



BOWLING TECHNOLOGY STUDY CONCLUSION

RESEARCH SUMMARY AND SPECIFICATION UPDATES

A **Future** FOR
THE **Sport**

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.

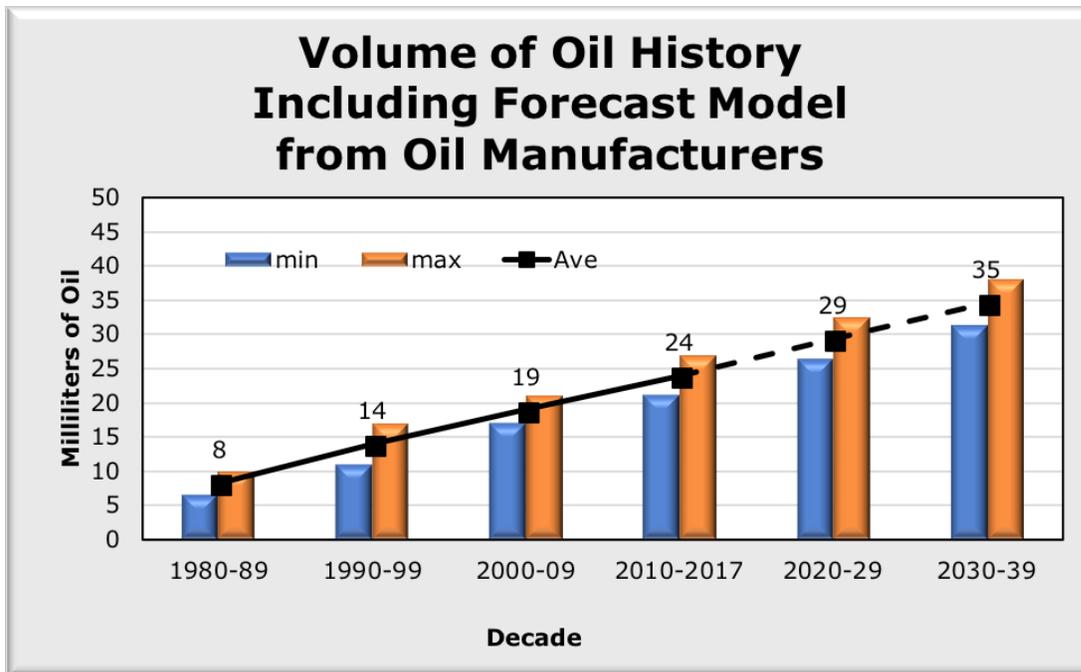


chart 1

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 are 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 the 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, we have a responsibility to look ahead and make the hard decisions now to ensure a future for the sport for decades to come.

When USBC started the Bowling Technology Study nearly three years ago, we set out to research the state of our sport and how technology is impacting the game. Through the research and data, the USBC Equipment and Specifications Committee has made necessary decisions in the best long-term interest of the sport.

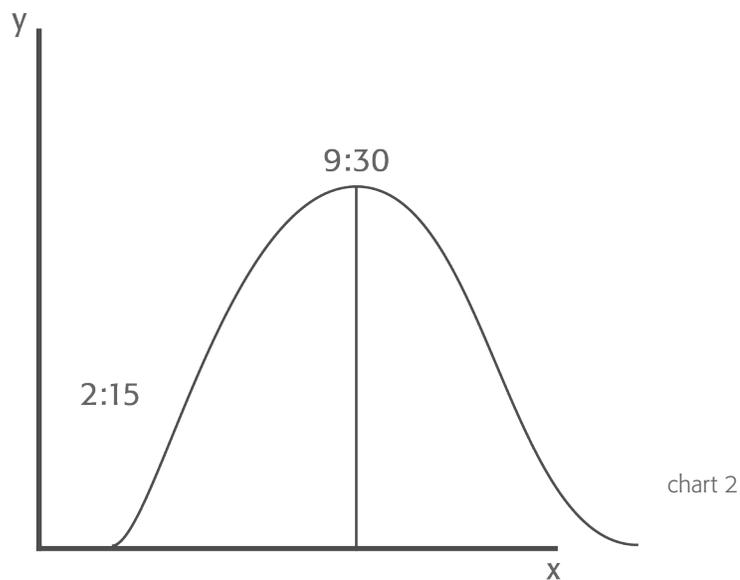
Oil Absorption

Effective August 1, 2018, all bowling ball manufacturers will be required to submit oil absorption data as part of the USBC bowling ball approval process. USBC began communicating in June 2017 with bowling ball manufacturers regarding a new standard operating procedure (SOP) to determine the rate at which balls absorb oil. USBC has been working together with the manufacturers since that time to perfect the process.

The final SOP will be provided to the manufactures after the USBC Convention, giving everyone more than two years before the changes go into effect.

