SLIMCORK®

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Natural cork stopper developed by Reliable Cork Solutions. This summary brings together selected laboratory results, comparative mechanical testing, bottling trials and food-contact evidence. Results refer to the samples and configurations identified below; they are not universal guaranteed specifications.

Physical properties and capillarity

RCS-0972-2022: nominal size 44 × 24 mm, lot CRF 0421, class CAT I. Reliable Cork Solutions confirms this sample as Slimcork. Report dated 3 August 2022; client-supplied sample. Laboratory environment: 24 °C, 50% relative humidity.

Parameter	Reported result	Method / sample
Length	44.2 mm mean; 44.0–44.4 mm	NP ISO 9727-1 / n=50
Diameter	23.7 mm mean; 23.6–23.7 mm	NP ISO 9727-1 / n=50
Ovality	0.1 mm mean; 0.3 mm maximum	NP ISO 9727-1 / n=50
Moisture content	4.6% mean; 4.3–6.2%	NP ISO 9727-3 / n=50
Mass / apparent density	4.2 g / 215 kg/m³ mean	NP ISO 9727-2 / n=50
Apparent density range	165–300 kg/m³	NP ISO 9727-2 / n=50
Residual peroxide	0.0 mg/stopper, as reported	NP 4502 / 2 tests × 3 stoppers
Capillarity (RCS-0424-2023)	0.0 mm	ISO 9727-8 / n=13

Capillarity was measured on a separate 44 × 24 mm Slimcork sample, reported on 6 April 2023, at 21 °C and 51% relative humidity. The laboratory limit was ≤0.5 mm. This initial capillarity test is distinct from liquid progression during pressure testing or bottle ageing.

Laboratory acceptance benchmarks

LB SP01-1 (3 August 2022): length ±1.0 mm; diameter ±0.5 mm; ovality ≤0.5 mm; moisture 4.5–8.0%; apparent density 130–270 kg/m³. Acceptance is assessed under the laboratory sampling rules. In RCS-0972-2022, one moisture result was below the limit and two density results were above the limit; both test sections were rated Approved.

Extraction force and liquid sealing

Immediate extraction, identified in the reports as >1 hour, according to NP 2803-4. Laboratory acceptance interval: 15–40 daN, with sampling acceptance rules.

Report	n	Mean ± SD (daN)	Min–max (daN)	Outside limits
RCS-0972-2022	20	25 ± 3	19–30	0
RCS-0424-2023	24	21 ± 3	16–28	0

Both extraction sections presented here were rated Approved. RCS-0424 combines 12 wine-filled BG 1358 bottles and 12 empty BD V bottles. These are separate tests; their means should not be interpreted as a controlled comparison. SD = standard deviation.

Pressure testing: progression and through-leakage

NP 2803-5; 10 stoppers per report; nominal stopper size 44 × 24 mm; test tube diameter 18 mm. Liquid progression is the percentage of stopper length reached by the liquid. Progression of 100% denotes complete traversal and is counted as through-leakage.

Pressure (bar)	2022 mean / max progression (%)	2022 leaks (n/10)	2023 mean / max progression (%)	2023 leaks (n/10)
0	0.0 / 0.0	0/10	0.0 / 0.0	0/10
0.5	0.0 / 0.0	0/10	0.0 / 0.0	0/10
1.0	0.0 / 0.0	0/10	2.5 / 24.8	0/10
1.5	5.7 / 31.0	0/10	7.8 / 45.6	0/10
2.0	21.0 / 56.7	0/10	35.3 / 100.0	2/10

2022: RCS-0972-2022 (24 °C, 50% RH). 2023: RCS-0424-2023 (21 °C, 51% RH). The meaning of progression percentages was clarified by Reliable Cork Solutions; leakage counts follow the reports' >99.9% threshold.

For stopper diameters up to 25 mm, LB SP01-1 requires no leakage at 1.5 bar and permits a maximum of 30% leakage at 2 bar. Both tested samples met these criteria: 0/10 leaks at 1.5 bar and respectively 0/10 and 2/10 at 2 bar. Both sealing sections were rated Approved.

