



**AMATEUR SOFTBALL ASSOCIATION OF AMERICA**  
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## **ASA BAT AND BALL CERTIFICATION PROGRAM**

### **OVERVIEW AND BACKGROUND**

ASA regulates softball bats and softballs used in ASA Championship Play. ASA requires bats and balls to satisfy the rules listed in the Official Rules of Softball published by ASA. Obtain your copy of the Official Rules of Softball by contacting your local ASA commissioner. The Official Rules of Softball are changed annually, so ASA reserves the right to changes its regulations for softball bats and softballs.

The rules require that an ASA certification mark must appear on any bat made since 2000, and on any ball made since 2001. The ASA Equipment Testing and Certification Committee oversees the bat and ball certification programs and continues to evaluate the ASA bat and ball performance standards. ASA certification marks are trademarks registered by ASA with the United States Patent and Trademark Office ([www.uspto.gov](http://www.uspto.gov)). Use and infringement of ASA's trademark and certification marks is governed by federal law and ASA's license agreements.

#### **How a Softball Bat or Softball Becomes ASA Certified**

A softball bat or softball manufacturer must satisfy certain requirements before an ASA certification mark can appear on one of its bats or balls. First, the manufacturer contacts ASA and submits samples of the softball bat or softball that it wants approved. The manufacturer signs a testing agreement and the samples are shipped to an ASA-approved testing facility. At the test lab, samples are tested according to the ASA performance standard. If the samples of that model satisfy the ASA performance standard and comply with the Official Rules of Softball requirements, then the manufacturer is offered a license agreement for that model and can then start applying the certification mark to the bats and balls of that particular model. Softball bats made entirely of wood do not need to be certified, but still must comply with the Official Rules of Softball requirements.

#### **How a Test Lab Becomes an ASA-Approved Testing Facility**

An ASA-Approved Testing Facility is a scientific test lab certified by ASA to conduct softball and/or softball bat testing. A test lab desiring to become ASA-Approved must first submit an application for certification. If the lab is already accredited by A2LA ([www.a2la2.net](http://www.a2la2.net)) to perform the necessary ASA performance test methods, then the lab is offered a contract designating the lab as ASA-Approved. If the lab is not yet A2LA Accredited, an ASA scientific consultant visits the lab to ensure proper scientific execution of the ASA performance test methods. If the test lab "passes" the inspection, then the lab is offered the same contract designating the lab as ASA-Approved. ASA intends for all ASA-Approved Testing Facilities to be A2LA Accredited by July 1, 2004.

## SOFTBALL BATS

### The ASA 2000 Bat Performance Standard

ASA first adopted a bat performance standard in 2000. The ASA Bat Performance Standard is not based on bat performance factor (BPF). ASA has never adopted the “1.20 BPF” or any other BPF standard. BPF is merely a mathematical ratio of ball speeds coming to and going off of a given bat. The ASA standard is also not based on hit distance, or how far a ball can be hit with a particular bat.

Instead, the ASA bat standard is based on batted ball speed (BBS). BBS is the speed of the ball coming off of a bat. The BBS is the speed of the ball as seen by the fielder. A standard based on BBS takes into account the swing speed of the bat, as well as the pitch speed of the ball. The ASA standard places a maximum limit on how fast a ball can come off of a bat.

Bats are tested according to a very specialized and scientific test method. The test method was not developed by ASA, but instead was developed by a national consensus group that is organized to develop standard test methods. This group is the F08.26 subcommittee of the American Society of Testing and Materials (ASTM). ASTM ([www.astm.org](http://www.astm.org)) is made up of over 30,000 producers, users, consumers, and general interest parties, such as academicians and government representatives. The ASTM F08.26 subcommittee holds meetings twice a year, and most of the major softball associations attend along with university professors, scientists, test lab representatives, and manufacturing representatives.

The ASA 2000 bat standard was based on the ASTM F1890 standard test method. The F1890 test method has been the industry standard for many years. When testing softball bats for ASA certification, test labs follow the F1890 testing procedure. Afterwards, the test lab reports its results to ASA and the manufacturer. The ASTM F1890 test method can be obtained online. See [www.astm.org](http://www.astm.org) - click on “standards.”



