



Explanation of the Exceptions to the 1550psi Barrel Compression Standard
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July 2017

Here's a simple explanation of the science: Recall from your physics class that in a collision, the harder object deforms the softer one and either crashes through or rebounds off. In the case of a hollow implement (softball bat) with a solid object (the ball), the bat deforms and trampolines the ball off. Since the ball is the same for both teams, bat manufacturers design their bats to get high batted ball speeds (BBS) so that the product is market competitive but not so high performing that the bats are out of compliance with our BBS standard of less than 98mph. Compliance with that standard is measured at the Sport Science Lab at Washington State University in both the new bat ASA certification process and in NCAA compliance testing.

In addition to compliance testing in the lab, the NCAA, some conferences, and institutions use barrel compression testing (BCT) to predict those lab results. In general, bats are considered to have passed BCT if they score a minimum of 1550psi on a BCT fixture. But there are exceptions. In most cases, there is a linear relationship if you graphed the stiffness of the bat shell and BBS (the softer the shell, the higher the BBS). However, there is a group of bats that, because of their unique designs, do not show a correlation of barrel stiffness to BBS. They are referred to as non-linear and can be granted exceptions to the minimum 1550psi.

Regarding the current NCAA Softball BCT exceptions: At the time of this writing, only Hillerich and Bradsby Co., Inc and Easton have been granted exceptions for their non-linear models--the Xeno and LXT editions of Louisville Slugger and the Ghost of Easton. Because the BCT fixture only compresses/measures the shell's stiffness, it does not engage the LS inner pendulum nor Easton's inner shell, so BCT is not an accurate predictor of these models lab or field performance. In essence, the inner construction prevents the soft shells from deforming so much that a high BBS would be the lab result but BCT fixtures do not exert enough pressure to engage those inner components. So these specific models have been granted exceptions to the BCT minimum in all bat testing done by or on behalf of the NCAA Softball Rules Committee. **Note- The exception is not an exception to have the bat barrel compression tested; it is an exception to the number that separates passed bats from failed ones.**

As to the exception protocol: There may be other manufacturers that develop non-linear models so a protocol for requesting an exception to the standard was created by the NCAA Softball Rules Committee in 2012, initially circulated to manufacturers, and later posted on the SUP ArbiterSports website.

In the case of the Xeno and LXT models, results showed that the models passed the lab tests even when the shell was as soft as 1400psi (although most tested in the 1500 range). In the case of the Ghost model, the outer shell was much softer so a compression minimum of 1000psi was agreed upon as the minimum. So for all NCAA BCT, (both in-season and postseason) bats will be disqualified from play if they test less than 1550psi except the Xeno, LXT and Ghost series which will be excluded only if they test less than 1400psi in the case of the Louisville Slugger models and less than 1000psi for Easton's.

BCT as a predictor but not the defining test: What BCT does is identify the bats that are likely too high performing by using a fixture that is a convenient, portable and inexpensive predictor of

the lab result. The NCAA will continue to use it during selected in-season tournaments and in all postseason play to filter out bats that are therefore likely to fail in the lab, send those bats to the lab for actual testing and amend the NCAA Approved Softball Bat List as appropriate using those results. Remember batted ball speed is still the bat performance standard required for inclusion of models on the NCAA Approved Softball bat List.

Questions? That's a quick summary of the testing the NCAA is doing but remember conferences can set their own policies so if you have questions about conference in-season or tournament testing, direct them to the appropriate conference office. In addition, some individual institutions also have policies for testing when playing on their campuses. Questions about NCAA BCT and compliance testing can be sent to Dee Abrahamson at Abrahamson@niu.edu or call (815) 751-2648.