FREQUENTLY ASKED QUESTIONS
BOWLING TECHNOLOGY UPDATES

Modern bowling balls and the higher revolution bowling style require an increasing amount of oil on the lanes, and patterns are changing faster. This trend is NOT sustainable.

USBC conducted extensive research and surveyed all of bowling's stakeholders.

To protect bowling's future:

- USBC is eliminating balance holes
- Setting a new specification for oil absorption
- The overall result will slightly limit hook potential

USBC research shows these changes will:

- Slow oil pattern transition
- Cause bowlers to move less
- Keep the same scoring pace with lower oil volume

No current USBC approved balls will be deemed illegal. All equipment is grandfathered in, indefinitely. Balance holes need to be plugged by August 1, 2020.

The goal IS to protect the playing environment for the future, NOT to lower scoring.

Below are several frequently asked questions regarding the changes:

BALANCE HOLES

1. **Why did USBC eliminate the balance hole?**
   Balance holes were originally intended to correct a ball that was drilled outside of our static weight tolerances. However, in recent years, balance holes have become a tool for pro shop professionals to manipulate the balls. Our studies determined the balance hole can greatly increase the Differential RG to strengthen the reaction of the equipment beyond the ball's original design intent.

2. **What is the intended purpose of a balance hole?**
   Balance holes were intended to help correct the static imbalance so that the ball would comply with USBC's one-ounce rule for finger, thumb or side weight, and three-ounce rule for top or bottom weight.

3. **How important is finger, thumb or side weight?**
   The static imbalance rule has been in place for decades, dating to before reactive resin. As bowling balls evolved, the coverstock has been cited in the 2008 ball motion study as having the most impact on performance of bowling balls, while side weight had minimal impact and the impact of finger and thumb was on the low end of the spectrum.

   A further study, the 2011 Static Weight Study, again determined that although the impact was small, it was not in the best interest to change or remove the current rule that only allowed three ounces of top weight and one ounce of finger, thumb or side weight.

4. **Do balance holes provide more hook?**
   Yes, in some cases a balance hole can provide additional hook on the lane. This often depends on size and location as to whether it impacts the performance and to what degree. In recent years, balance holes have been noted to increase the RG Differential (flare potential) up to 0.021 in a given bowling ball.

5. **How many ounces are taken out by most balance holes?**
   That varies based on the hole depth and diameter. See this weight removal chart here for further understanding.

6. **What is the new static weight rule exactly?**
   Effective January 1, 2020 USBC will increase the balance tolerance for static weights (side, thumb and finger weight) to three ounces (for balls weighing more than 10 lbs.), up from one ounce. The prior rule of three ounces of top and bottom weight is still intact. By doing this, all previously drilled balance holes may no longer be required.

7. **How will the new maximum top weight specification of five ounces for undrilled balls impact me when buying new bowling balls?**
   It will not impact you; rather, equipment manufacturers will need to adhere to keeping the top weight of all bowling balls under five ounces. In most cases, these manufacturers are targeting 2.5 ounces to 3.5 ounces of top weight already. It will be the responsibility of your pro shop professional to properly weigh your bowling ball before determining the drilling layout and again after drilling to ensure your bowling ball complies with the new three ounce of static weight rule for USBC certified competition.

8. **Will I have to buy a new ball if I have a balance hole in my existing equipment?**
   No. While USBC is eliminating balance holes on August 1, 2020, at the same time the static weight allowance is increasing to three ounces in all directions. Many weight holes were added to existing balls to meet the one-ounce specification for side, finger and thumb weight. If the hole is plugged, it should be legal to use in USBC certified competition within the new specification limits, in most cases.

9. **What is the timeframe for me to be able to correct my bowling balls to comply with the new rules?**
   The new three-ounce static weight rule is effective January 1, 2020 and then balance holes are being eliminated from competition on August 1, 2020, giving all consumers with bowling balls that have balance holes seven months to work with their pro shop professionals to correct their equipment.

