchoring, clamping, or holding fixtures applied to the body of the container are allowed and may be required to withstand application of the required force to the opening element.

4.7.3.1 The anchoring technique shall not distort, deform, or reinforce the container in any way.

4.7.3.2 If the best anchoring method is facilitated by use of integral anchoring provisions of the product, the product may be opened to use such attachment methods.

4.7.3.3 The anchoring shall be sufficiently strong enough to withstand the tensile test without failing before the load is fully applied. If the anchoring fails first, another test shall be conducted with a new sample.

4.7.3.4 Where the body materials are too weak to withstand the pulling forces (thin metal or plastic walls) without breaking, anchoring may be enhanced by use of a reinforcement plate(s) to distribute the load, provided it does not enhance the test specimen's strength as it relates to the locking of the opening element.

4.7.3.5 Anchoring may be facilitated by drilling holes in the body element to bolt the test specimen as necessary, provided it does not enhance the test specimen's strength as it relates to the locking of the opening element.

4.7.4 A single point of attachment for pulling shall be on or about the opening element and perpendicular to the major plane of the opening element.

4.7.4.1 If multiple attachment points are available, attachment shall be at a point furthest from the hinge element (if equipped) or nearest to the point of locking of the locking device, or both.

4.7.4.2 If external lips of the opening element are exposed, a hook-like fixture may be fabricated to allow pulling on that lip. The hook-like instrument shall distribute load over a 25-mm (1-in.) wide area such that the pulling point shall withstand the pulling force.

4.7.4.3 If the YRFC has both attachment points on the opening element and exposed lips, the point of pull shall be on the lip and nearest the point of locking of the locking device.

4.7.4.4 If the YRFC has multiple locking points of the locking device, the point of pull shall be centered about the locking points.

4.7.5 The pulling force of 1000 N (225 lb) shall be applied to the opening element of the YRFC.

4.7.5.1 The pulling force shall be applied gradually from zero to the rated force over a period of 10 s in a near linear increase to avoid shock loading effects.

4.7.5.2 The pulling force shall be sustained for a period of 10 s once the full force is achieved.

4.7.6 Failure occurs if the YRFC is disabled or compromised, or can be opened or compromised without tools (by hand) within 1 min after the test is completed and the attachment device is removed.

4.7.7 If the attachment point breaks off or fails during the test, the YRFC is judged as passing this test.

4.8 *Shock Test:*

4.8.1 One YRFC shall be subject to a shock test, intended to simulate a hammer attack in a controlled means to cause the test specimen to become disabled by breaking and disabling the lock.

4.8.2 A fixture shall be fabricated to drop a penetrating plunger (striking element) directly on the exposed elements of the locking device, securing the container.

4.8.3 The striking element of the shock fixture shall be a carbon steel shaft 38 mm (1.50 in.) long, 19 mm (0.75 in.) in diameter with a full radius on the tip.

4.8.4 The total mass of the drop mass and striking element shall be 1.0 kg (2.2 lb).

4.8.5 The fixture shall allow for the drop mass to fall unrestrained 1 m (39.4 in.) five times with the striking element in a vertical orientation when it impacts the test specimen. The guiding mechanism of the fixture shall not slow or impede the falling acceleration of the mass.

4.8.6 The striking element of the mass shall strike the lock element perpendicular to the plane the lock is mounted in.

4.8.7 Failure occurs if the YRFC is disabled or compromised or can be opened or compromised without tools (by hand) within 1 min after the test is completed.

4.9 *Saw Test:*

4.9.1 One YRFC shall be subject to a saw cutting attack test, intended to cause the test specimen to become disabled by severing and disabling the locking system or compromising the point of engagement of the locking device(s).

4.9.2 The test specimen shall not be anchored or restrained by any means other than by the hand(s) of the testing technician.

4.9.3 A conventional bow-style hacksaw with a new carbon steel 305-mm (12-in.) fine-pitch metal cutting blade with 32 teeth/25.4 mm (32 teeth/in.) shall be used. Only one saw blade shall be used during testing.

4.9.4 The test shall run for 2 min, and time shall only be recorded while the tool is in contact with the test specimen.

4.9.5 The total test time shall not exceed 5 min.

4.9.6 The saw attack shall be conducted on any area of the YRFC.

4.9.7 The sawing rate shall not exceed 60 cycles/min, and shall not be less than 45/min. One cutting cycle is defined as the combination of one 152-mm (6-in.) forward and one 152-mm (6-in.) backward cutting motion. The saw attack shall consist of two separate 120 cycle attacks, but in no instance shall more than 120 cutting cycles be applied to any one "specified" location. For example, the testing agent may identify (specify) the hinge and lock body areas of a YRFC as vulnerable to attack. A total of 120 cutting cycles may be applied to the hinge of the device and an additional 120 cutting cycles shall be applied to the lock body of the device.

4.9.8 The sawing force shall be limited to 45 N (10 lbf) perpendicular to the cutting blade.

4.9.9 The saw shall not be used in a means it is not designed for, such as prying, hammering, and so forth.

4.9.10 Failure occurs if the YRFC is disabled or compromised, or can be opened or compromised without tools (by hand) within 15 s after the test is completed.

4.10 *Pry Attack Test:*

4.10.1 One YRFC shall be subject to a pry attack test intended to cause the opening element of the test specimen to become disabled or compromised by bending or breaking the opening element or the body element of the test specimen.

