

A. The Composition of Oak and an Overview of its Influence on Maturation

Oak is used for tight cooperage because of its chemical as well as its physical nature. Among Earth's many tree species, oak is unique in the size of its radial rays which give strength when shaped into a barrel. Chemically, it is a particularly pure wood, unlike many tree species such as pine and rubber trees that contain resin canals which result in strong flavor extractives. The major constituents of oak are the three building blocks of all woody plants - cellulose, hemicellulose and lignin - plus tannins and small amounts of lipids (oils, fats and waxes). An exception, which applies mainly to American white oak, is the oak lactones. The small amounts of lipids give rise during the coopering process to oak lactones. These have such a profound effect upon flavor that they have been considered as a separate issue in these proceedings.

When considering oak's influence on wines and spirits during maturation, it is very important to remember that oak barrels, chips or tank staves do not consist of oak as such, but as oak which has been modified by seasoning and heat treatments - toasting or charring. We will also explore the interaction between the actions of seasoning and heat treatment.