

WATER BOTTLE ADVISOR

Product Testing Protocol

Version 1.0

How Water Bottle Advisor screens, uses, measures and documents products before any score is calculated.

Hands-on use • Repeatable measurements • Category-specific protocols

PUBLIC METHODOLOGY

This document describes how evidence is collected. Scoring formulas, category weights and recommendation rules belong to the separate WBA Score System.

PROTOCOL MAP

Contents

01	How the protocol works Workflow from safety screen to evidence recording
02	Safety gate Material disclosure and eligibility before testing
03	30-day real-world use The highest-priority lived-experience test
04	Core measured tests Insulation, leakage, drinking, cleaning and lid durability
05	Supporting tests Opening, portability, fit, quietness and dishwasher validation
06	Specialized protocols Shaker, hydrogen, smart and non-insulated bottles
07	Evidence and scoring What is recorded before the score model is applied

Protocol principle

Manufacturer information is reference material. A claim is not treated as a test result unless WBA has actually performed the relevant check.

WORKFLOW / EVIDENCE FIRST

1. How the protocol works

Every bottle is used in real life and put through repeatable performance, usability, cleaning and durability checks. Measurements and observations are linked to one specific product before any score is calculated.

Stage	What happens
Step 01 - Safety screen	Review materials, chemical disclosures and official documentation before the bottle enters testing.
Step 02 - Measure	Verify weight, height, mouth diameter and base diameter independently.
Step 03 - Test	Run the relevant thermal, leak, lid, cleaning and category-specific protocols.
Step 04 - Carry	Use the full bottle during walking, desk work, driving and exercise.
Step 05 - Stress	Complete repeated lid cycles and 30 consecutive days of daily use.
Step 06 - Record	Store raw measurements and observations before applying the score model.

Evidence first. Scoring second.

The testing protocol explains how evidence is collected. The WBA Score System is a separate layer that explains formulas, weights, score labels and recommendation rules.

BEFORE PURCHASE

2. Safety gate

Safety screening happens before a product becomes eligible for a normal Water Bottle Advisor review. The process checks official product information, manuals, packaging, FAQs, material statements and - when necessary - direct clarification from the brand.

No safety clearance, no testing and no review.

If a product fails the required criteria, or there is not enough information to confirm them, it does not enter the normal WBA testing process.

Required material disclosures

For relevant food-contact materials, WBA looks for confirmation that the product is free from:

- BPA, BPS and BPF
- Other hazardous bisphenol substitutes
- PFAS

- Phthalates, including DEHP, DBP, BBP, DIBP, DINP and DIDP

When information is missing

“Not disclosed” is not treated as the same thing as “confirmed safe.” If the official product page, manuals, packaging, FAQs and material statements do not answer the question, the brand is contacted for clarification.

Lead is reported separately

Lead does not automatically make a vacuum-insulated bottle ineligible because some constructions use a lead-containing sealing material. WBA investigates and reports whether the bottle is lead-free, uses lead, or remains undisclosed after brand contact. Confirmed lead-free construction can receive additional credit in the WBA Score System.

HIGHEST-PRIORITY TEST

3. The 30-day real-world use test

Every newly purchased bottle becomes the primary bottle for 30 consecutive days. It is used throughout normal routines rather than kept on a shelf or reserved for a short laboratory check.

Part of the 30-day test	Method
Rotation stop	The new bottle replaces the usual favorites so it has to stand on its own.
Real scenarios	Use includes work, driving, walking, commuting, workouts, regular time at home and travel when applicable.
Small details	Comfort, noise, grip, carry feel and day-to-day annoyances are observed over time.
Final impression	At the end of the month, WBA records whether the bottle actually fits real life - not just a laboratory checklist.

Why this matters

Some problems only become obvious after repeated use: awkward handles, noisy parts, grip issues, annoying cleaning steps, poor cup-holder fit, inconvenient opening, or a drinking experience that becomes irritating over time.

PRIMARY PERFORMANCE CHECKS

4. Core measured tests

After real-world use, WBA relies on repeatable measured checks for the performance areas that matter most.