In 2000, ASA set a maximum batted ball speed (BBS) limit of 125 feet per second (fps) when tested under the F1890 test method. This equates to a limit of approximately 85 mph.

The ASA 2000 standard meant that when a bat was tested according to the F1890 test method, a softball cannot rebound off the bat at 125 fps or more. If it did, then the bat was not allowed in ASA Championship Play and could not have an ASA certification mark.

When the sample bat was shown to satisfy the 125 fps limit, the manufacturer was allowed to put the ASA certification mark on all bats of that model and the model was approved for ASA Championship Play. The manufacturer is obligated to make sure that all weight and length combinations of a particular bat model satisfy the ASA Bat Performance Standard.

## **The New Bat Standard – the ASA 2004 Bat Performance Standard**

ASA has adopted a new bat performance standard, effective January 1, 2004. This change has been made in light of recent scientific developments. Much of the research leading to the new bat standard and the new ASTM test method has been funded by ASA. ASA has determined that this change is necessary because some of the highest performing bats on the market is adversely affecting the character and integrity of the game, and renders a player's performance more a product of his/her bat rather than his/her individual skill.

The ASTM F1890 test method is no longer the industry standard, even though some softball associations continue to rely on this test method. ASTM has just recently developed the ASTM F2219 test method. The most recent version of F2219 is available at [www.astm.org](http://www.astm.org) – click on “standards.” This test method provides a number of improvements over the old ASTM F1890 test method. For example, F2219 allows bats to be tested in the lab at a much higher speed, including speeds actually found in the field of play. It also places tighter tolerances on testing procedures, such as the softballs that are used in conducting the bat test. ASTM F2219 allows the testing to be done at the “sweet spot” of the bat - regardless of where that point is along the barrel of the bat.



The ASA 2004 bat standard relies on the swing speed of the batter. ASA has learned and now takes into account that a batter's swing speed is more dependent on the distribution of the weight across the length of the bat than just the total weight of the bat alone. This weight distribution feature is often referred to as the bat's moment of inertia, and is incorporated into the new 2004 standard. The 2004 standard is also based on more accurate information about the speeds involved in the “bat-ball collision,” which are swing speed of the bat and the pitch speed of the ball.

The 2004 bat standard has a maximum batted ball speed (BBS) limit of 98 mph when tested according to the ASTM F2219 test method (as approved for balloting). Even though this limit is numerically higher than the ASA 2000 bat performance standard, in science and in practice the 2004 bat standard is actually a reduction compared to the 2000 bat standard. The F2219 testing is done at higher speeds than under the old F1890 standard. As a result, some bats that satisfied the old ASA standard of 125 fps will not pass the new 98 mph standard. Bats that do not satisfy the ASA 2004 Bat Performance Standard will not be allowed in ASA Championship Play, effective January 1, 2004. Bats that satisfy the ASA 2004 Bat Performance Standard will be allowed to use a new 2004 ASA certification mark. Older bats that pass the new standard will still be allowed in ASA Championship Play.

In setting the limit at 98 mph, ASA considered preliminary results from scientific studies that demonstrated the change in bats over the past few decades. In one study, ASA used the newer test method to test about two dozen bats using the same model of softball - .44/375lb. These bats were produced throughout the past 30 years, and included wood, single wall aluminum, multi-walled aluminum, composite and titanium bats. The preliminary results showed batted ball speeds ranging from 90 mph to upwards of 110 mph. These results also showed bat performance consistent with bat performance on the field of play. In another study, the preliminary results showed that the performance level of a typical composite bat is similar to the performance level of a typical titanium bat when tested with the same ball. However, when a titanium bat was tested with a softball from that era, the test yielded a result of over 110 mph.

### **Enforcement of ASA Bat and Ball Standards - Recertifications**

ASA has a license agreement with manufacturers of bats and balls allowed in ASA Championship Play. Under that contract, ASA has the right to enforce the bat or ball performance standards. ASA periodically purchases certified bats and certified balls at retail. ASA ships those bats and balls to an ASA approved testing facility and obtains testing results on them. If a bat or ball exceeds the ASA performance standard, ASA notifies the manufacturer in writing. A second round of testing is then conducted on that particular model. If the results from the second round of testing confirms the first round results, ASA sends the manufacturer a Notice of Noncompliance and immediately withdraws the model from ASA Championship Play.