Effective August 1, 2020, USBC approved balls must meet the specification requiring no sample ball has an oil absorption rate under two minutes and 15 seconds (2:15), and must adhere to the 0.6% non-conformance rate.

In addition, any balls where the model average is under nine minutes and 30 seconds (9:30) will require additional balls to be tested.



Every bowling ball in every bowler’s bag, including the bowling balls yet to be produced up to July 31, 2020, will be allowed for use in USBC certified competition.

No ball will be deemed illegal due to oil absorption.

What does this new specification mean to the consumer? Manufacturers will not be able to produce bowling balls beyond the new specification, which is one component of slowing the trend of oil volume increases. This change will not impact current ball covers but sets an important boundary for future coverstocks.

During USBC’s research, it would test more than 500 balls for oil absorption.

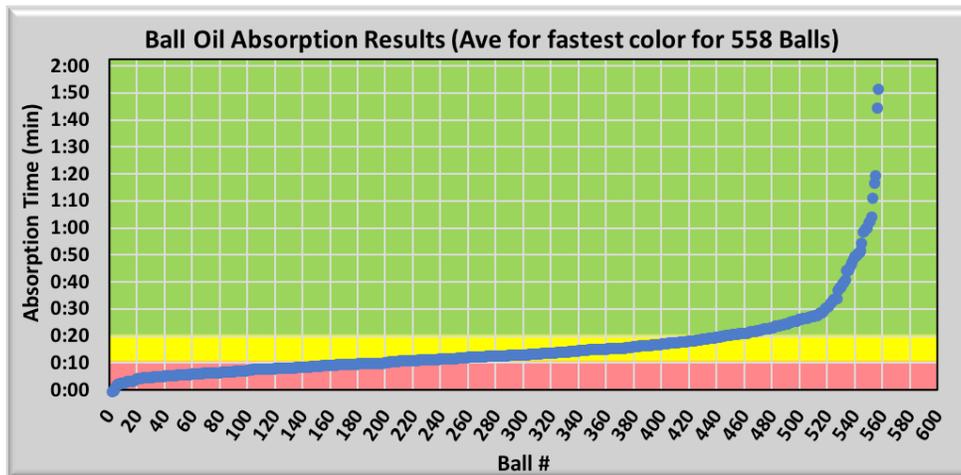


chart 3

As seen in the above chart, 29% absorbed the oil in less than 10 minutes, 49% in 10-19 minutes, and 22% of the balls tested absorbed the oil in 21 or more minutes.

What are the results of these changes? Bowlers will find themselves starting a few boards further to the outside and the patterns will hold up a little longer, requiring less moves inside over the course of a league or tournament.

The speed of pattern transition will not increase as fast. The goal is for patterns to maintain their intended design longer over the course of an event. It is not intended to be a noticeably significant change today, but rather a step to protect the future.

To be clear, the rationale for these changes have nothing to do with scoring. USBC does not believe overall scores will be impacted by this change. The research and new specifications were always about the oil patterns and protecting the integrity of the playing field environment.

Balance Holes

Throughout the bowling technology study, it was apparent the flare potential and, thus, the amount of hook displayed by bowling balls was growing over time.

Balance holes, also known as weight holes, were originally intended to help correct the static imbalance of a bowling ball so it would comply with USBC's one-ounce rule in any direction (finger, thumb or side).

Over the years, the balance hole has also evolved into a way to create added hook for bowlers. As shown through the research, balance holes can add up to 0.021 RG Differential to a given bowling ball.

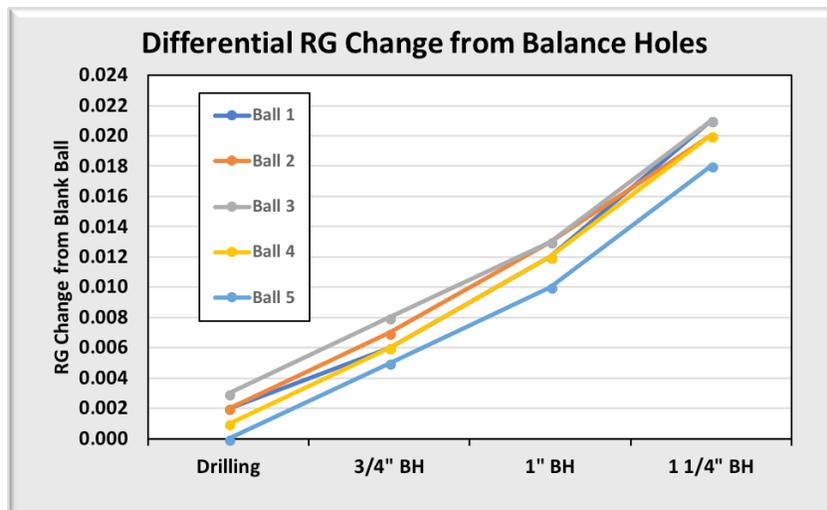


chart 4

No longer a correction hole, this practice became fundamentally altering the dynamics of the ball. Placing the balance hole in coordination with certain layouts will deliver additional hook beyond the originally intended USBC manufacturing specification limit for Differential RG.

