

Equipment Specification Research Study and Updates

2018 Tradeshows

Research Summary

- July 2015, ongoing
 - Cores
 - Coverstocks
 - League simulation



RG and Differential RG Findings

- 2 most hook
 - High diff RG (.060, .080)
- 2 least hook
 - Low diff RG (both .030)
- Difference
 - 3 boards
 - 1.3 degrees of entry angle





Balance Hole (BH)

- Pro Shop suggestion
- Gripping holessmall effect on differential RG
- Balance holes added .018" -.021" to the differential RG





Balance Holes

- Intended to achieve legal static weight
- Being utilized to strengthen reaction
- What if balance holes were removed?







What happens without balance holes?



Bowler Test 5" Pin, 3 oz. Static Weight Outside Specs



• Red line = baseline

- 0 static weight
- no weight hole
- Blue = 3 oz static weight
 - outside spec
- Green = 3 top, 3 thumb, 0 side weight
 - Least hooking



Bowler Test 5" Pin, Legal Today vs. 3 oz. Extra Static Weight



• Red line = baseline

0 static weight

no weight hole

- Black = legal balls
 - Most with balance hole
- Blue = 3 oz static weight

outside spec

- Green = 3 top, 3 thumb, 0 side weight
 - Least hooking

Conclusion from Balance Hole Testing

- Balance holes create extra flare and hook
- This effect forces bowlers to start further inside on the lane to hit the pocket
- Balls with balance holes hooked approximately two more boards
- Key Takeaway Removal of balance holes has most impact on reducing hook potential

A Future FOR THE Sport

Oil Absorption Test Equipment



Oil Absorption Results

Ball Oil Absorption Results (Ave for fastest color for 1105 Balls) 2:20 2:10 (ui 2:00 1:50 1:40 1:40 bsorption Time 1:30 1:20 1:10 1:00 0:50 0:40 0:30 ∢ 0:20 0:10 0:00 Ball # United States Bowling Congress

 Average oil absorption time for 3 drops in fastest color

- Fastest 2:33
 (2 min 33 sec)
- Specification –
 2:15 (2 min 15 sec) or longer.

Oil Absorption League Simulation Study



Oil Absorption League Simulation Study 10-Bowler Test over three days

DAY

- 1. Slow oil absorption balls (average. 27.5 min)
- 2. Fast oil absorption balls (average. 6.5 min)
- 3. Slow oil absorption balls 80% oil volume



- Scoring
- Starting Positions
- Moves
- Oil depletion

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Day	Equipment Type	Group Average Score
1	Slow Oil Absorption, Additional Side Weight.	209.0
2	Fast Oil Absorption, Additional Side Weight.	206.8
3	Slow Oil Absorption, with 80% oil volume.	208.2

***** No significant difference in scoring



Scoring

 Starting Positions

- Moves
- Oil depletion

Day	Equipment Type	Starting position	Starting Target
1	Slow Oil Absorption, Additional Side Weight.	29.8	16.6
2	Fast Oil Absorption, Additional Side Weight.	33.1	18.4
3	Slow Oil Absorption, with 80% oil volume.	30.5	16.6

Fast oil absorption equipment starts further inside.



- Scoring
- Starting Positions
- Moves
- Oil depletion

Day	Equipment Type	Position Moves	Target Moves
1	Slow Oil Absorption, Additional Side Weight.	7.3	3.9
2	Fast Oil Absorption, Additional Side Weight.	9.2	5.8
3	Slow Oil Absorption, with 80% oil volume.	7.9	4.8

Fast oil absorption equipment causes bowlers to move more.



House Pattern for 10 Bowler test- 8 ft



- Day 1: Slow Oil Absorption, No Balance Hole.

- Day 2: Fast Oil Absorption, No Balance Hole.

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– – – Day 2: Fast Oil Absorption, No Balance Hole.

Day 3: Slow Oil Absorption, No Balance Hole, 80% Oil. – – – Day 3: Slow Oil Absorption, No Balance Hole, 80% Oil.

- Tapes from 8 ft down-lane
- Slow Oil Absorption Balls (Day 1)
- Fast Oil Absorption Balls (Day 2)
- Slow Oil Absorption Balls with 80% oil (Day 3)

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Day 3- After- Slow OA- no hole- 80% oil-8ft

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Conclusion from League Simulation Study

- Oil absorption had no significant impact on scoring.
- Fast oil absorption equipment makes bowlers start further inside.
- Fast oil absorption equipment causes bowlers to move more.
- Oil depletion occurs where the balls touch the lane.
- Starting deeper inside the lane, and moving more often deteriorates lane conditions quicker.



Oil Volume on the Lane

Oil Volume has Increased (Oil Manufacturers Data)



Summary

- To protect bowling's future
- USBC is eliminating balance holes Effective Aug 1, 2020
- Setting a new specification for oil absorption
- 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



