

Effect of Dimple Number on Flying Characteristics and Flow Pattern of Golf Ball

by

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(Received on Sep. 28, 2001 & accepted on Dec. 19, 2001)

Abstract

The flying distance of a golf ball is known to be affected by the initial velocity and the spin given at the time of impact, the aerodynamics resistance during flying time. As far as the flight of the golf ball is concerned, the studies of the aerodynamics characteristic and the spin rate decay have been reported. However, there is no study to make clear the relation between the flying characteristics and the number of dimples; they are the important factors for decreasing the aerodynamic resistance and increasing the flying distance. The aim of this study is to clarify the relation between the flying characteristics and the changes of the number of dimples, the depth of dimple. The number of dimples is changed from 0 (smooth) to 728 using the test ball. The drag and lift acting on a ball in a uniform airflow are measured by changing Reynolds number. From these results, it is found that the critical region tends to shift toward the lower Reynolds number, as the number of dimples increases. The flow around the ball is also visualized, and it is found that the separation point and flow pattern are made clear.

Keywords: Golf Ball, Number of Dimples, Drag and Lift Coefficient, Aerodynamics Characteristics, Visualization

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