

Practical Barrel Management and Maintenance



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GRAPE BREEDING & ENOLOGY PROJECT



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

Why use barrels???



- Add aromas and flavors
- Allow slow and steady micro-oxidation
- Invokes tradition and quality.....marketing
- The majority of the highest rated wines spend time in barrel

Barrels and perception of QUALITY

- There is no question that barrel-aged wines have more overall complexity, increased structure, enhanced flavors, aromas, and better ageing potential.
- *Barrels are perceived as a mark of quality and sophistication.*
- When customers see barrels in your winery, they are willing to pay a higher price for your wines.
- Barrels are sexy! They look good, smell great, and make many wines taste yummiier!!! Tradition,.... “Old World” style....

Barrel Pros and Cons

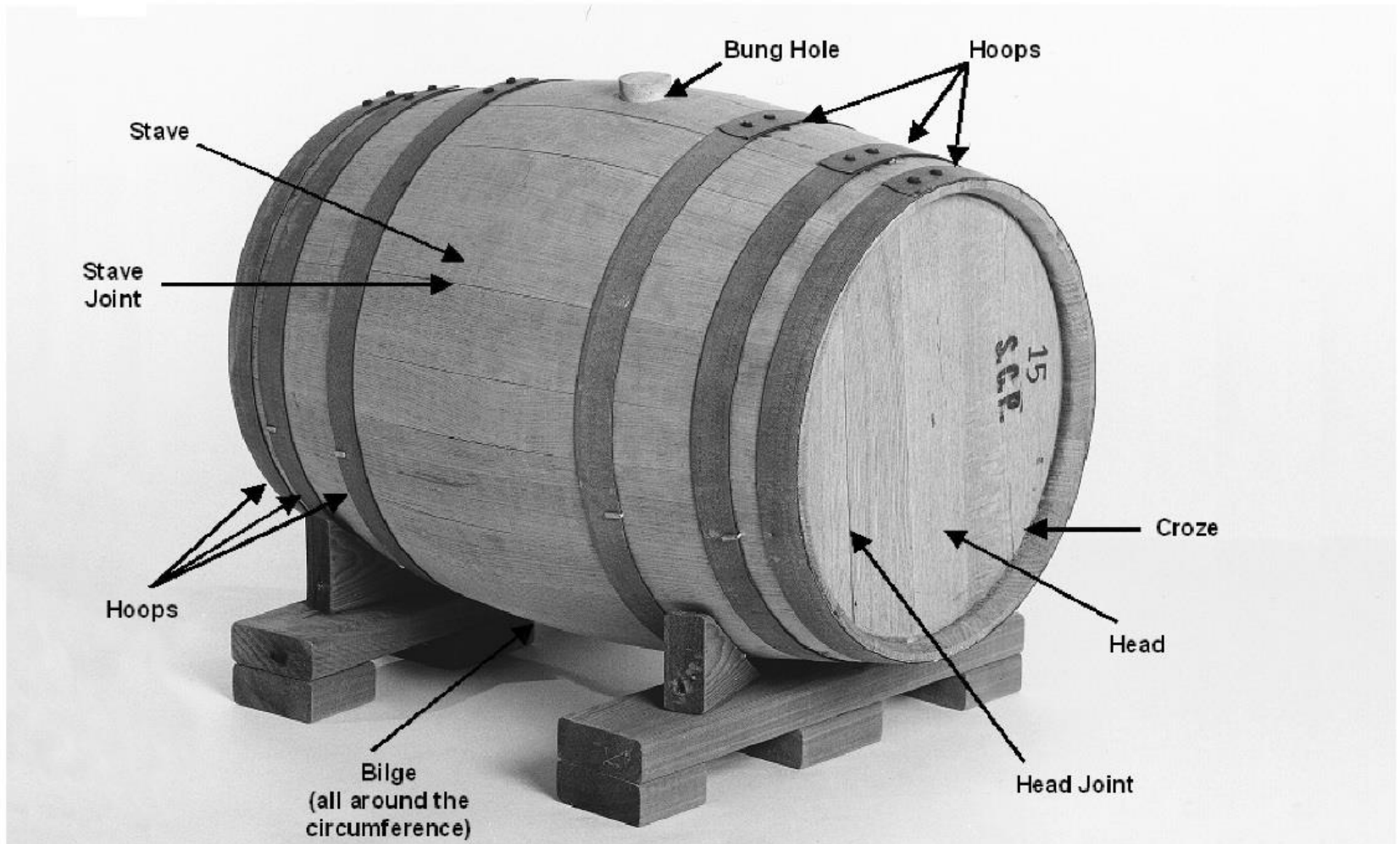
PRO:

- Add Complexity
- Add Texture, softens
- Add Flavor(s)
- Add Aroma(s)
- Reduce tartness
- Marketing appeal
- Invokes Tradition/Quality

CON:

- Expensive
- Wine loss/evaporation
- Takes up space
- Need special tools/eqt.
- Extra effort/work/time
- Need to be replaced
- Takes extra time to mature, carry inventory

Barrel Anatomy & Terms



Preparing Barrels for Use

“The French Method”

