Institute for Continental Climate Viticulture & Enology
College of Agriculture, Food and Natural Resources

Barrel Sanitation: The Latest

The Barrel Aging article (*pp.13-16, ICCVE's The Midwest Winegrower, Summer 2011*), provided an overview of why and how the wine industry uses barrels. As indicated at the end of that article, a series of mini-articles would follow, each focused on a single, practical aspect of barrel usage. This is the first of the series, about Barrel Sanitation, largely based on a soon-to-be-published article. (2)

Tartrate build-up and microbial spoilage are the two basic maintenance issues winemakers face in the barrel room. The traditional methods of sanitizing oak barrels include hot water, steam, CO_2 and ozone There is recognition that traditional hot water washing is incomplete in removing tartrate deposits and incapable of adequately sanitizing the underlying porous surface of oak.

A recent addition to barrel cleaning and disinfection techniques uses high-power ultrasonic (HPU) equipment. Laboratory tests have proven that such ultrasound effectively kills *Brettanomyces.* (1)

How does HPU work? As HPU waves propagate through a liquid, bubbles form and collapse, releasing their energy and creating areas of up to 5000°C (9032°F). Application of this technology for cleaning oak barrels has shown a >99% removal of tartrate deposits (2). See the following website for more details: http://www.premierwinecask.com/assets/upload/HPU%20Article%20Dec%2009%20ANZG&W_1.pdf

As an alternative, HPU in conjunction with hot water at 40°C (104°F) produced similar results, compared to standard hot water washing alone (60°C, or 140°F). **When HPU is used in conjunction with hot water of at least 60°C (140°F), there is nearly complete removal of tartrate deposits; this joint process also removes *Brettanomyces* inhabiting the surface and up to 4 mm into the oak itself.** Of course, any remaining *"Brett"* embedded deeper than 4 mm would have the potential to infect new wine aged in these barrels.

There have been no observed adverse effects on oak volatile extraction into wine stored in HPU-treated barrels.

If you are interested in learning more about equipment models and pricing, you may wish to check the following websites:
http://www.cavitus.com/wine-barrel-cleaner.html
http://reignofterroir.com/?s=cavitus

1. **Jiranek, V., P. Grbin, A. Yap, M. Barnes, and D. Bates.** 2008. High power ultrasonics as a novel tool offering new opportunities for managing wine microbiology. Biotechnology letters **30:**1-6.
2. **Schmid, F., P. Grbin, A. Yap, and V. Jiranek.** Relative Efficacy of High Pressure Hot Water and High Power Ultrasonics for Wine Oak Barrel Sanitization. Am. J. Enol. Vitic. 2011.11014

Michael J. Leonardelli, MS, MBA
ICCVE Enology Extension Associate
Institute for Continental Climate Viticulture & Enology
124 Eckles Hall, Columbia MO 65211-5140
Website: http://iccve.missouri.edu
Office: 573-884-2950
Cell: 573-239-6121
Email: leonardellim@missouri.edu