These results describe the laboratory tests. They do not establish a guaranteed operating pressure or suitability for sparkling wine.

Supporting mechanical and bottle-trial evidence

Comparative torsional testing

Four closure groups, 25 stoppers per group, nominal size 44 × 24 mm. NP 2803-6; 20 °C and 51% relative humidity. Values below are means ± standard deviations.

Closure group	Torsional moment (daN·cm)	Rupture angle (°)	Shear stress (daN/cm²)
Slimcork	29.5 ± 5.24	32 ± 8	10.8 ± 1.89
Natural Super/1st grade	28.5 ± 2.95	30 ± 5	10.4 ± 1.07
Filled-natural reference	26.1 ± 4.82	24 ± 5	9.4 ± 1.72
Micro-agglomerated reference	26.3 ± 0.94	69 ± 6	9.5 ± 0.33

Slimcork recorded the highest mean torsional moment and shear stress in the tested groups. The modest numerical advantage over the Natural Super/1st grade reference does not establish statistical superiority. See the Comparative Torsional Performance note for interpretation and reference-limit limitations.

Bottling trials: up to 12 months

Programme 26/3 assessed Slimcork 45 × 24 mm, Light finish, in two still white wines, with three opening times per trial and 10 stoppers per closure type at each mechanical assessment.

Opening	Trial 1: extraction mean (daN)	Opening	Trial 2: extraction mean (daN)
2.5 months	33.60	3 months	25.17
6 months	32.91	6 months	26.90
12 months	37.46	12 months	33.70

All six Slimcork extraction means were within the 20–40 daN interval used in this programme. Five of six sensory assessments found no statistically significant difference from the natural cork reference. Wine chemistry was broadly comparable. This bottle-trial evidence is separate from the 2022/2023 immediate-extraction tests.

Initial characterisation reported 0.15 mg dust per stopper and 0.00 mm capillarity. At 12 months in Trial 2, migration was 23.20 mm for Slimcork versus 7.60 mm for the reference; storage at approximately 24–25 °C was considered non-ideal. These trials do not establish multi-year ageing performance.

Food-contact evidence and traceability

CTCOR Report 2210/24 (E), dated 20 June 2024, tested the client-supplied sample identified as SLIMCORK. Selected results are summarised below; the separate food-contact summary provides the full context.

Parameter	Reported result	Accreditation scope
Overall migration, 20% ethanol	2 mg/stopper	Within scope
Overall migration, 3% acetic acid	5 mg/stopper	Within scope
Specific silicone migration	<0.2 mg/stopper	Outside scope
Moulds and yeasts	0 cfu/stopper	Within scope
Bacteria	1 ± 1 cfu/stopper	Within scope
Mercury / total chromium	<0.33 / <0.67 mg/kg dry matter	Outside scope
Cadmium / lead	<0.067 / <0.83 mg/kg dry matter	Outside scope

Accreditation applies to the marked tests, not to this RCS summary or client sampling. Reported values below quantification limits must not be described as absolute absence. This document is a technical evidence summary, not a declaration of legal conformity.

Patent reference

European patent EP3331678 B1: grant published 8 November 2023; proprietor Reliable Cork Solutions, Unip. Lda. The patent concerns the cork-treatment device. International application publication: WO2017021866 A1, 9 February 2017.

Sources and use of this summary

Souto e Castro: RCS-0972-2022 (3 August 2022); RCS-0424-2023 (6 April 2023); torsional reports RCS-0171 to RCS-0174-2022. Acceptance criteria: LB SP01-1, dated 3 August 2022. Sample identity and progression terminology were clarified by Reliable Cork Solutions.

Related RCS public documents: Technical Product Dossier, English v2 (programme 26/3); Comparative Torsional Performance, English v1; Food-Contact Safety and Compliance, English v1, based on CTCOR 2210/24 (E).

This consolidated sheet selects physical, mechanical, bottle-trial and food-contact findings; it does not reproduce every inspection item in the source reports. Product sizes, batches and test conditions differ. Laboratory benchmarks are not automatically contractual specifications. Confirm the supplied specification and bottle compatibility with Reliable Cork Solutions.

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