- When you receive a barrel you will need to treat it with water to “soak it up” and help it to swell and seal itself.
- Put a few gallons of hot water into barrel, stand the barrel on one head and pour a few gallons of hot water onto the *outside* of the upper head.
- After 20 minutes, turn the barrel over and repeat.
- After 20 minutes put barrel on a rack with bung-hole down and rinse the inside of the barrel with a spray-ball and arm, 3-5 mins...
- This will cause the stave/head joints, aka the “croze”, and all other seams and joints to swell and tighten.
- Let barrel drip dry for an hour and you are ready to fill.
 - Can do an overnight cold soak if needed to prove liquid tightness

Optimum Barrel Storage Environment

- Temperature
 - 60F or below,... 55F is best, but not below 50F
- Humidity
 - Between 65% and 75% is best
 - Reduces evaporation loss
 - Too much humidity can lead to mold issues on barrel exterior
- Other considerations
 - Some ventilation is needed
 - Light or dark environment does not really matter
 - AVOID DAILY TEMPERATURE FLUCTUATIONS

Barrel Life Span

- Barrel Companies vs. You
 - They want to sell you new barrels more often than may be necessary...
- New barrel - 50% of flavor (Approximately)
- 2nd fill year - 30% ...
- 3rd fill year - 15% ...
- 4th fill year - 5% or neutral
- “Neutral barrel”
 - No flavor/aroma but still micro-oxidation benefits
 - Can use up to 8-10 years IF KEPT CLEAN & MAINTAINED

Reconditioning

- Re-Coopering (recoopbarrels.com)
 - Dismantle, interior shaved or sanded, re-toasted
 - Only available in CA, or you spend \$ to ship there and back
 - “Fakey” pencil-shaving aromas possible
- Dry-Ice blasting – “Cryo Clean” in Napa, CA
 - Uses dry ice “beads” to blast away a few millimeters of stave interior
 - Preliminary reports are positive
 - Still ship to and from CA....

Monetizing old barrels

- Saw into planters and use or sell
- Use for exterior and tasting room decoration/tables
- Make wine-related items and furniture
- Sell to barrelbroker.com, and other companies...



Stacking & Moving Barrels

Racks vs Pyramid stacking



Bordeaux style vs. Burgundy Style

Taller/narrower vs shorter/wider

225 Liters



228 Liters

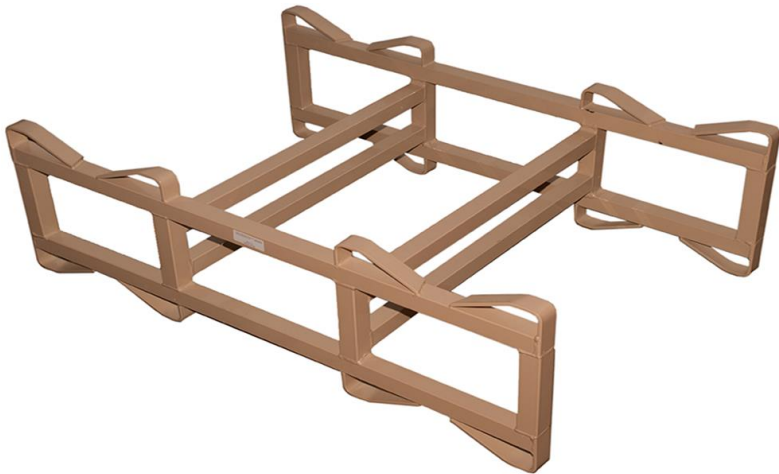


Basic Barrel & Rack Safety

- Do not use broken, bent, or otherwise unsafe racks
- Barrels placed on racks should be of same type and shape, unless intending to be placed on the TOP of a stack, and if so, should be marked clearly as such, stack may tilt...
 - (Note **Bordeaux** vs **Burgundy** style, shape, and capacity)
- Barrels must be placed on rack evenly, with equal amounts of barrel-ends extending from rack in a balanced manner.
- When placing a single barrel on a 2-barrel rack, it must be placed in the CENTER of the rack, not on just one side.
- Use proper safe-lifting techniques when moving barrels
- Only certified forklift operators should work with moving and/or stacking of barrels and racks

Barrel Racks and use

Fork lift vs. Pallet jack access



WRONG!



RIGHT!!!



Storing, Moving, and Stacking

- Can move up to 4 barrels on 2 racks with pallet-jack
 - Careful making sharp turns!
 - When placing barrels on second level by hand, need 2 people and proper lifting techniques
- Can move up to 6 barrels on 3 racks with fork lift
 - Forklift safety program, inspections, certifications...
 - “Standard” 4,500 capacity lift.....
 - 2 full barrels and rack is about 1250 Lbs....
- Can stack 6 barrels/3 racks on top of 6 barrels/3 racks, but that is the general industry **maximum**...

Stacking & Moving Barrels With Pallet Jack or Forklift



Ooops!



Barrel Cleaning/Sanitizing Options

It's not easy to clean OR sanitize a barrel...

