Designation: F 1447 – 02

An American National Standard

Standard Specification for Helmets Used in Recreational Bicycling or Roller Skating[1]

This standard is issued under the fixed designation F 1447; 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.

1. Scope

1.1 This specification covers performance requirements for helmets manufactured for use by recreational bicyclists or roller skaters. This specification recognizes the desirability of lightweight construction and ventilation; however, it is a performance standard and is not intended to restrict design.

1.2 All testing and requirements of this specification shall be in accordance with Test Methods F 1446, except where noted herein.

1.3 Partial utilization of this specification is prohibited. Any statement of compliance with this specification shall be a certification that the product meets all of the requirements of the specification in its entirety. A product that fails to meet any one of the requirements of this specification is considered to have failed the standard and should not be sold with any indication that it meets parts of the standard.

2. Referenced Documents

2.1 *ASTM Standards:*

F 1446 Test Methods for Equipment and Procedures Used in Evaluating the Performance Characteristics of Protective Headgear[2]

F 2043 Standard Classification for Bicycle Usage[2]

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *recreational bicycling*, *n*—bicycling in conditions up to Condition 4 as specified in Classification F 2043.

3.1.2 *in-lines*, *n*—roller skates with all wheels on each skate arranged along a single longitudinal line.

3.1.3 *quads*, *n*—roller skates with four wheels on each skate arranged in a rectangular pattern.

3.1.4 *recreational roller skating*, *n*—skating horizontally using quads or in-lines but not roller hockey or trick roller skating such as ramp jumping, sliding sideways, or skating on stairs.

4. Headforms

4.1 Headforms to be used in this specification are as specified in Section 6 of Test Methods F 1446. The appropriate size headform shall be selected (see 3.1.7 of Test Methods F 1446) for the helmet to be tested.

4.2 In addition to the provisions of Test Methods F 1446, the center of gravity of the headform must be within a 10° vertical cone from the center of impact and lie within a rectangular area 28 by 12.8 mm oriented as shown in Fig. 1. The center of gravity of the drop assembly shall lie within 6.4 mm millimeters of the Z-X plane, which is defined for twin wire systems as the plane containing the axes of the two guide wires, and for monorail systems as the plane containing the design center of the headform and the axis of the monorail. The center of gravity of the drop assembly shall lie within 6.4 mm of the Y-Z plane on the side opposite the arm of the ball arm and within 21.6 mm of the Y-Z plane on the side containing the ball arm where the Y-Z plane is perpendicular to the Z-X plane and contains the design center of the headform. Please see Fig. 1. The center of the anvil must be fixed in alignment with the center vertical axis of the accelerometer.

5. Anvils and Impact Velocities

5.1 Anvils to be used for impact tests in this specification are the flat, hemispherical, and curbstone anvils, described in 16.4, and Figs. 7, 8, and 11 of Test Methods F 1446.

5.2 The helmet shall be dropped onto the flat anvil to achieve an impact velocity of 6.2 m/s (corresponding to a theoretical drop height of 2.0 m).

5.3 The helmet shall be dropped onto the hemispherical and curbstone anvils to achieve an impact velocity of 4.8 m/s (corresponding to a theoretical drop height of 1.2 m).

5.4 The impact velocity shall be measured during the last 40 mm of free-fall for each test and shall be within ±3 % of the velocities specified in 5.2 and 5.3.

6. Marking the Test Line (Area of Required Coverage)

6.1 Place the helmet on the appropriate reference headform (see 3.1.15 of Test Methods F 1446) and preload with a preload ballast weight of 5 kg.

[1] This specification is under the jurisdiction of ASTM Committee F08 on Sports Equipment, and Facilities and is the direct responsibility of Subcommittee F08.53 on Headgear and Helmets.

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[2] *Annual Book of ASTM Standards*, Vol 15.07.