TECHNICAL PRODUCT DOSSIER

SLIMCORK®

Natural cork stopper - performance and validation summary

Technical overview: Slimcork is a natural cork stopper developed by Reliable Cork Solutions to combine the visual identity of natural cork with controlled extraction performance, low dust and reliable behaviour in bottled wine. This dossier summarises product characterisation and two comparative bottling trials monitored for up to 12 months.

Identification	Description
Product	Slimcork® natural cork stopper
Tested size	45 x 24 mm, obtained by rectifying a 45 x 25 mm stopper
Finish	Light
Validation batch	150,000 stoppers
Test programme	Initial characterisation plus two comparative bottling trials
Test code	26/3

0.15 mg	25.17-37.46	6	12 months
dust per stopper	Slimcork extraction means, daN	sensory assessments	maximum monitoring period

Key technical findings

Area	Finding
Visual quality	Uniform Light finish; appearance assessed as very satisfactory and comparable to higher-grade natural cork stoppers.
Extraction	Slimcork averages remained within the 20-40 daN technical range at every bottling-trial time point.
Sensory	Five of six assessments found no statistically significant difference. In the only significant result, preference was 15 for Slimcork and 13 for the reference.
Wine chemistry	The monitored chemical profiles were broadly comparable across both bottling trials.

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Product characterisation and initial tests

The validation batch was produced using a patented individual treatment with cork powder, adhesive and colorant. Exact formulation quantities are not disclosed. Their omission does not affect the reported test results.

Visual assessment and marking

Technology	Assessment	Observation
Laser	Best result	Good definition on the body; local variation may occur where the mark coincides with treated pores.
UV-LED ink	Intermediate	Some variation in ink fixation in treated areas.
Heat/fire marking	Weak	Reduced marking quality, particularly in treated areas.

Initial physical performance

Parameter	Unit	Slimcork	Natural Super grade
Dust content	mg/stopper	0.15	0.50
Capillarity	mm	0.00	0.00
Absorption - room temperature	%	3.3	6.3
Absorption - 37 °C	%	8.6	15.8
Absorption - cold	%	2.3	2.2
Extraction - room temperature	daN	20.5	22.8
Extraction - 37 °C	daN	27.4	39.4
Extraction - cold	daN	21.2	13.4

Interpretation: Compared with Natural Super grade, Slimcork recorded 70% less dust, zero capillarity, lower absorption at room temperature and 37 °C, and extraction within 20-40 daN in all initial conditions.

Scope of the test programme

Area	Parameters
Physical	Dust, capillarity, absorption, extraction force, migration and dimensional recovery
Chemical	Alcoholic strength, density, sugars, total and volatile acidity, pH, free and total SO2, and optical density at 420 nm
Sensory	Triangle tests performed in four series per time point, using a significance threshold of alpha <= 0.05

Comparative bottling trials

Element	Description
Trial 1	Still white wine; clear Bordeaux bottle; bottled 3 October 2023; openings at 2.5, 6 and 12 months
Trial 2	Still white wine; green Bordeaux bottle; bottled 29 November 2023; openings at 3, 6 and 12 months
Closures	Slimcork Light and a natural cork stopper reference
Mechanical sample	n=10 per closure type and opening time

Comparative results by opening time

Trial / time	Sensory result	Extraction daN Slim / Ref.	Migration mm Slim / Ref.
T1 - 2.5 m	No significant difference (17/48; threshold 22/48)	33.60 / 38.80	3.60 / 14.60
T1 - 6 m	No overall significant difference (17/44; threshold 21/44)	32.91 / 45.80	8.10 / 9.52
T1 - 12 m	Significant difference (28/44; threshold 21/44); preference 15 Slimcork / 13 reference	37.46 / 45.24	16.95 / 21.89
T2 - 3 m	No significant difference (14/44; threshold 21/44)	25.17 / 27.15	0.92 / 5.42
T2 - 6 m	No significant difference (10/48; threshold 22/48)	26.90 / 27.10	4.01 / 5.12
T2 - 12 m	No significant difference (16/56; threshold 26/56)	33.70 / 43.80	23.20 / 7.60

Storage context: During Trial 2, storage temperature was approximately 24-25 °C and relative humidity 75-83%. These conditions were considered non-ideal and were associated with greater oxidation and capillary progression. At 12 months, the wine also showed approximately 0.4 bar pressure at 23 °C.

Overall reading of the bottling trials

Dimension	Conclusion
Sensory	No statistically significant difference in five of six assessments. The only significant result did not indicate preference against Slimcork.
Extraction	Slimcork remained within 20-40 daN at all six time points. The natural reference exceeded 40 daN at three later time points.
Migration	Slimcork was equal to or below the reference at five of six time points; the exception occurred in Trial 2 at 12 months under non-ideal storage.

Wine chemistry and technical assessment

Analytical area	Parameters	Technical finding
Composition	Alcoholic strength, density and sugars	Profiles evolved over time without a consistent adverse pattern attributable to Slimcork.
Acid-base balance	Total acidity, volatile acidity and pH	Results remained broadly comparable between Slimcork and the natural reference.
Preservation and colour	Free SO2, total SO2 and optical density at 420 nm	Changes were compatible with the evolution of the wines and the recorded storage conditions.

Physical-mechanical assessment

Parameter	Assessment
Dust	Initial result: 0.15 mg/stopper for Slimcork versus 0.50 mg/stopper for Natural Super grade.
Absorption	Initial results were lower at room temperature and at 37 °C. Across bottling trials, Slimcork was equal to or below the reference at five of six time points.
Extraction	All Slimcork means remained within the 20-40 daN technical interval.
Migration	Favourable or equivalent at five of six time points, with one storage-related exception at 12 months in Trial 2.
Recovery	Mean dimensional recovery of 90% in Trial 1 at 6 months and 87% in Trial 2 at 3 months where reported.
Visual condition	Good overall condition after opening; observations linked to bottling conditions were treated as potential confounding factors.

Technical conclusion: Within the tested configuration, wine types and 12-month period, Slimcork demonstrated high visual quality, low dust, controlled extraction and sensory and chemical performance broadly comparable to the natural cork stopper reference. The product is technically validated for the scope of the trials presented in this dossier. This public dossier is not a certificate issued by an accredited laboratory and does not support a universal superiority claim.

Scope and limitations

Limitation	Implication
Product	The conclusions apply to Slimcork 45 x 24 mm with Light finish and to the tested production process.
Duration	The maximum monitoring period was 12 months; multi-year ageing was not assessed.
Wines	Two still white wines were assessed. Red, fortified and sparkling wines were not included.
Sampling	Physical-mechanical testing used n=10 per closure type and time point, which limits statistical precision.
Methods	This public summary does not identify accredited laboratory standards or confidence intervals for every parameter.