During the summer of 2002, ASA withdrew a number of bat models from ASA Championship Play for noncompliance reasons. There are only a few reasons why a certified bat or certified ball would fail to comply with the ASA performance standard. One reason is that the manufacturer actually changed the design of the bat or ball without notifying ASA or having the redesigned version tested at an ASA approved testing facility. Another is that the test result on the original testing sample was so close to the pass/fail line that the manufacturer did not properly take into account their product quality control tolerances or the testing variance inherent to the test method. Bats were banned in 2002 for both of these reasons. In addition, two bat models were banned for using the ASA certification mark without permission, because the manufacturer started using the certification mark before they had a test report showing the bat satisfied the ASA bat performance standard.

Some manufacturers elected to “recertify” the noncomplying bats. These bats were retrofitted in the manufacturers’ facilities and returned to players. In the future, ASA plans to eliminate the ability of a manufacturer to “recertify” a noncomplying bat. If the manufacturer makes bats that the ASA finds are not in compliance with the ASA Bat Performance Standard, then all bats of that particular model will have to be recalled and replaced by the manufacturer.



ASA continues to enforce its bat and ball performance standards.

## SOFTBALLS

### The ASA Softball Performance Standard

ASA adopted its current softball performance standard in 2001. The ASA Softball Performance Standard focuses on the COR as well as the compression of the softball. COR and compression of a softball is measured by a test lab using ASTM test methods F1887 and F1888. ASA Playing Rules also regulate the size, weight, and other characteristics of softballs used in various divisions of ASA Championship Play.

Since 2001, ASA has certified three different levels of softball COR: .47, .44, and .40. During that same time, ASA certified softballs have had two different levels of compression: 525 lbs, and 375 lbs. These levels of COR and compression result in ASA certification of softballs at six different performance levels:



Red Colored Marking & Stamp  
Max .47 COR - Max 525 lbs

Black Colored Marking & Stamp  
Max .44 COR - Max 525 lbs

Blue Colored Marking & Stamp  
Max .40 COR - Max 525 lbs



Red Colored Marking & Stamp  
Max .47 COR - Max 375 lbs

Black Colored Marking & Stamp  
Max .44 COR - Max 375 lbs

Blue Colored Marking & Stamp  
Max .40 COR - Max 375 lbs

Different divisions of ASA Championship Play allow softballs having different COR and compression combinations. For example, in men's slowpitch play as of January 1, 2003, the maximum performing softball allowed is a .44/375 lb ball, although a .40/375 lb ball is also authorized. The Official Rules of Softball identify the performance levels of softballs allowed in each division of ASA Championship Play.

ASA understands that lower compression softballs are in the development process. ASA may elect to begin certifying softballs with compression values at some level below 375 lb.

### Softballs – COR and Compression

The performance of softballs is currently compared and tested based on two primary measurements: COR and compression. COR stands for "Coefficient Of Restitution." In non-scientific terms, this is a number that reflects how fast a ball will bounce off of a wall. For example, if you shoot a softball at a wall at 60 mph, and the ball comes off of the wall at 30 mph, then the speed of the ball has been reduced by one-half. In science terms, that results in a "0.50 COR." If the same ball rebounded off the wall at 27 mph, the COR would be 0.47.

Compression of a softball is currently measured by how many pounds of force is required to squeeze a softball one-quarter of an inch. So, a softball with a 375 lb compression means that the testing facility had to apply 375 pounds of force (or less) to squeeze two sides of a softball by a total of 0.25 inches. If the test report actually reveals a compression of 325 pounds, ASA will currently certify that softball model as a 375 lb model.

Through lab research and field testing, ASA has learned that a change from a .47/525 ball to a .44/375 ball will decrease overall bat and ball performance on the field by approximately 5-6%. ASA has also learned that reductions in softball compression can have a greater effect than reductions in COR in decreasing overall bat and ball performance in the field.

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