10. **If I plug a balance hole I currently have, how will my ball roll different?**
    It may vary based on the layout chosen by you and your pro shop professional. In general, your ball should go longer before it starts to hook.

11. **Today if I purchase a bowling ball and the reaction isn't what I expected, I can have a balance hole drilled to enhance the reaction. What other options do I have now?**
    USBC recommend consulting with your pro shop professional to determine the next steps as all bowling balls are different. Working with your pro shop professional to determine when to utilize specific equipment will help to ensure you have a positive experience in bowling.

12. **I run a tournament that starts in July and runs through the end of August 2020. With the balance holes being eliminated on August 1, 2020, can I implement a rule that says no balance holes will be allowed for balls used in the tournament?**
    Yes, it would be permissible to implement such a rule, so every participant is bowling under the same conditions.

13. **How will I know if plugging my balance hole will meet the new three-ounce rule?**
Using the weight removal chart and determining what size diameter hole and how deep it was drilled, will tell your pro shop professional how much weight was originally taken out. USBC suggests consulting with your pro shop operator to determine what additional changes are needed, should plugging the hole make your ball illegal. Most layouts today would not put you in jeopardy of that.

14. **I see there are requirements for how my ball is plugged. How do I know the density of my ball plug?**
The new density specification is a manufacturing specification for ball plug materials approved by USBC. All USBC Approved Ball Plug materials meet these requirements already. Your pro shop professional should be aware and use one of the approved ball plugs. To verify, you can consult the USBC Approved Ball Plug List on the Equipment Specifications Page for approved ball plug materials.

15. **Eliminating the balance holes seems like a huge change. How is this in the best interest of bowling?**
While the elimination of balance holes may seem extreme to some, it will help maintain the playing environment by reducing overall hook by approximately two boards, our research has shown. This continues the path of moving the bowlers slightly further outside as the game was once played. The sustainability and integrity of the current environment long-term is the chief concern and this change is supported by that.

16. **If there are no balance holes, why is a rule being implemented that you cannot change static weight during competition?**
Static weight still can be altered by drilling gripping holes deeper. This new rule will ensure that once competition begins, no changes to the equipment can be made that may alter the performance of the equipment in any way.

GRIPPING HOLES

1. **How will the change in gripping holes affect me?**
Effective August 1, 2020 there can be up to five holes for gripping purposes and all holes **must** be used on every delivery during USBC certified competition. A gripping hole is a gripping hole. An unused hole is a balance hole, which are no longer allowed.

2. **How does this gripping hole rule differ from the present rule?**
On May 7, 2014 USBC announced it was modifying the rule on bowling ball gripping holes. It clearly stated:

Holes or indentations for gripping purposes shall not exceed five and shall be limited to one for each finger and one for the thumb, all for the same hand. The player is not required to use all finger holes in any specific delivery, but they must be able to demonstrate, with the same hand, that each gripping hole can be simultaneously used for gripping purposes. Any thumb hole that is not used for gripping purposes during the delivery would be classified as a balance hole.

Since the balance hole is no longer allowed, this rule will be removed as the intended purpose of it is no longer valid. In addition, USBC made one other announcement as it pertained to specifications regarding gripping holes and layouts as well as an interpretation.

Gripping hole announcement
Gripping hole layout interpretation

These too, will be removed on August 1, 2020 when the new gripping holes rule goes into effect.

3. **What if I don't use my thumb, but my ball has a thumb hole drilled in it?**
   All gripping holes must be used on every delivery. If you aren't going to use your thumb in the ball for gripping purposes on every delivery, you would need to plug the thumb hole. The ball would then have to meet the new static balance requirements of three ounces of imbalance in any direction.

4. **What if I don't use a thumb for my strike ball but use my thumb for my spares, do I have to throw two different balls?**
   Yes, for your equipment to comply with USBC playing rules. In this case your strike ball cannot have a thumb hole. If you choose to put your thumb in the ball for your spares, you will need to have a different ball from your strike ball where you don't use your thumb.

5. **Can I drill a hole to grip the ball with my opposite (non-delivery) hand?**
   No. All gripping holes must be used by the fingers/thumb on the same hand.

