

USA SOFTBALL MINNESOTA

.52 COR / 300 LBS. COMPRESSION SOFTBALL – HOW IT WORKS

Coefficient of Restitution (COR) described is a measure of the "restitution" of a collision between two objects: how much of the kinetic energy remains for the objects to rebound from one another versus how much is lost as heat, or work done deforming the objects.

COR AND COMPRESSION IN RELATION TO AN IMPACT INJURY

COR is the ability of the ball to rebound away from the impact area. The lower the COR, the higher the impact therefore when a player gets struck by a lower COR ball, the impact drives into the body instead of wanting to rebound away from it. When a ball drives into the impact area it is transferring the energy into the impact, creating a much more severe impact.

COMPRESSION IS THE HARDNESS OF THE SOFTBALL

When high compression and lower COR are combined, the impact rises to a point that it is beyond severe levels. The harder the ball the less flex it has on impact. An impact of a 44/375 ball has the initial impact of about the size of a quarter. Now the force of the ball is transferred into the impact that spot. The ball does flex somewhat after the initial impact but the damage has already occurred.

HIGH COR BALLS

A high COR softball will reverse direction much quicker on impact lessening the force transferred to impact spot. By the ball rebounding away from the impact spot the damage is reduced by a great deal.

COMPRESSION

If we lower the compression with a high COR ball and you now have an impact spot is about 2 times the size of a low COR ball. That means the energy that gets transferred does so over a bigger area lessening the force dramatically. Think of having 2 hammers. They both weigh the same but one is a ball peen hammer and the other is a roofing hatchet. The ball peen hammer has an impact spot no bigger than the head of a nail and the roofing hammer has an impact spot the size of a half dollar. Which one would have to strike a hard surface like a skull harder to break it? Or take a ball made of metal (hollow of course) and a tennis ball. Both the same size and weight, which one would you rather be hit by?

SCARY PART I

Severity Index (SI) is the measurement of the impact on a National Operating Committee on Standards for Athletic Equipment (NOCSAE) <http://www.nocsa.org> head form. Anything above 1200 SI can kill you. Anything close can kill you.



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During my testing using an American Association for Laboratory Accreditation (A2LA) <http://www.a2la.org> accredited NOCSAE approved test facility we performed head form studies. These tests were performed on NOCSAE head forms and impact data collected through force load transducers.

44/375 softballs were constantly testing above 1800 SI. Many tested above 2400 SI. And some tested as high as 3600 SI. Now it is proven that SI's above 1200 will break the skull and or cause severe brain trauma. This is unacceptable in recreational sports.

High COR balls using the same test and the same facility yielded impacts of less than 500 SI, we tested the balls at different weights and none of the ball that were within an approved spec tested above 500 SI that we tested.

I also tested a couple of 50/525 balls and found the less dangerous than a 44/375, still way above the 1200 SI.

Peak G's is the G force that the brain can take before you have severe brain trauma. 180 peak g's will cause a severe brain trauma. Anything below 170 is acceptable. With the new balls they tested around 157 to 165 balls at 165 are not being made by me or anyone else unless their ball fails the specifications. I did extensive testing on different weights. As long as the balls are made at less than 6.7 ounces they will pass the peak G's no problem.

So a brief review we can make a ball that is safer for play. Keep 300 foot fences in play and not lose the home runs. We now have a ball that is much less sensitive to cold or heat and allows softball players to go out and have fun like we used to do without the fear of dying every time a ball is hit at them.

SCARY PART II

NOTHING is safe traveling at you at 100 MPH, even a tennis ball can kill you if it hits the exact spot at the exact time. But this ball is much safer than what we have made in the past. Nose, fingers, and other bones can still be broken but the skull structure will be much less affected by this ball than before.

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