UNIFORMLY WEIGHTED GOLF BALL

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Appl. No.: 10/133,170
Filed: Apr. 27, 2002

Related U.S. Application Data

Continuation-in-part of application No. 09/670,843, filed on Feb. 20, 2001, which is a continuation-in-part of application No. 09/385,532, filed on Aug. 30, 1999, now abandoned.

Publication Classification

Int. Cl. 7 A63B 37/00
U.S. Cl. 473/351

ABSTRACT

A golf ball in which the core is made from one material and the cover from a different material yet the density of the core and the density of the cover material are essentially identical.
UNIFORMLY WEIGHTED GOLF BALL

BACKGROUND OF THE INVENTION

[0001] At the present time, golf balls are manufactured using various materials for cores, inner cores, outer covers and covers. These materials are each of a different density and thus, if they are not perfectly centered about one another, there can be a heavy side and a light side to the ball. If a straight line is drawn between the light and heavy points in a golf ball, and this line is parallel to the desired direction of travel, then when striking the ball towards the target, the ball's travel will be true and straight to the target. If this imaginary line is perpendicular to the target and the ball is struck towards that target, then the ball's travel will veer slightly in the direction of the heavy side of the ball.

[0002] Golf balls currently are usually made of a core comprised of polybutadiene and a zinc monomer material with a total typical density of 1.18 grams per cubic centimeter. The golf ball core thus formed is centerless ground to achieve near perfect roundness.

[0003] Centerless grinding is a well-known process wherein spheres are suspended against a work blade between two grooved grinding wheels whose axis are slightly cocked and spinning in opposite directions. These actions continually rotate and remove material from the sphere to achieve near perfect spherical shape.

[0004] The next is the most difficult step and that is to center this core in the final mold and keep it centered while the cover material is injection molded around the core. This is usually done by using retractive steel pins in the mold. The extremely high injection pressure and viscosity of the cover material creates very high pressures on the core and even with steel pins, movement is almost impossible to avoid. This, it is not unusual to see differences of cover thickness of 0.005 inches to 0.020 inches from one side of the ball to another. In fact, a standard inspection method in golf ball production is x-ray or cross section balls to note differences in cover thickness. This produces a heavy side and a light side to the ball with the attendant disadvantages mentioned above.

[0005] Low-cost, one-piece balls have long been manufactured for driving ranges and these are thought to be weight balanced. However, compromises are made to the material of construction and thus the balls distance performance and “feel” is generally recognized as inferior. Because of the poor performance, these balls are not generally sold to the general public. Around the turn of the century, one-piece balls were also manufactured but again their performance did not compete with multi-material constructed balls introduced later.

BRIEF DESCRIPTION OF THE DRAWINGS


[0011] FIG. 2. A cross section of a conventional golf ball in which the core 10 and the outer layer 11 are perfectly centered.

[0012] FIG. 3. A cross section of a typical golf ball in which the core 10 has an outer layer 11 which is thicker on the right side of the core than the left side.

[0013] FIG. 4. A cross section of a typical multi-layer golf ball in which the core 10 has outer layers 11 and 12 which are thicker on the right side than on the left side.

DETAILED DESCRIPTION OF THE INVENTION

[0014] FIG. 1 is a perspective view of a conventional golf ball. FIG. 2 is a cross section of a conventional golf ball in which the core 10 and the outer layer 11 are perfectly centered. FIG. 3 is a cross section of a typical golf ball in which the core 10 has an outer layer 11 which is thicker on the right side of the core than the left side. FIG. 4 is a multi-layer golf ball wherein the layers 11 and 12 are thicker on the right side than on the left side.

[0015] Applicant's invention preferably involves making the density of the core material and the density of the cover materials the same, and having these made from different materials. For example, utilizing a core having a density of 1.13 gm/cc, the initial layer and each succeeding layer can be constructed of suitable materials that have been formulated with constituents that bring the density of the layer to exactly match the 1.13 gm/cc of the core. In this manner, assuming the finished ball is perfectly spherical, it is not critical that the cover and core be concentric since the ball will always be perfectly balanced. If desired, the core may be made from a polybutadiene and a zinc monomer as is the current practice. In constructing the initial layer and each succeeding layer suitable materials that have been formulated with appropriate constituents to bring the density of the layer to exactly match the density of the core, it is important that the constituents contained in said layer be uniformly distributed therein. Otherwise, erratic results will be obtained when the ball is hit. One way of doing this is shown
What is claimed is:

1. A golf ball comprising a spherical core made from a first material, at least one layer of a second different material completely covering said core wherein the density of said core and the density of said one layer surrounding said core are essentially identical and wherein any additional layer surrounding said core and said one layer has a density essentially identical to the density of said core, and wherein the constituents of said material in said layer are uniformly distributed therein.

2. The golf ball of claim 1 wherein said core has been prepared by centerless grinding.

3. The golf ball of claim 1 wherein said core is a blend of polybutadiene and a zinc monomer.

4. The golf ball of claim 1 wherein said core is completely covered by at least one layer of a suitable material which contains density altering constituents so that its density is essentially identical to the density of said core.

5. The golf ball of claim 1 wherein said core is covered by one or more layers of a material selected from the group consisting of urethane, balata, and an ionomer resin or any combination of these materials, which have been modified with density altering constituents such that the density of the core, said one or more layers, and the complete ball will be essentially the same.

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