

**LABORATORY PROCEDURAL
GUIDE FOR CERTIFYING
NEWLY MANUFACTURED
LACROSSE BALLS**

NOCSAE DOC (ND)149-14m14

Prepared By



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

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1 Scope

- 1.1 This procedural guide establishes recommended practices for the certification of lacrosse balls.
- 1.2 **All testing and requirements of this standard specification must be in accordance with NOCSAE DOC.001 and NOCSAE DOC.021, NOCSAE DOC.049.**
- 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 PROTECTIVE HEADGEAR, 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 ASTM F 1888 TEST METHOD FOR COMPRESSION-DISPLACEMENT OF BASEBALLS AND SOFTBALLS
- 2.4 ASTM F 1887 STANDARD TEST METHOD FOR MEASURING THE COEFFICIENT OF RESTITUTION (COR) OF BASEBALLS AND SOFTBALLS
- 2.5 STANDARD PERFORMANCE SPECIFICATON FOR NEWLY MANUFACTURED LACROSSE BALLS, NOCSAE DOC.049.

3 Test Equipment Required

- 3.1 Scale
- 3.2 Height gauge
- 3.3 Flat level measuring table surface
- 3.4 Ball Propelling Device (as shown in Figure 1, NOCSAE DOC.021)
- 3.5 Light gate assembly capable of measuring inbound and rebound velocities
- 3.6 Compression Displacement measuring device
- 3.7 Miscellaneous hand tools.

4 Laboratory Environment

See Section 12, NOCSAE DOC.001 and Section 3.2.4, NOCSAE DOC.021.

5 Sample Preparation

5.1 See Section 4, NOCSAE DOC.049.

5.2 Balls to be tested must be moved into a Laboratory environment for conditioning at least four (4) hours prior to testing

6 Sample Selection

6.1 See Section 11, NOCSAE DOC.001.

6.2 Each certifier must test an adequate and representative sample size in order to be reasonably sure that samples released to use, but not actually tested, will meet the requirements as set out in NOCSAE DOC.001 and NOCSAE DOC.049. Certifiers may be faced with processing samples manufactured from variable raw materials. Sample selection **must** be random yet demonstrate that raw material variability's have been accounted for.

7 Testing Procedure for Certification.

7.1 Measuring Ball Mass

- 7.1.1 Obtain a scale device that has been currently calibrated/verified for accuracy prior to use.
- 7.1.2 Place the ball holder in the center of the scale; insure that the scale is set to measure in ounces. Zero the scale with the ball holder in place.
- 7.1.3 Place the first ball to be weighed on the holder on the scale, allow the scale reading to stabilize, record the weight of the ball in ounces, and remove the ball from the holder. Insure that the scale has returned to zero, if not re-zero the scale with the ball holder in place.
- 7.1.4 Place the next ball to be weighed on the holder on the scale, allow the scale reading to stabilize, record the weight of the ball in ounces, and remove the ball from the holder. Insure that the scale has returned to zero, if not re-zero the scale with the ball holder in place.
- 7.1.5 Repeat steps until all ball samples have been weighed

7.2 Measuring Ball Circumference

- 7.2.1 Obtain a height gauge measuring device that has been currently calibrated/verified for accuracy prior to use and place it on a flat level measuring surface.
- 7.2.2 Zero the height gauge measuring device. After loosening the locking screw on the height gauge; touch off on the flat level surface by apply a steady light pressure to the reference surface of the moveable jaw. Press "zero" and check to see that the LCD display reads zero (0).

- 7.2.3 Extend the moveable jaw, position the ball so that it is directly between the reference surface of the moveable jaw and the measuring surface. Note the ball's orientation by using either the parting line or any markings on the ball so that the ball can be rotated $90\pm 3^\circ$ after this first measurement is taken for a second measurement.
- 7.2.4 Touch off on the ball by applying a light steady pressure to the moveable jaw until the reference surface of the moveable jaw just comes into contact with the ball. The measurement is made through the center of the ball, make certain that the widest dimension in this ball orientation is obtained by moving the ball slightly. Observe and record the value given on the display.
- 7.2.5 Take the diameter determined above and multiply it by the value of pi to get the ball's circumference, record the resulting number as the circumference #1 of the ball.
- 7.2.6 Repeat steps with the ball oriented $90\pm 3^\circ$ from the first measurement. Record the resulting number as the circumference #2 of the ball.
- 7.2.7 Average the two circumferences and record the result as the ball's circumference.
- 7.2.8 Repeat the steps above until all ball samples have been measured.

7.3 Measuring Ball C/D

- 7.3.1 Have readily available the current version of ASTM F 1888, Test Method for Compression-Displacement of Baseballs and Softballs.
- 7.3.2 Condition ball samples in accordance with section 4 of ND 049.
- 7.3.3 Orient the ball in the compression tester so that the parting line is approximately parallel to the platens of the compression tester.
- 7.3.4 Activate the compression device so that the ball is compressed to 25% of the diameter determined above.
- 7.3.5 Data recording should follow section 9.1 of ASTM F1887.
- 7.3.6 Compile and print the data from the computer.
- 7.3.7 Repeat steps until all ball samples have been measured.

7.4 Measuring Ball COR

- 7.4.1 Have readily available the current version of ASTM F 1887, Standard Test Method for Measuring the Coefficient of Restitution of Baseballs and Softballs.
- 7.4.2 Position the light gates and cannon according to sections 7.2-7.4 of ASTM F1887.
- 7.4.3 Condition ball samples in accordance with section 4 of ND 049.
- 7.4.4 Velocities of ball samples should be in accordance with section 5.4.3 of ND 049.
- 7.4.5 Ball impacts should be in accordance with section 5.4.4 of ND 049.
- 7.4.6 Data recording should follow sections 9.3-9.4 of ASTM F1887.

7.4.7 Compile and print the data from the computer.

7.4.8 Repeat steps until all ball samples have been measured.

8 **Reports**

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

OCTOBER, 2014 MODIFICATIONS/REVISIONS

- Corrected typo and added tolerance to section 7.2