

**LABORATORY PROCEDURAL
GUIDE FOR CERTIFYING
NEWLY MANUFACTURED
BASEBALL/SOFTBALL BATTER'S
HELMETS**

NOCSAE DOC (ND)023-98m14

Prepared By



**NATIONAL OPERATING COMMITTEE
ON STANDARDS FOR ATHLETIC EQUIPMENT**

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Scope

- 1.1 This procedural guide establishes recommended practices for the certification of baseball/softball batter's helmets.
- 1.2 **All testing and requirements of this standard specification must be in accordance with NOCSAE DOC.001 and NOCSAE DOC.021, NOCSAE DOC.022 and NOCSAE DOC.101.**
- 1.3 *This recommended practice does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this recommended practice to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2 Referenced Documents

- 2.1 STANDARD DROP TEST METHOD AND EQUIPMENT USED IN EVALUATING THE PERFORMANCE CHARACTERISTICS OF HEADGEAR/EQUIPMENT, NOCSAE DOC.001.
- 2.2 STANDARD PROJECTILE IMPACT TEST METHOD AND EQUIPMENT USED IN EVALUATING THE PERFORMANCE CHARACTERISTICS OF PROTECTIVE HEADGEAR/PROJECTILE, NOCSAE DOC.021.
- 2.3 STANDARD PERFORMANCE SPECIFICATON FOR NEWLY MANUFACTURED BASEBALL/SOFTBALL BATTER'S, NOCSAE DOC.022.
- 2.4 EQUIPMENT CALIBRATION PROCEDURES - NOCSAE DOC.101.

3 Test Equipment Required

- 3.1 Twin-wire Guide Assembly (as shown in Figure 3, NOCSAE DOC.001).
- 3.2 Ball Propelling Device (as shown in Figure 1, NOCSAE DOC.021).
- 3.3 Appropriate NOCSAE headforms (see Section 13, NOCSAE DOC.001).
- 3.4 Appropriate MEP pads (see Section 15, NOCSAE DOC.001).
- 3.5 PCB Triaxial Accelerometers, #354MO3, #356A66 or equivalent.
- 3.6 KME Series 200 Data Analyzer (or any analog/digital equivalent that can be demonstrated to correctly calculate SI from a given input signal)¹

¹ The portion of this procedural guide that is specific to data acquisition equipment use and calibration is for the KME Series 200 only. You should refer to the manual for the specific system you are using for differences in system operation.

- 3.7 Miscellaneous tools and equipment.
 - 3.7.1 Digital voltmeter (DVM), 3 ½ digit, 1mv resolution, ±0.5% accuracy and connecting cables.
 - 3.7.2 Torque wrench, range to 200 in/lb minimum, 5 % accuracy.
 - 3.7.3 Appropriate electrical connectors (banana clips).
 - 3.7.4 Tape measure.
 - 3.7.5 Non-conducting glass/plastic jeweler's screwdriver (tweaking tool).
 - 3.7.6 Miscellaneous hand tools.

4 **Mechanical Set-up**

All components of each assembly (i.e., the headform, headform adjuster, headform rotator stem, headform collar, linear bearing table, etc.) must be rigidly connected. Any looseness or play will cause spurious signals (false SI results). The linear bearing table must traverse freely but without bearing "slap" or excess play.

5 **Laboratory Environment**

See Section 12, NOCSAE DOC.001.

6 **Helmet Preparation**

- 6.1 See Section 4, NOCSAE DOC.022.
- 6.2 Helmets to be tested must be moved into a Laboratory environment for conditioning at least four (4) hours prior to impacting.

7 **Calibration Procedures**

See NOCSAE DOC.101.

8 **Sample Selection**

- 8.1 See Section 11, NOCSAE DOC.001.
- 8.2 Each certifier must test an adequate and representative sample size in order to be reasonably sure that helmets released to use, but not actually tested, will meet the requirements as set out in NOCSAE DOC.001 and NOCSAE DOC.022.
- 8.3 Certifiers may be faced with processing helmets manufactured from variable raw materials. Sample selection **must** be random yet demonstrate that raw material variability's have been accounted for.

9 Testing Procedure for Certification

- 9.1 Calibrate your system and run the pre-testing calibration check as described in Section 7 above.
- 9.2 Helmets selected for testing must be tested in all locations as specified in Section 5, NOCSAE DOC.022.
- 9.3 Testing may begin in any location. All (except high temperature) impacts must be completed before moving to a new location. It is not necessary to complete all testing on a given helmet before removing the helmet from the test rig.
- 9.4 Helmets selected for high temperature testing must have already been impacted at ambient temperature.
- 9.5 Immediately after impact, record SI results and peak g's. Any delay greater than 30 seconds can result in erroneous data.
- 9.6 Periodically, post-testing calibration (system) checks need to be run to assure that the system being used has remained correctly calibrated (see Section 18, NOCSAE DOC.001 and Section 5, NOCSAE DOC.101). The pre-test and post-test SI values must be within 7% to validate test results.

10 Reports

All reports must comply with Section 14, NOCSAE DOC.001.

APRIL, 2002 MODIFICATIONS/REVISIONS

- Simplified document references within document.

APRIL, 2003 MODIFICATIONS/REVISIONS

- Modified naming convention and added NOCSAE logo to cover page.
- Defined data acquisition systems capabilities for use with the standard

JANUARY, 2011 MODIFICATIONS/REVISIONS

- Added additional accelerometer options in section 3.5

FEBRUARY, 2011 MODIFICATIONS/REVISIONS

- Added additional accelerometer options in section 3.4
- Updated footnote to remove reference to “blue box” and GHI obsolete data acquisition systems.

OCTOBER, 2014 MODIFICATIONS/REVISIONS

- Updated title name of NOCSAE DOC. 001