4.1 Insulation and condensation

Check	Protocol
Preparation	Bottle starts at room temperature and is filled to full capacity. It is not pre-cooled or pre-heated. The lid remains closed for the entire test.
Cold retention	Start water temperature: 1°C. Measure again after 24 hours without opening the lid.
Hot retention	Start water temperature: 88°C. Measure after 12 hours only when hot drinks are officially allowed.
Reading	Open and measure immediately. The protocol uses a digital thermometer with approximately ±0.5°C accuracy.

Check	Protocol
Condensation	Fill with 1°C water and inspect the exterior for 30 minutes. Visible droplets outside the bottle count as a fail.

4.2 Three-stage leak test

Check	Protocol
Fill volume	Approximately 200-300 mL of water.
Stage 1	Place the sealed bottle upside down for 5 minutes over a paper towel.
Stage 2	Place the bottle on its side for another 5 minutes over a clean paper towel.
Stage 3	Perform 20 vigorous shakes.
Pass/fail rule	One escaped drop is enough to fail the leakproofness test.
After test	Water is remeasured and the bottle is weighed after testing.

4.3 Drinking comfort, flow and mouthpiece hygiene

Drinking comfort is based on repeated real use rather than a single sip. WBA considers lip fit, flow control, suction force, mouthpiece shape and whether the user naturally reaches for the bottle.

Observation	Interpretation
Comfortable	Natural lip fit, controlled flow and no excessive suction.
Uncomfortable	Poor flow, excessive suction force or an awkward mouthpiece shape.
Mouthpiece coverage	The drinking surface is recorded as fully covered, partially covered or exposed.

4.4 Timed cleaning test

Stage	Protocol
Start	The stopwatch begins when disassembly starts.
Cleaning	Every removable part, gasket and straw is cleaned and rinsed.
Tools	Consistent kit: long narrow bottle brush, straw brush and mild dish soap.
Parts count	Every component removable without damaging the bottle is counted.
Finish	The timer stops only after the bottle has been reassembled and is ready to use again.

4.5 Lid durability - 500 cycles

Check	Protocol
Cycle count	500 complete manual operating cycles performed across several days.
Complete cycle	Open lid, open cap, press button where present, close cap and close lid.
Logging	Every completed cycle is recorded rather than estimated.
Inspection	Check springs, buttons, breakage, wear and threading resistance before and after.
Result	Functional changes are recorded separately from cosmetic wear.

DAILY USABILITY AND MAINTENANCE

5. Supporting tests

These checks explain why one bottle feels easy to live with while another gradually becomes annoying, even when headline performance is similar.

5.1 Opening and one-hand operation

Check	Protocol
Preparation	Tighten the lid fully.
Dry-hand attempts	Three attempts with dry hands.
Wet-hand attempts	Three attempts with a wet hand.
Success criterion	Success on the first attempt matters.
True one-hand use	Open and close the drinking cap without using the other hand.
Partial result	Possible only with awkward grip repositioning.
Difficult opening	Failure on the first try, hand fatigue or pain indicates difficulty.

5.2 Weight, dimensions and fit

Measurement	Protocol
Empty weight	The empty bottle is weighed and compared with the manufacturer specification.
Height and mouth diameter	Total height and opening width are measured for storage, cleaning and ice access.
Base diameter	The base is measured and checked in real cup holders wherever possible.
Cup-holder probability	Narrow or tapered bases are more likely to fit; WBA does not claim that one bottle fits every vehicle.

5.3 Handle comfort and leverage

Check	Protocol
30-minute carry	Carry the full bottle by its handle for 30 minutes.
Comfortable	No discomfort during the carry.
Medium	Any mild discomfort.

Check	Protocol
Uncomfortable	Major discomfort.
Handle leverage	A rigid handle may help with opening. WBA attempts to unscrew the lid using the handle and records this separately from finger capacity.

