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An American National Standard

Standard Specification for Helmets Used for BMX Cycling[1]

This standard is issued under the fixed designation F2032; 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 used in BMX cycling. Studies have shown higher risk to the head and face for this sport as compared to recreational street riding; therefore, this specification requires impact protection over a larger area of the head than Specification F1447 and the CPSC standard. This specification also provides performance criteria for helmets equipped with chin bars.

1.2 All testing and requirements of this specification shall be in accordance with Test Methods F1446 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 headgear with faceguard meets all of the requirements of the specification in their entirety. A headgear with faceguard that fails to meet any one of the requirements of this specification is considered to have failed the specification, and shall not be sold with any indication that it meets parts of the specification.

1.4 Headgear designed to comply with this and other standards may proclaim uses as certified by the manufacturer.

1.5 The values stated in SI units are to be regarded as standard.

1.6 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

F1446 Test Methods for Equipment and Procedures Used in Evaluating the Performance Characteristics of Protective Headgear

F1447 Specification for Helmets Used in Recreational Bicycling or Roller Skating

3. Labels and Warnings

3.1 Shall meet the requirements of Test Methods F1446.

3.2 Shall have the words “For BMX bicycle riding and racing.”

4. Marking the Test Line

4.1 The test line is shown in Fig. 1 and shall be marked in accordance with Test Methods F1446.

5. Conditioning and Number of Samples

5.1 Shall be in accordance with Test Methods F1446.

5.2 The test requires a minimum of four samples of each shell/liner combination, with a fifth sample required for full face helmets with a chin bar.

6. Retention System Testing

6.1 Retention system tests shall be performed before impact testing.

6.2 The ambient helmet shall be subjected to the Roll-Off Test of Test Methods F1446 using a 4 kg drop mass from a height of 0.6 m.

6.3 The retention system shall remain intact and the helmet shall remain on the headform.

6.4 The hot, cold, and wet helmets shall be subjected to the Dynamic Strength Retention Test of Test Methods F1446 using a 4 kg drop mass from a height of 0.6 m.

6.5 The retention system shall remain intact without elongating more than 30 mm.

7. Impact Sites and Projections

7.1 Impact sites are described in Test Methods F1446.

7.2 *Projections*—Any unfaired projection extending more than 7 mm from the helmet’s outer surface shall break away or collapse when impacted with forces equivalent to those produced by applicable impact-attenuation tests in Section 5. There shall be no fixture on the helmet’s inner surface

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

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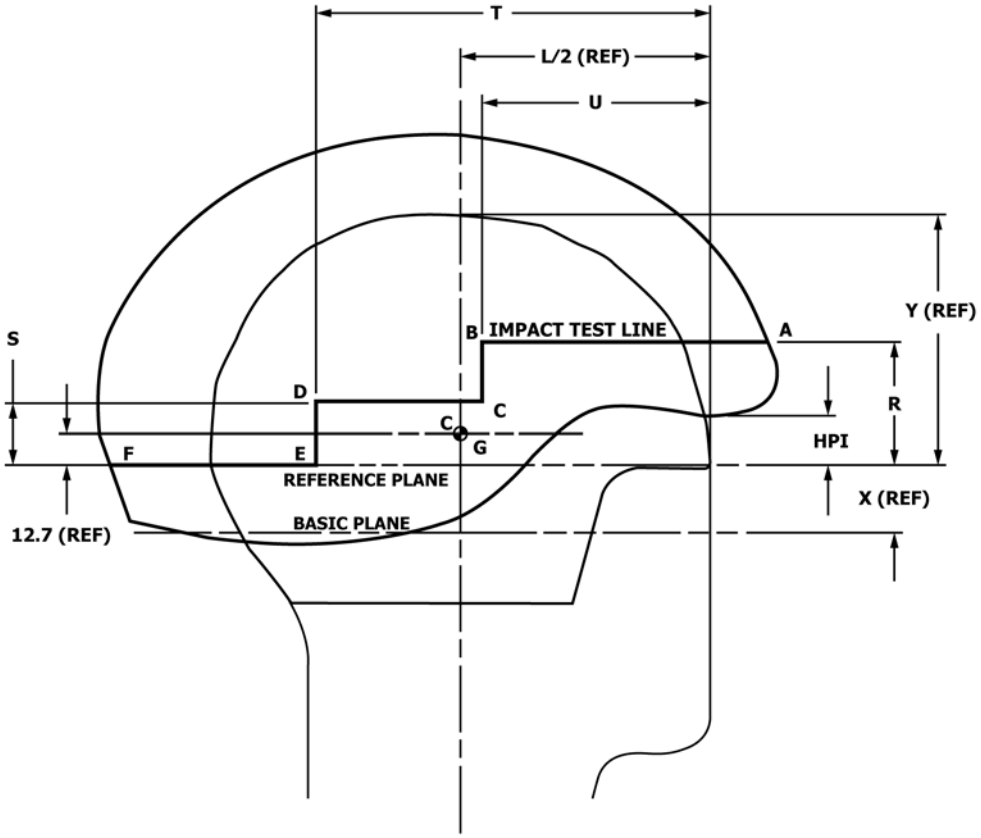
[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.



