



## Title: “Effect of screwcap and cork closures on SO<sub>2</sub> levels and aromas in Sauvignon Blanc wine”

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To study the performance of Stelvin screwcaps, the authors bottled a 2002 Marlborough Sauvignon Blanc from New Zealand using both corks and screwcaps with three different fill heights (20, 25, and 30 mm) and treated with three initial levels of free SO<sub>2</sub> (20, 25, and 30 mg/l). The wine was stored either upright (screwcaps) or lying down (corks) in an underground concrete cellar (6-14°C, 80% humidity). The decline in SO<sub>2</sub> levels was monitored 4, 10, and 23 months after bottling. At 23 months post-bottling, chemical composition and varietal character were evaluated. And the performance prize goes to...

- First, here are the main findings: 1) **O<sub>2</sub>**: Even though dissolved O<sub>2</sub> was more variable and higher in the wine with corks immediately after bottling, after 4 and 10 months the readings were equally low (<0.01mg/l) under corks and under screwcaps. 2) **CO<sub>2</sub>**: Immediately after bottling, as well as later, corks and screwcaps had similar gas retention and both were acting as effective gas barriers. 3) **SO<sub>2</sub>**: Free and total SO<sub>2</sub> followed the same pattern. Most SO<sub>2</sub> decline happened in the first 4 months, and was slightly greater with corks (12% drop versus 9% for screwcaps), consistent with the higher initial dissolved oxygen in the corks. From 10 to 23 months, corks and screwcaps recorded the same SO<sub>2</sub> drop (2.6%). For screwcaps, the larger the initial headspace (lower fill level), the greater the SO<sub>2</sub> loss.
- 4) **Volatile thiols** (mercaptohexyl acetate and mercaptohexanol), which are responsible for a number of SB varietal aromas, were 18-23% lower in the bottles with corks than in the bottles with screwcaps. Once again, the higher initial dissolved oxygen in the bottles with corks may be responsible. Screwcaps with lower SO<sub>2</sub> at bottling had about the same amount of volatile thiols as those with higher SO<sub>2</sub> levels.
- 5) **Sensory**. When a trained panel of 12 judges was presented the wines in pairs and asked the question: “Are they the same or different?”, there was no significant difference. When the same panel was asked to rate the intensity of 6 self-generated attributes (passion fruit/sweet, passion fruit/stalk, capsicum, cat urine, grassy, and lemon peel) using an unstructured scale, the intensities were similar for the three sample wines compared. In other words, the difference in volatile thiols was not large enough to allow a sensory differentiation of the wines.

The authors conclude that the oxygen entry for wines bottled under corks or screwcaps was very similar for the wine used in this study. The slight higher SO<sub>2</sub> loss in the wines with corks appears to be due to the different exposures to oxygen at time of bottling. (The screwcap bottling machine in the study did not have pre-evacuation or inert gas sparging. The corker head did have a vacuum feature, but the authors believe that the action of inserting the cork may have injected air also). Even though the screwcaps preserved more of the volatile thiols responsible for the SB varietal aroma (boxtree, passionfruit and grapefruit) than the corks, the differences in the wines two years after bottling were too small to be perceived by a trained panel. Let’s say the performance prize goes to... *nobody*. (Results would likely have been different had they run into a tainted cork!)

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