6. **Am I required to drill a thumb hole?**
   If you aren't using the thumb hole for gripping purposes on every delivery, you're not allowed to have a thumb hole. If a bowler does not use a thumb hole, there must be a scribed or engraved "+" near the center of the palm to indicate the grip orientation. The ball must be delivered in the marked orientation (i.e. palm must cover the "+").

7. **Can I drill a thumb hole and cover it with my gripping hand?**
   No. The thumb must be inserted into the thumb hole for gripping purposes on every delivery.

8. **Can I take my thumb or a finger out to shoot a spare?**
   No. All gripping holes must be used on every delivery.

9. **Are vent holes and "mill" holes still allowed?**
   Yes

OIL ABSORPTION

1. **How will the new oil absorption specification affect existing coverstocks?**
   All USBC approved bowling balls are grandfathered in for use, indefinitely.

2. **How does this new oil absorption measurement impact the USBC new ball approval process?**
   Effective August 1, 2018 all manufacturers will be required to submit oil absorption data on the updated USBC Ball Application Form. The information will be submitted along with previous requested data, such as ball color, name, and coverstock type.

3. **What is the reason the oil absorption specification won't be implemented for two years?**

USBC wants to work with the equipment manufacturers to help improve the process over time. By allowing this window, USBC can share data, identify areas of concern, and adjust (if necessary) to improve the standard operating procedure (SOP). In addition, each company then will have a chance to work toward adjusting their coverstock technology and product lines and tighten up their standard deviation as they prepare for the specification changes.

4. **What is standard deviation, and how does that apply to this?**
The standard deviation is a measurement that is used to quantify the amount of variation of a set of data values. A low standard deviation indicates that the data points tend to be close to the mean (also called the average) of the set, while a high standard deviation indicates that the data points are spread out over a wider range of values.

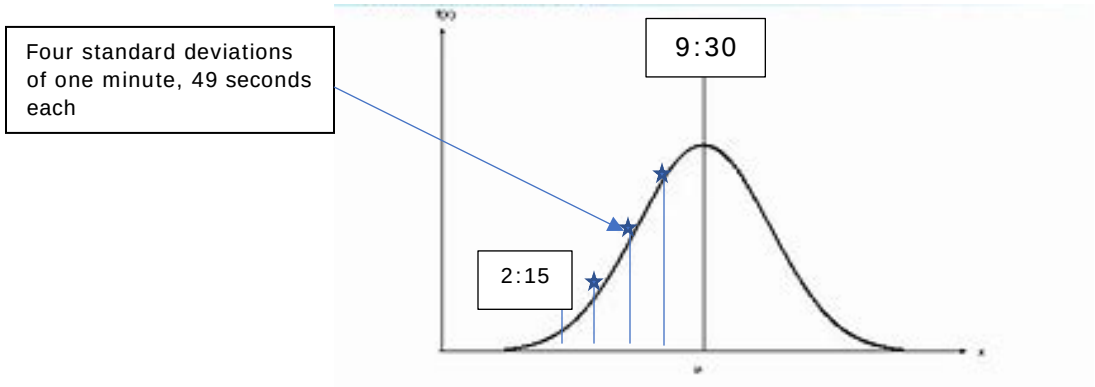
   For USBC's oil absorption test, the current standard deviation was based on measuring 60+ balls from one ball model. Other ball models will have their own standard deviation which can be larger or smaller. USBC will be using a standard deviation of one minute, 49 seconds (1:49), and the mean (or average) is nine minutes, 30 seconds (9:30).

   Manufacturers are allowed four standard deviations which on the low end of the bell curve equates to approximately two minutes, 15 seconds (2:15). Therefore, when measuring multiple bowling balls for approval, if a bowling ball falls below the average, USBC will require additional balls to test so that it can determine if a ball model will fall below the new specification of two minutes, 15 seconds (2:15) when testing more bowling balls of the same model.