Headform Size	Dimension						
	X	L/2	Y	R	S	T	U
A	24.0	88.0	89.7	38.0	23.0	142.0	84.0
C	25.0	91.0	92.7	38.5	23.5	146.5	86.0
E	26.0	94.5	96.0	39.0	24.0	151.0	88.0
J	27.5	101.0	102.5	41.0	25.0	160.0	92.0
M	29.0	106.0	107.0	41.0	27.0	166.0	96.0
O	30.0	108.5	110.0	42.0	27.0	170.0	97.0

FIG. 1 Marking the Test Line

projecting more than 2 mm into the helmet interior except occipital stabilizers and foam fit pads.

8. Impacting Schedule

8.1 All impacting shall be performed in accordance with Test Methods F1446, using the variable mass drop assembly configuration.

8.2 Helmets shall be impacted with the anvils centered on or above the test line described in Fig. 1.

8.3 The test anvils can be oriented in any horizontal, centered position.

8.4 For full face helmets with a chin bar, a fifth ambient helmet shall be tested in accordance with Section 10 below.

9. Impact Testing

9.1 Retention system testing shall be completed prior to impact testing.

9.2 The helmet can be impacted such that the theoretical center of impact described in Test Methods F1446 is anywhere on or above the test line with the curbstone anvil in any horizontal orientation.

9.3 Anvils to be used are the flat, hemispherical, and curbstone anvils from Test Methods F1446.

9.4 The helmet shall be dropped onto the flat anvil to achieve an impact velocity of 6.2 m/s ± 3 % (corresponding to a theoretical drop height of 2.0 m).

9.5 Hemispherical and curbstone anvil impacts shall achieve an impact velocity of 4.8 m/s ± 3 % (corresponding to a theoretical drop height of 1.2 m).

9.6 Each helmet shall be given two flat anvil impacts and one each hemispherical and curbstone anvil impact in any sequence.

9.7 The theoretical center of each impact site shall be separated from the theoretical center of other impact sites by a minimum of 120 mm.

9.8 The peak acceleration of each impact shall not exceed 300 g.

10. Chin Bar Rigidity Test

10.1 The chin bar rigidity test applies to helmets with a chin bar only.

10.2 If a chin bar is present, it shall be tested in accordance with the procedures in Test Methods F1446, Chin Bar Rigidity Test, with an impact velocity of 2.8 m/s ± 5 % (corresponding to a theoretical drop height of 0.4 m), using a fifth ambient sample that has not been subjected to any other impact testing.

11. Keywords

11.1 bicycle; BMX; helmets