



R&A Rules Limited  
and  
United States Golf Association

INITIAL VELOCITY TEST PROTOCOL

Rev. 2.1  
9 April 2019

Revision	Date	Details of Revision
1.0	21-Nov-2003	Original published version.
2.0	16-Oct-2017	New major revision based on the adoption of new test equipment pursuant to Notice to Manufacturers "Initial Velocity (IV) Test Replacement", 17 October 2017.
2.1	9-Apr-2019	Updated Rules references, reformatted step numbering and section titles to be consistent with other protocols, included metric units.

## 1. Scope

This protocol describes the method used to test golf balls for conformance to the Equipment Rules, Part 4, Section 5, as administered by R&A Rules Ltd. (The R&A) and the United States Golf Association (USGA).

## 2. Test Protocol

- a. Golf balls shall be maintained at 75° F +/- 1° F (23.9° C +/- 0.6° C) for a minimum of three hours prior to testing.
- b. Each of 24 balls hereafter referred to as the sample shall impact an effectively rigid, fixed barrier.
  - i. The barrier shall be set such that the surface normal is inclined at an angle of 5° from the inbound path of the ball.
  - ii. The ball should be propelled in such a way as not to induce significant spin.
- c. The rebound velocity of the ball shall be measured at a distance beginning no less than 7 inches (177.8 mm), and no more than 9 inches (228.6 mm) from the impact target. The gauge distance for velocity measurement should be no more than 18 inches (457.2 mm).
- d. The time of contact between the ball and the barrier shall be measured.
- e. The Initial Velocity (IV) of the golf ball (ft/s) shall be calculated according the following:

$$IV = 136.8 + 136.3 e + 0.019 t_c$$

Where e is the coefficient of restitution, and  $t_c$  is the contact time in microseconds at an impact speed of 143.8 ft/s (43.83 m/s).

- f. The pre-impact speeds for the test should enable accurate interpolation to the target speed of 143.8 ft/s.
  - i. To this end, each ball may be tested over a range of speeds, such that:
    - a) The impact speeds should not be different from 143.8 ft/s by more than 15 ft/s (4.57 m/s).
    - b) Sufficient measurements are made at speeds above and below the target speed as to allow for linear interpolation to 143.8 ft/s.
- g. The IV of each ball in the sample shall be reported.

### 3. Determination of Conformance Status

For each golf ball, the IV shall be compared to the 250.0 ft/s limit plus a maximum tolerance of 2%. In a sample of 24 golf balls, if four or more initial velocities exceed 255.0 ft/s, then the sample shall be ruled nonconforming to the Equipment Rules, Part 4, Section 5.

Appropriate screening methods may be employed.