In addition to the oil absorption specification, the USBC Equipment and Specifications Committee has added several new rules and changes around the balance hole to help maintain the intended USBC specification limit for Differential RG.

Effective January 1, 2020, the new rule will allow for bowling balls (for balls weighing more than 10 pounds) to have up to three ounces of static side, thumb and finger weight, up from one ounce. The changes will eliminate the need for a balance hole to correct the static imbalance. The current rule of no more than three ounces of top or bottom weight, after drilling, will remain in effect.

Effective August 1, 2020, all balance holes will be eliminated and deemed illegal for use in USBC certified competition.

USBC did extensive research to better understand the impact these rule changes will have on the equipment and their performance for USBC's members.

In the chart below, the black lines are legal balls today with balance holes and the blue lines are comparable examples of balls with no balance holes that have up to three ounces of static weight (which is outside the current specification but will be legal with the new rules). You can see balance holes have a more significant impact on hook than static weight.

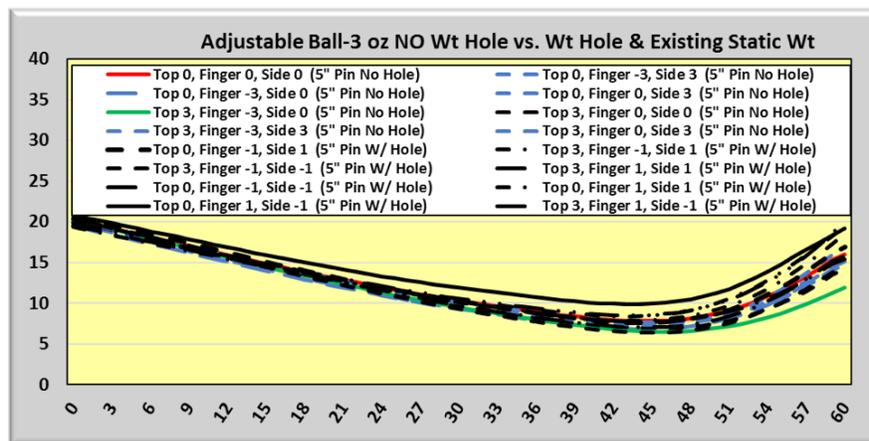


chart 5

Balls with balance holes hook more than the balls without balance holes.

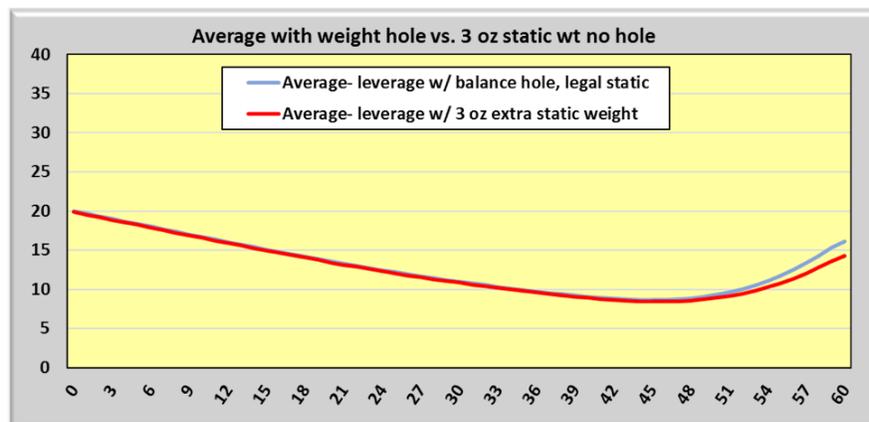


chart 6

When looking at the average of all tests, balls with balance holes hooked nearly two boards more than the balls without balance holes.

Pro shop operators still will need to weigh equipment for customers using a dodo scale to ensure, with the given layout choice, a ball stays within the three-ounce limit for side, thumb, finger, top and bottom weight, since balance holes have been eliminated.

The elimination of balance holes may seem extreme to some, but it will help maintain the playing environment by reducing overall hook potential, as USBC research has shown, and continue the path of moving the bowlers slightly further outside.

How will this impact the marketplace? While bowlers certainly could begin purchasing and request bowling balls without balance holes immediately, it isn't necessary until January 1, 2020. At that point, the rules for static weight will take effect and customers will be required to work with their pro shops over the next seven months to plug their balance holes to comply with the rule eliminating balance holes taking effect August 1, 2020.