   As manufacturers shrink their standard deviation, they will be able to target closer to the specification. Thus, producing bowling balls that absorb oil on a more consistent basis, regarding how fast they absorb oil.

5. **What is the reason for the oil absorption specification being set at no lower than two minutes, 15 seconds (2:15)?**
Today, the lowest approved ball is two minutes, 38 seconds (2:38). There have been no submitted ball samples for approved models that have fallen below two minutes, 15 seconds (2:15), since USBC started testing for oil absorption (approximately 800 balls to date).

   In manufacturing, there will be variances in production and a bell curve (shown below) defines an acceptable level of variance. The numbers are based on this idea; By measuring multiple bowling balls within the same ball models, USBC found a typical standard deviation for oil absorption in ball manufacturing to be one minute, 49 seconds (1:49).



USBC also measured 558 bowling balls across the spectrum of all different brands and models and found a portion of them fell below nine minutes, 30 seconds (9:30). When you multiply the four standard deviations of one minute, 49 seconds (1:49) you get seven minutes, 16 seconds (7:16). Then subtract that from the average nine minutes, 30 seconds (9:30) and you get two minutes, 14 seconds (2:14).

The result is USBC's new lower limit specification for oil absorption, rounded up by one second to two minutes, 15 seconds (2:15).

To meet USBC's oil absorption specification, the average oil absorption time for the model must remain 2.5 standard deviations above two minutes, 15 seconds (2:15). For USBC's observed manufacturing variance this relates to an oil absorption time of six minutes, 46 seconds (6:46) and a non-conformance rate of 0.6%. If the average oil absorption time fluctuates up and down from batch to batch (over a period of time), the ball model's standard deviation will increase and could risk falling outside of specifications.

To ensure that a model remains within specifications the model should target an average of 4 standard deviations over the specification limit. According to USBC's observed standard deviation four standard deviations over the specification limit is nine minutes, 30 seconds (9:30). Therefore, additional samples are required for balls measured lower than nine minutes, 30 seconds (9:30).

6. **What does USBC mean by non-conformance rate?**
The non-conformance rate of 0.6% refers to when the ball falls below the specification. There may be instances where balls being submitted for approval fall below the specification of two minutes, 15 seconds (2:15).

That is why additional testing for balls below the nine minutes, 30 seconds value (9:30) are required. This starts with two original test balls, with eight additional being sent if below the nine minutes, 30 seconds (9:30), If the average of the first 10 balls is below nine minutes, 30 seconds (9:30), then 24 additional are sent for a total of 34 balls. 99.4% of the ball's distribution must be above two minutes, 15 seconds (2:15) allowing for no more than 0.6% non-conformances.

If a manufacturer can improve their process control, they will be able to target a value below the nine minutes, 30 seconds (9:30) average and produce faster oil absorbing balls. If their process does not fluctuate up and down from batch to batch, they will be able to target six minutes, and 46 seconds (6:46). If their standard deviation is larger, they will have to target above the nine minutes, 30 seconds (9:30) to ensure that no more than 0.6% fall below the two minutes, 15 seconds (2:15) specification limit.

7. **How many current balls will be impacted by the new oil absorption specification?**
There have been no submitted ball samples for approved models that have fallen below two minutes, 15 seconds (2:15), since USBC started testing for oil absorption (approximately 800 balls to date).

From those 800 bowling balls, it can be shown that approximately 12% of bowling balls currently being submitted for approval are measured with times of less than six minutes, 46 seconds (6:46). The current fastest oil absorption time for an approved reactive resin bowling ball measured is two minutes, 33 seconds (2:33). The current slowest oil absorption time for a reactive resin bowling ball measured is two hours, 28 minutes, and

37 seconds (2:28:37). Though, most reactive balls fall within the range of three minutes to one hour.

8. **Why is there not a specification for the maximum time it takes a bowling ball to absorb oil?**
   Because that would mean various urethane and polyester bowling balls would no longer be allowed in USBC certified competition. Our research and efforts are focused on the other end of the spectrum, thus why USBC set a lower limit specification.

