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An American National Standard

Standard Test Methods for Equipment and Procedures Used in Evaluating the Performance Characteristics of Protective Headgear[1]

This standard is issued under the fixed designation F1446; 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

These test methods specify equipment and procedures used for testing protective headgear. Individual ASTM performance standards (standard specifications) will use these procedures and equipment. Test conditions, pass-fail criteria, and other performance requirements will be specified in the individual performance standards, tailored to the needs of a particular activity (for example, bicycling, skateboarding, skiing, etc.).

These test methods were developed using resources in medical, scientific, mechanical engineering, human factors, and biomechanical fields. However, it is recognized that it is not possible to write a protective headgear performance standard that will result in headgear that can protect against injury or death in all accidents. It is also recognized that serious injury or death can result from both low- and high-energy impacts, even when protective headgear is worn.

These test methods incorporate aspects of other recognized headgear performance standards. They draw from work done by others where appropriate for these test methods. These standards are referenced within this standard test method. It should be noted that these test methods specify laboratory tests of completed headgear to measure its ability to reduce head acceleration during use and other selected parameters.

1. Scope

1.1 These test methods cover laboratory equipment, procedures, and basic requirements pertinent to testing protective headgear. Deviations or additions, or both, to these test methods will be specified, as required, in individual ASTM performance standards.

1.2 *Requirements*—The protective headgear is to be tested under specified environmental conditions for the following:

1.2.1 Impact attenuation (the limiting of head acceleration) of the protective headgear, and

1.2.2 Strength and stability of the retention system and its attachment to the protective headgear.

1.2.3 Special tests for particular protective headgear uses will be specified in the individual performance standards to be used in conjunction with these test methods.

1.3 *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 Standard:*[2]

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

F2220 Specification for Headforms

2.2 *Federal Motor Vehicle Safety Standard:*[3]

218 S7.1.8 Motorcycle Helmets

2.3 *SAE Standard:*[4]

SAE J211 Recommended Practice for Instrumentation for Impact Tests—Requirements for Channel Class 1000

[1] These test methods are under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and are 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.

[3] Available from National Highway Traffic Safety Administration (NHTSA), 400 7th St., NW, Washington, DC 20590.

[4] Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.

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