One additional change effective August 1, 2020, is that a bowler cannot change static weight during competition (i.e. drill grip holes deeper). The rule will be enacted to maintain the integrity of the competitions. While a new bowling ball may be drilled during a competition, if the league or tournament rules allow it, an existing ball may not be adjusted once used in the competition.

The key item to note about the balance hole specification changes is that ALL bowling balls impacted by the changes CAN be used in competition. There should be no fear by bowlers about purchasing a product or owning a product that might be deemed illegal in the future. Simply work with your pro shop professional to plug the balance hole after January 1, 2020 – July 31, 2020 before the new rule goes into effect.

Lastly, effective August 1, 2020, there can be up to five holes for gripping purposes and all holes must be used on every delivery during competition.

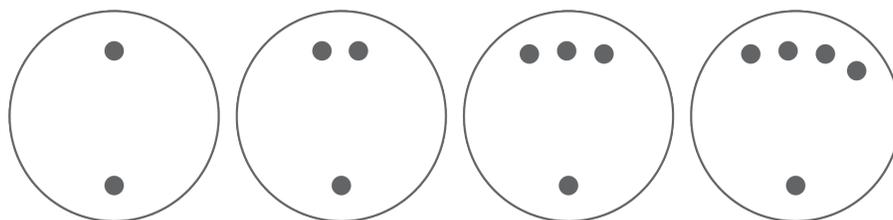


image 1

Example of up to five holes used for gripping purposes.

By eliminating balance holes, if a bowler were to throw a bowling ball that has three holes and uses just two of the holes for gripping purposes, then the third hole would act as a balance hole and be deemed illegal. This will eliminate the need for the previous rules as it relates to the triangle grip and the Wi grip.

USBC modified the specifications on bowling ball gripping holes in 2014, stating any thumb hole not used for gripping purposes during the delivery would be classified as a balance hole.

Also, any bowler choosing to not have a thumb hole will be required to mark either by scribe, engraver or tool their intended grip center with a "+" mark. The marking of this will dictate that they may only use the bowling ball by placing their fingers in the appropriate holes with the same gripping orientation each shot. (i.e. palm must cover the "+").

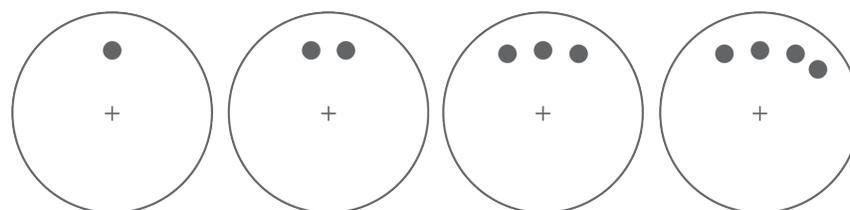
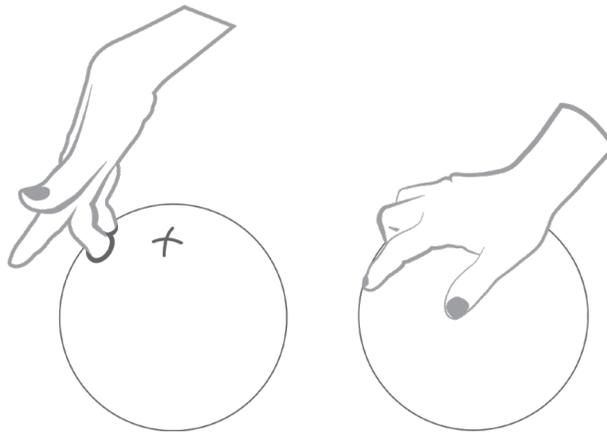


image 2

Example for those who do not use a thumb hole.



In addition, effective August 1, 2019, only a dry towel can be used to clean bowling balls during competition. Liquid cleaners of any kind will only be allowed before or after competition.

The use of cleaners during competition has been difficult to police locally and this aligns with other proposed changes to ensure equipment is not manipulated during competition. More and more approved cleaners are being marketed to enhance the ball's performance, but this was never the original design intent for bowling ball cleaners.

Conclusion

The sustainability and integrity of the bowling environment is the chief concern, now and in the future.

The USBC Equipment Specifications and Certifications team's ongoing commitment is to stay informed, analyze changing products, and thoroughly test new products that could impact the sport.

The various rules and equipment specification changes did not come lightly. Nearly three years of research, data and feedback from bowling's stakeholders went into the Bowling Technology Study presented to the USBC Equipment and Specifications Committee.

The USBC Equipment and Specifications Committee used its delegated authority from the USBC Board to make the changes. The board supports the decisions.

The work done by all groups will help ensure bowling's future.