4.10.2 The pry attack shall be conducted with a common flat-blade screwdriver not to exceed 200 mm (8 in.) in overall length.

4.10.3 The test specimen shall not be anchored or restrained by any means other than by the hand(s) of the testing technician.

4.10.4 The applied force perpendicular to the center axis of the screwdriver shall not exceed 110 N (25 lbf) or the torque applied shall not exceed 25 N-m (220 lbf-in.).

4.10.5 The test shall run for 2 min, running the clock continuously until the time has expired.

4.10.6 Failure occurs if the YRFC is disabled or compromised.

4.11 *Hinge Attack Test:*

4.11.1 One YRFC will be subject to a hinge attack test intended to cause the opening element of the test specimen to become disabled by disabling the hinge.

4.11.2 This test does not apply if the YRFC does not have an exposed hinge or hinge components.

4.11.3 Tools allowed for hinge testing:

4.11.3.1 One screwdriver, flat-blade style not to exceed 200 mm (8 in.) in overall length.

4.11.3.2 One hammer, ball-peen type not to exceed 400-g (16-oz) total mass.

4.11.3.3 One pair of pliers not to exceed 250 mm (10 in.) in overall length.

4.11.3.4 One center punch, pointed tip, not to exceed 115 mm (4.5 in.) in overall length.

4.11.4 Tools may not be modified in any way from their purchased condition.

4.11.5 The attack will be focused on the hinge element only and tool use shall be restricted as follows:

4.11.5.1 The punch is used exclusively to attempt removal of the hinge pin, used in conjunction with the hammer, to drive the hinge pin out one end of the hinge element.

4.11.5.2 The pliers are used exclusively to pull the hinge pin out of the hinge element.

4.11.5.3 The screwdriver is used exclusively to pry on the hinge elements in an attempt to break the hinge connection point(s). The hammer may be used to drive the screwdriver into a leverage position to facilitate prying. The hammer may not be used to strike the hinge while the screwdriver is engaged in a prying position.

4.11.6 Tools shall not be replaced if they are damaged or destroyed during the test.

4.11.7 The test shall run for 2 min, running the clock continuously until the time has expired.

4.11.8 Failure occurs if the YRFC is disabled or compromised.

4.12 *Flammability Test:*

4.12.1 One YRFC shall be subject to a flammability test, intended to cause the locking device of the test specimen to become disabled by damaging and disabling the lock.

4.12.2 The flame source shall be a conventional butane cigarette lighter.

4.12.3 The flame length should not exceed 50 mm (2 in.).

4.12.4 The flame shall be presented to any part of the lock as judged by the testing technician to best affect disabling the lock.

4.12.5 The testing specimen shall be placed or held at any attitude to facilitated flame concentration on the desired point.

4.12.6 The flame shall be presented to the test specimen for a period of 2 min.

4.12.7 The total test time shall not exceed 5 min.

4.12.8 Failure occurs if the YRFC is disabled or compromised, or can be opened or compromised without tools (by hand) within 1 min after the test is completed.

5. Instructions

5.1 The following instructions shall be provided to the consumer on how to use the YRFC:

5.1.1 How to engage and disengage the locking mechanism;

5.1.2 How to check to ensure the YRFC is functioning properly; and

5.1.3 How to anchor the YRFC properly, if applicable.

5.2 Each YRFC shall include conspicuous and legible instructions for the consumer, and at a minimum shall include the following information (not necessarily verbatim).

5.2.1 Read all instructions before using this YRFC. Keep instructions for future use. (**WARNING**–This YRFC is designed to increase safety of unloaded firearm(s). Completely unload the firearm(s) before using this device. Treat every firearm as if it were loaded. Always keep the muzzle pointed in a safe direction when handling any firearm.)

5.2.2 Read the owner's manual and instructions supplied with your firearm before attempting to operate the firearm and use this YRFC.

5.2.3 Always store unloaded and locked firearms in a safe place inaccessible to children and other unauthorized persons. Store ammunition in a separate locked or secure location.

5.2.4 Do not store the key or combination to the YRFC in the same place as your YRFC.

6. Product Marking

6.1 The manufacturer must provide a label or marking on the outside of the YRFC that states: "This product has been tested and certified to conform to ASTM F2456, Youth Resistant Firearms Containers."

6.2 The manufacturer or make and model, including traceability information (such as lot number, date code, or serial number), of the YRFC shall appear on the product.

6.3 A testing report document shall be produced. The testing report shall include:

6.3.1 The date of the test.

6.3.2 The make and model of the YRFC.

6.3.3 The basic dimensions ($H \times W \times D$) and cubic volume of the YRFC.

6.3.4 The name, address, and phone number of the laboratory that conducted the test. If the test was self-administered, then the report shall state "Manufactured Self-Tested."

6.3.5 The name of the testing technician and the name of his/her employer.

6.3.6 A black-and-white (grayscale or color is acceptable) photo of each test setup before testing, showing fixtures and tools with the test specimen ready for testing.

6.3.7 A black-and-white (grayscale or color is acceptable) photo of each specimen after the completion of each test.

6.3.8 A certification statement that the YFRC has passed all testing criteria: "This product has been tested and certified to conform to ASTM PS 140, Youth Resistant Firearms Containers."

6.3.9 An authorized signature of the testing laboratory or the signature of the testing technician if the testing was self-administered.

6.4 The manufacturer must keep on file a copy of the testing report and provide the report at the request of any reseller or consumer.

7. Keywords

7.1 firearm; firearm container; youth-resistant firearm container