

Toasting Techniques and Wine Flavor

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Abstract

Research has revealed the role that various stages of barrel production play in wine flavor.¹ These include oak species, grain tightness, seasoning and the toasting procedure (temperature and time). It has been shown that toasting has more influence than any other parameter on wine flavor. Knowledge of the underlying chemistry has enabled a series of toasting schematics to be engineered that replicate famous Appellation styles and result in a new range of barrels. Barrel-dependent wine flavors are now created with know-how and precision. The origin of these characteristics is understood.

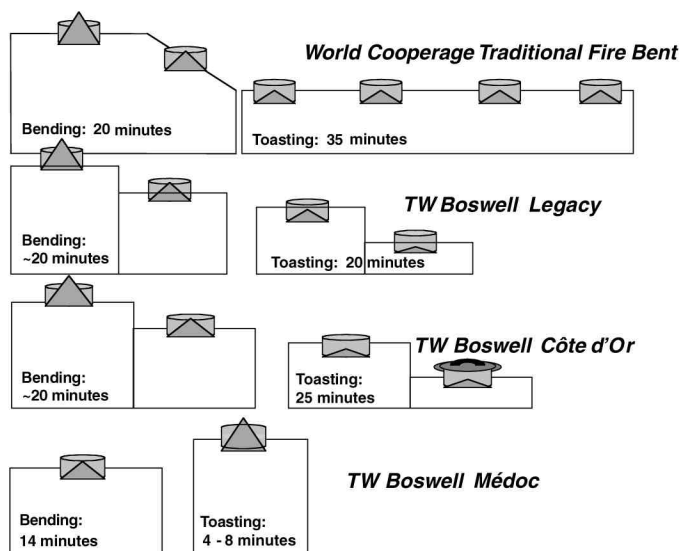


Figure 1. Toasting schematics for a range of barrels supplied by World Cooperage

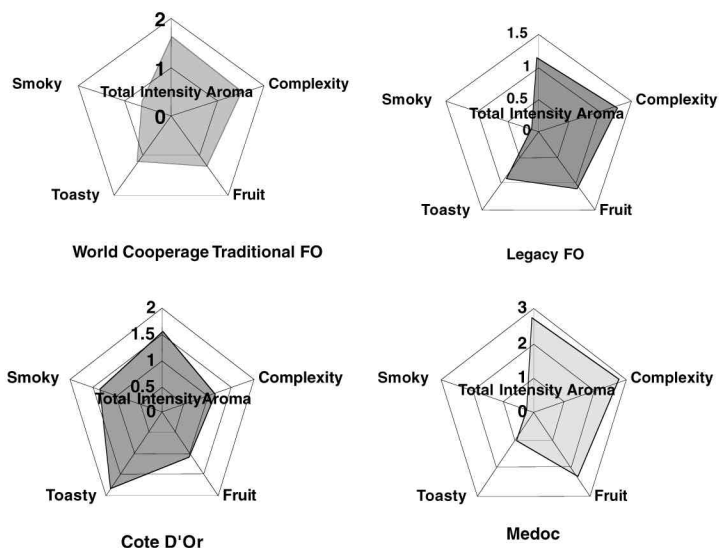


Figure 2. Flavor profile star diagrams of Chardonnay barrel fermented in four types of French oak barrels supplied by World Cooperage.

Discussion

It has been shown that flavor extractives in toasted barrels depend upon both temperature and time². The series of toasting schematics shown in Figure 1 demonstrate how heat intensity and toasting time are varied in four styles of barrels supplied by World Cooperage. These vary from a maximum of 55 minutes (the traditional World Cooperage) for the two-stage bending and toasting process over medium fires, to just 22 minutes and high fires for the Médoc barrel.

Figure 2 shows flavor profiles of Chardonnay produced in the four styles of French oak barrels. The traditional World Cooperage fire bent barrel gave a deep layer of toast and a high intensity of aroma with high toastiness and medium smokiness. By comparison the Legacy barrel produced slightly less intensity but more complexity, less toastiness without smoke, and allowed a clear fruit impact. The Côte d'Or barrel, made like the Legacy but with a lid placed over the barrel in the latter stages of toasting, was less complex but had a high level of toastiness and some smokiness. The Médoc barrel gave a clear vanillin quality, high intensity, high complexity and fruit with a little toastiness. The Médoc barrel also had a tannic edge in young wine and is not intended for short term ageing.

References

1. Swan, J.S and J. Newton 'The relationship of oak seasoning and toasting' in 'Proceedings of the 4th International Barrel Symposium', (A. Boswell Ed.), Section E, pp 88-103, ISC Co., Lebanon Mo. (2001).
2. See accompanying poster 'The Chemistry of Toasting Barrels'.

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