9. **What does the new oil absorption specification mean for bowlers?**
   Simply put, you will be able to continue to purchase high-performance bowling equipment. There really is no immediate impact for the bowlers. There is room for improvement from the manufacturers which would allow them to tighten their standard deviation and release bowling balls with faster oil absorbing rates, just not below our new specification.

   If the specification was not introduced, you would continue to see bowling balls absorb oil even faster. This could require additional expenses to maintain the ball's performance. The need for this should be slightly reduced, so that your equipment's performance holds up slightly longer. You may find yourself moving your feet slightly closer to the outside so that you can better line up on the lanes to hit the pocket. There should be no effect on your scores directly.

10. **Why does USBC believe that limiting technology is the right direction for bowling?**
    The USBC Equipment Specifications and Certifications team's ongoing commitment is to stay informed and analyze changing products, and thoroughly test new products that could impact the sport. Through the Bowling Technology Study of 2018, USBC did extensive research and communicated with bowling's stakeholders for nearly three years to determine if the current direction of technology was in the best interest of bowling.

    Technology advancements in the bowling ball, the lanes, and oil conditions have made an impact on the sport during the last several decades, and recent studies by the United States Bowling Congress Equipment Specifications and Certifications team has shown the interaction of these factors are progressively growing out of balance, creating an integrity risk for the sport.

    While bowling ball technology has advanced, the physical playing field remains mostly unchanged.

    The volume of oil used on the lanes has nearly tripled over the last four decades. The combination of advancing ball technology and higher revolution bowling style is disrupting the oil pattern quicker.

    It has led to the lanes transitioning much faster, with less consistency and greater manipulation. All of this threatens the integrity of the sport. The sustainability and integrity of the current environment over the long term is the chief concern for the future.

    The technology of the bowling ball in the hands of the consumer dictates how much oil is on the lane and the levels of oil is increasing to the point of being unmanageable.

    How has the competition been impacted? When lanes transition, making the correct moves and quality shot making may determine the winner. However, in this environment, finding the right ball to match the condition can be more important than execution skill.

The sport is being changed by technology, and it's important to determine if such changes are lessening the importance of quality shot making and bowler's skill.

Our sport is at a crossroads, as "we" are running out of lane, literally.

If this escalation continues, what will the sport look like 10 or 20 years from now? As the National Governing Body, USBC has a responsibility to look ahead and make the hard decisions now to ensure a future for the sport for decades to come.

Through the research and data, the USBC Equipment and Specifications Committee has made necessary decisions in the best long-term interest of the sport.

BALL CLEANERS

1. **I have a ball cleaner that has the USBC "Approved Anytime" logo on it. Can I still use the cleaner during competition?**
   No, after August 1, 2019, only a dry towel can be used to clean your bowling ball during competition.

2. **I still see there are products with the USBC "Approved Anytime" logo on it. Why is that?**
   USBC communicated in advance of the rule change with bowling ball cleaner companies about our intent, but they were not officially notified until the rule change was announced. The rule was put in place for August 1, 2019 to allow time for everyone to cycle through their products. Some will do that faster than others.

3. **What if the lane or center equipment damages my ball?**
   If there is a belt mark or other substance that can't be removed with the dry towel alone, you may contact the league or tournament official about using a cleaning product.

4. **Can I clean my ball with an approved cleaner during practice?**
   You can clean your ball with an approved cleaner during practice unless otherwise specified by event rules.

5. **Can I clean my ball with an approved cleaner between games during certified competition?**
   You cannot clean your ball between games, as the competition has started.

6. **Can I clean my ball with an approved cleaner between tournament squads?**
   You can clean your ball with an approved cleaner between squads unless otherwise specified by event rules. "During competition" should be defined by events to include or exclude practice and time between competition (where applicable).

7. **Since I can only use a dry towel to clean my ball, what if it was used with a liquid cleaner prior to competition?**
   Yes, you can use that towel if the towel is dry at the time of use during competition.

Should you have additional questions not covered above, please direct those to specifications@bowl.com.