- Hot water “ball” wash/rinse until draining water clears
 - drip-dry/air dry for an hour or so with bung hole down
- Pressure washer
 - Be careful with pressure washers, can gouge wood
 - Keep tip at a distance, keep moving...
- Steam generator
 - Recent favorite, but not cheap....
 - 3-5 minutes at 40psi, melts tartrates, cool rinse after...or 2nd steaming...
- Ozone rinse/sanitize
 - After hot-water wash/rinse, 3 minutes, (slight hazard)
 - Must wait before re-filling for ozone to dissapate

Barrel Cleaning Options cont....

- Peroxyacetic acid soak - sanitizes
 - aggressive oxidizer, hazardous, PPE, soak 24 hours, citric rinse, water rinse
- *Sodium Percarbonate* soak
 - (main ingredient in Oxy-clean)
 - 24-72 hours, hot-water ball wash, citric acid rinse, and water rinse
- Acid/SO₂ soak, “pickling”:
 - 3 Lbs. **Tartaric** acid --- about pH 2.2
 - ½ Lb. KMBS --- about 500 ppm SO₂
 - Mix in hot water in 60 gallon barrel, topped & bunged, 5 to 10 days
 - Water rinse and drip dry

Barrel Washing & Rinsing



Storing Barrels; Sulfur disk/burner

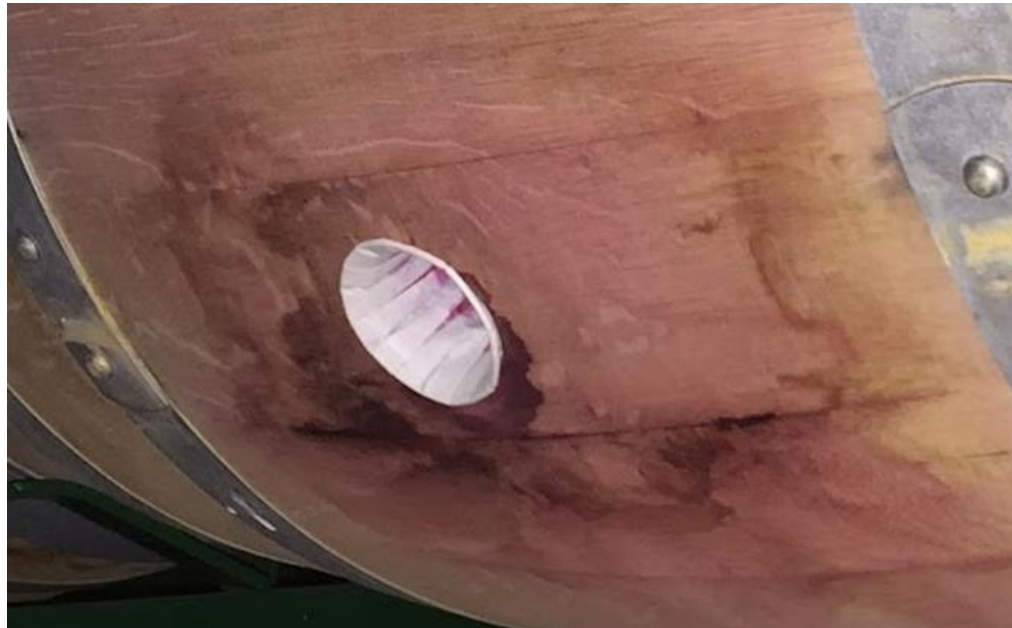
(...in lieu of compressed SO₂ gas, PA license, etc.)



SO₂-gassed barrels in storage

Re-hydrate (hot water spray), drip dry, and re-gas
with SO₂ every month

Pleated paper cup keep pests out & allows moisture
equalization in and outside the barrel
(Solo 3.5 ounce cup on Amazon)



Barrel Leak Repair

The “Croze” is the most likely place
Use oak “spiles” or wedges
Call supplier or email me!



Barrel Topping and Maintenance

Every 4 weeks is best (“Gallo protocol”)

- Wine will evaporate during barrel maturation
- Barrels should be un-stacked, inspected, bungs checked for tight placement, barrel/rack exterior rinsed with hot water
- Area around bung should be scrubbed with 3g/L tartaric acid/water solution, then rinsed again
- Remove bung, observe surface, smell head-space
- Sample, smell/taste, check for FSO_2 , add if needed and **stir**
 - “Composite” barrel sampling on larger lots...
- Top with clean wine to bungle-hole-top
- Insert clean/sanitized bung and re-rinse all...stack & store

"Rack and Return"

- At times wine in barrel may become *reduced*, and needs some air/oxygen
 - ("fresh" vs "canned" fruit character, even slight H₂S...)
- Gather all barrels of same lot, sample, taste and smell for faults, all good barrels get racked together into tank
 - (now the lot is homogenized for flavor/aroma)
- Clean empty barrels and drip dry, adjust barrel blend/mix of barrels if desired, add or remove new oak, etc.
- Check and add SO₂ to wine if needed and mix/re-check, etc.
- Top (fill) and bung barrels with clean/sanitized bungs
- Rinse, stack and store....
- Save/preserve any excess wine for future topping

Special thanks to the U of MN Grape Breeding & Enology Project



Thanks !!! Any Questions ???

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