



# SPORTURF™

## White Paper

The Science of Baseball



### COEFFICIENT OF RESTITUTION

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## Introduction

Synthetic turf offers many positive things to outdoor sports activities normally played on a natural surface. One positive is that it maintains the same physical traits in all four seasons. Synthetic turf can withstand more frequent use, allows for a multi-use venue, offers faster drainage and requires less maintenance than a natural surface field. However, with all of these positive attributes you get from having a synthetic turf surface they mean very little if the players have to react the field and not the ball.

Sporturf™ has worked hard to develop a sport specific system that allows you to play the game just like you would on a natural field. These systems provide a performance level that is most representative of a natural grass field to coaches and players at all levels. If a ball reacts differently after striking the synthetic field surface than it would on a natural surface, misplays would likely occur. Sporturf™ believes in these systems so much they chose to put them up against actual science and used a 3rd party independent test lab to back up what they're saying. Sporturf™ believes the synthetic surface should not change the tradition of the game or how it's played.

## Coefficient of Restitution

There are forces in the universe that explain to how a ball will react after being hit by the batter.

- Speed of the pitch from the pitcher as well as the speed of the bat swing.
- Angle of the bat when it strikes the ball.
- Spin of the ball from the pitcher and when it leaves the bat.
- Which hemisphere of the ball that the bat impacts



When you combine these forces, you should have a really good and measurable ball reaction. Once the ball hits the surface you can determine the Coefficient Of Restitution (COR). The COR is defined as the change in vertical velocity of the ball after contact with the turf. This is found by measuring how much energy is absorbed by or lost when the ball strikes the surface. The Lab testing shows that results will fall between 0.0 and 1.0. The lower the number the more natural the bounce and roll of the ball will be. When the surface is scoring a higher number it means the field has a much higher level of elasticity. The higher number translates to the ball bouncing unnaturally high and losing energy during the roll after the ball hits the surface. This translates to your team is “playing the field and not the game.”

### Infill

Sporturf™ has developed a technique that pairs the turf and infill in a very specific way that creates a system that mimics natural turf like no other system on the market today. Instead of mixing the crumb rubber and sand together during the infill installation, you would add them separately. Start off with the crumb rubber infill and work it into the synthetic turf until it falls to the bottom of the system. This will provide quick water drainage and shock absorption for player safety. The next step would be to add a solid layer of sand on top of the crumb rubber. This will give the field a lower COR and provide a ball bounce that mimics a natural surface. The sand will also give you a firm surface for the ball to impact much like dirt does for a natural grass surface. Top quality Sporturf products together with this revolutionary infill creates a system that is unequalled in the synthetic turf industry.



## Independent Lab Testing

With this system Sporturf knew it had a winner and they did something that no one else in the industry has done. They took these turf systems to an independent 3rd party laboratory and asked that they be tested head to head with a high level natural grass surface. Sporturf asked the lab to find the Coefficient of Restitution of a high-level natural surface. The independent laboratory found that .35 was the average COR reading for a high-level natural surface. The lab then tested the synthetic turf systems brought forward by Sporturf and came out with some excellent COR averages. The Fielder's Choice system averaged .42 as it's COR. When the PowerHouse system was tested it read .40 consistently. This translates to a field that allows you to play the game as it's meant to be played but gives you the advantages of synthetic turf field.

