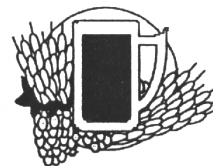




Oak Barrel Winecraft, Inc.

1443 San Pablo Avenue
Berkeley, CA 94702
(510) 849-0400

"Everything for the makers of wine and beer"
Since 1957



All-Grain Brewing Demonstration Updated November 14, 2015

1. Strike Water

- a. Calculate strike water volume (1.25 qt. of water per 1 lb. of grain)
- b. Heat to the appropriate temperature:
 - i. Find the temperature of the grain (or the ambient temperature)
 - ii. Green Bay Rackers online calculators are a good resource
 - iii. For a 152°F mash temperature at 1.25qt/lb, use the following chart:
(Grain Temp = Strike Temp), 50°F = 171°F, 60°F = 169°F,
65°F = 168°F, 70°F = 168°F, 80°F = 166°F, 90°F = 165°F

Note: Preheat your mash paddle and/or mash tun if possible

2. Mash In

- a. Pour grain slowly into water and mix well to avoid clumps
- b. Place a floating thermometer in the top of the mash tun and cover
- c. Note the mash-in time
- d. Check the temperature in 10 minutes to ensure proper rest

3. Heat Sparge Water

- a. Calculate pre-boil volume (Batch size + Boil-off)
- b. Calculate absorption: Grain weight x 0.125 = gallons absorbed
- c. Calculate Sparge amount: Pre-boil volume - (Strike amount – absorbed amount)
= sparge amount
- d. Maintain Sparge water at 170°F (no higher)

4. Recirculation

- a. Check mash temperature and remove thermometer
- b. Note the time you begin recirculation
- c. Pump or get a good continuous flow out of the mash tun into two containers
- d. Pour back on top of the mash tun on top of foil
- e. Run until clear (at least 10 minutes)

5. Runoff and Sparge

- a. Runoff into boil kettle, keeping the hose just out of the liquid
- b. Heat the kettle during runoff; keep it near boiling
- c. Pour sparge water over the top, keeping 1-2 in. above grain
 - i. Pour on top of foil or use a sparge arm
- d. Fill to pre-boil level and run off remaining liquid into bucket and dump

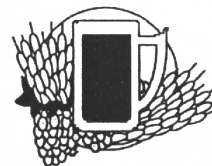
NOTE: As an option, you can pour 3 gallons of cold water on top of the original sparge to cool down your mash and ensure you get the proper amount of water for your sparge without risking astringency



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6. Hot Break and pre-boil sample

- a. Adjust temperature and spray water to avoid foam-over
- b. Get past your hot break and boil for 10 minutes; watch carefully
- c. Take sample and cool
- d. Calculate pre-boil volume
 - i. Adjust for expansion (boil volume \div 1.04 = actual volume)
- e. Determine starting gravity and projected final gravity

7. Boil!

- a. Calculate hop bitterness
 - i. BeerSmith is a good tool for full boils
 - ii. How To Brew is a great resource ($IBU = AAU \times U \times 75 / V$)
 - iii. As a very general guideline, balanced beer is $\leq 1/2 IBU:1$ gravity point for 60 minute addition (ex. 23 IBU:1.050 Original Gravity)
 - iv. Some beers are balanced differently, such as:
 1. Light beers, soft character, such as Hefeweizen, lagers, Kölsch, etc. have well less than half IBU:OG
 2. Bitter beers such as imperial IPAs, have much higher IBU:OG
- b. Hop Additions
 - i. 45-90 minutes (bittering)
 - ii. 30-45 minutes (bittering and flavor)
 - iii. 10-30 minutes (flavor)
 - iv. 0-5 minutes and whirlpool (flavor and aroma)
 - v. Dry hopping (aroma)

NOTE: Standard recipes generally use a 60 minute, 15 minute and/or 0 minute addition
- c. Recommended 15 minute additions
 - i. Whirlfloc for clarity (Irish moss tablets – add direct)
 - ii. Yeast nutrient for healthy fermentation (dissolve in warm water)
 - iii. Immersion chiller (place clean chiller in for 15 minutes to sanitize)

8. Cooling, Runoff (and Recirculation)

- a. Record the time
- b. Re-circulate the boil if you are using a plate or counter-flow chiller
- c. Whirlpool hops can be added to re-circulation
- d. Cool the wort (immersion chiller, counter-flow or plate chiller)
- e. Runoff the wort
- f. Take a sample for your Original Gravity reading
- g. Record your final volume

9. Pitch Yeast

10. Clean and dry equipment immediately