

## Softball COR/Compression Discussion

As SSUSA rolled out their new proprietary senior softball in 2018, I thought this would be an opportune time to discuss two important characteristics of a softball: COR and compression. First off, the making of a softball vs. a baseball are disparate in their manufacturing processes. Softballs have a circumference of ~12 inches and a diameter of ~3.8 inches, and weigh about 7 ounces. Unlike baseballs, softballs have an inner polyurethane ball-core (e.g. a synthetic polymer) with a cover stitched and glued to the core. The cover is sometimes leather or more commonly a composite material.

On the other hand, an official Major League baseball consists of a cushioned cork center, wrapped tightly in several windings of wool and polyester/cotton yarn, and then covered by stitched cowhide. A baseball is ~9.25 inches in circumference and ~2.95 inches in diameter, and weighs ~5.25 ounces.

*Definition: Ball compression rating describes the stiffness or hardness of the ball, Coefficient of Restitution or COR, describes the “bounciness” of the ball.*

The COR value (i.e. **C**oefficient **o**f **R**estitution) is how much is given back after the impact with a solid wall during testing. This value indicates how much energy is left over after the ball strikes the immovable object and then bouncing back at a speed lesser than its incoming speed. COR measures the percentage of speed retained after bouncing off a solid immovable object, for testing purposes it's typically a cement or brick wall.

A softball with a high COR value, has an affinity to “bounce” off any hard surface it comes in contact with, like a solid wall or a softball bat. Consequently, a very high COR rating will not compress the bat barrel as much, which in turn will not maximize ball-exit-speed and distance.

If you were to bounce a .44 COR ball on the street and a .52 COR ball simultaneously, the .52 COR would reach a greater height off the pavement. Remember, the higher the ball COR value is results in less barrel compression.

*Note: Don't confuse COR with “core” which is the center of something, as they sound the same when pronounced.*

The balls that perform the best are the COR=44 or COR=47 coupled with a high compression value of 400lbs or 450lbs. It's hard to find softballs today that are 525lbs compression or higher as they are found to be too hot for our senior bats. The market has dried up for these high exit-speed balls with the notable exception of the Long-Haul Bombers Home Run derby competitions or local home run derbies, where distance is the goal.

### **COR table ball elasticity values:**

COR 52	=	-very bouncy or springy-
COR 47	=	-medium bouncy-
COR 44	=	-low to medium bouncy-
COR 40	=	-much less bouncy.

### **Compression hardness values:**

COMP 275.....	=	-extremely soft limited flight-
COMP 325.....	=	-soft limited flight-
COMP 375.....	=	-top of the scale of limited flight-
COMP 400.....	=	-semi-hard found in the ISA ROCKs-
COMP 450.....	=	-very hard, too lively for senior bats-
COMP 525 and up...	=	-way too hard and are bat breakers!

*The table values shown above are not intended to be an exhaustive collection of possibilities. .*

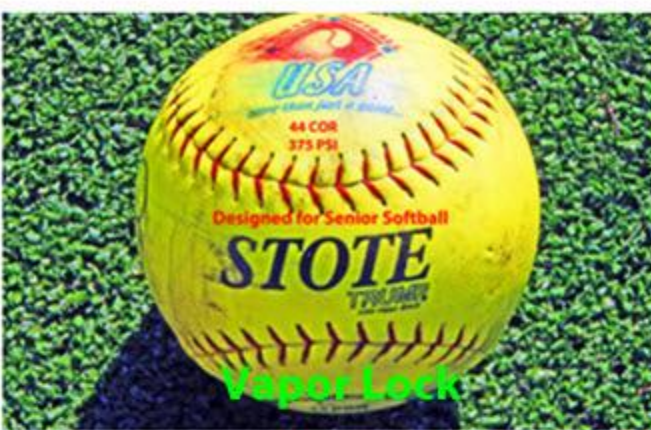
A 52COR/275lbs compression ball by definition is a sock!

We've all experienced ball compression diminishing with increasing humidity and temperature during tournaments. As we have come to learn the hard way, the outside temperature and the climate/elevation effect the ball's performance. Cooler temps keep the balls harder and higher elevations with less air friction fly farther. Warmer temps will make the ball soft and mushier and performance is degraded.

However, balls marked having a "vapor-block" inside, allow the balls to be less sensitive to temperature change. As a result performance is not degraded nearly as much when playing those hot afternoon games, where other balls seem to go dead. Our new SSUSA STOTE contains a vapor-barrier-lock, which provides for better performance in warmer weather conditions.

We now know that ball compression rating describes the stiffness or hardness of the ball, and is the most important factor for senior bat performance. The Coefficient of Restitution or COR, describes a ball's "bounciness". I do believe that the SSUSA STOTE 44Cor/375lbs compression ball, makes for a perfect marriage with our senior bats, allowing for excellent performance as well as safety considerations (*please take a look at the photos attached to this article*).

*Happy Hitting,*  
Art Eversole



**Ball Thrown at Solid Wall...**