5.4 Bottle quietness

Check	Protocol
Table test	Place the empty bottle on a hard surface and note whether the impact sounds sharp or muted.
Lid sound	Screw the lid on and off and note whether threads and cap sound loud, scratchy or subdued.
Bottom padding	Record silicone or padded bases because they can noticeably soften set-down noise.

5.5 Dishwasher validation

Check	Protocol
Eligibility	Only perform the test when the manufacturer says the bottle is dishwasher safe, following the stated instructions.
Cycles	Run 30 dishwasher cycles at 65°C.
Inspection	Monitor body, lid, seals and accessories.
Aftermath	Check for warping, coating wear, changes in fit and whether the product still functions as before.

PURPOSE-SPECIFIC TESTING

6. Specialized category protocols

Specialized bottles complete the applicable core checks above, then receive additional tests based on the task they were designed to perform.

6.1 Shaker bottles

Test element	Method
Preparation	Add 400 mL of 20°C water first, followed by 30 g of the same whey powder.
Movement	The same person performs consistent vertical shakes through approximately 30 cm of travel.
Checkpoints	Inspect and photograph the drink after 10 shakes and again after 20 shakes.
Clumps	Record remaining clumps, dry powder on the base and residue trapped near the lid.
Leakage	Run a separate vigorous 20-shake sealed test over a paper towel.

6.2 Hydrogen bottles

Test element	Method
Water	Use purified water with a target TDS below 10 ppm at approximately 20°C, filled to full capacity.
Measurement	Use a hydrogen water tester plus hydrogen test reagent.
Practical limits	Observed practical ceilings: approximately 1,600 ppb for the meter and 3,000 ppb for reagent drops.
Timing	Keep the bottle sealed during the generation cycle and begin measurement immediately after completion.
Battery	Charge fully, then run five complete generation cycles per day until the battery is depleted.
Certificates	Research independent reports for authenticity and contact the brand when documentation is unclear.

6.3 Smart bottles

Test element	Method
Reference measurement	Weigh the bottle before and after each drink. Treat 1 g of water loss as approximately 1 mL consumed.
Accuracy	Compare 20 drinking events across small, medium and large sips with the app's recorded intake.
Error metric	Calculate average absolute percentage error across successful measurements.
Reminders	Check 20 scheduled reminders for delivery within a two-minute window.
Synchronization	Run 20 synchronization attempts including app relaunches and Bluetooth reconnection.
Battery	Measure runtime from a full charge with reminders enabled and five sync sessions per day.

6.4 Non-insulated bottles

Test element	Method
Material	Observe odor, taste transfer, staining, discoloration and exterior comfort.
Structure	Track cracks, deformation, scratches, coating wear and changes after daily use.
Cleaning	Assess mouth opening, drying access, parts count and manufacturer-approved washing methods.
Handling	Interpret weight within the relevant capacity and material category.

RECORDING BEFORE RANKING

7. Evidence and scoring

Measurements and observations are stored before the scoring model is applied. The protocol is designed to keep raw evidence separate from the later ranking logic.

What this document is

A public description of how Water Bottle Advisor collects hands-on evidence.

What this document is not

It is not the WBA Score System. Score formulas, category weights, labels and recommendation rules are maintained separately.

Quick reference

Protocol	Reference
Real-world use	30 consecutive days as the primary bottle.
Cold retention	24 hours, starting at 1°C.
Hot retention	12 hours, starting at 88°C, only when hot drinks are allowed.
Leakproofness	Upside down 5 min + side 5 min + 20 shakes; zero-drop rule.
Cleaning	Timed full disassembly, washing, rinsing and reassembly.
Lid durability	500 complete manual operating cycles.
Handle comfort	30-minute carry with a full bottle.
Dishwasher	30 cycles at 65°C when manufacturer-approved.
Shaker	400 mL water + 30 g whey; inspect after 10 and 20 shakes.
Hydrogen	Purified water <10 ppm TDS; immediate post-cycle measurement.
Smart bottle	20 drinking events, 20 reminders and 20 sync attempts.

Water Bottle Advisor

Independent product testing focused on real use, repeatable measurements and transparent evidence.