

King's Robust Porter - #164

Description

Based on many AHA & other recipes, #161, & #153, with dry Safale US-05 yeast. Makes ~11 gal, 90 IBU (?? per BeerSmith). 6.7% (v/v) alcohol, and 228 calories in 12 oz. See next try, #xxx.

Brew (Brew day takes ~8hr, see page 2 for mashing details)

- 1) **Yeast**, use Chico yeast, this one was a repitch from RRIPA #163, 950 ml.
- 2) **C filtered** 23 gal. H₂O, add 1 Campden tablet per 20 gal. the night before. 12 gal. in HLT.
- 3) **Grain Bill** (33.5 lb. total grain) based on 70% extraction efficiency, got 75%.
 - 10.5 lb. Briess Brewer's (2L, 31%) 6.5 lb. Marty's 2 Row (19%) 6 lb. Golden Promise (2L, 18%)
 - 4 lb. Rye (12%) 4 oz. Acidulated 0.8% 2 lb. CaraBrown (55L, 6%)
 - 2 lb. Pale Choc. (230L, 6%) 2 lb. Chocolate (400L, 6%) 0 lb. Cane Sugar (0%) ~\$50.00
- 4) **Mash-In** – 1x infusion, 147-150°F, use 1.25 qt./lb., 10.5 gal of 164°F strike H₂O, heat to 173°F, for 33.5 lb. malt, hold 60 min. (this one was 173°F in the HLT, and 169°F strike, needed stirring for 166°F, got 152- 149°F mash, 92 min.
- 5) **Water Adjustment** – Just before Mash, add 6 gm. Gypsum, CaSO₄, & 0 gm. Epsom Salts, MgSO₄, 5.5 gm. added to mash remaining 9.6 gal. of 20.1 gal. mash water (15 gal. in brew pot), got 8.5 gal. 1st batch, needed 6.5 gal. more, so;
86 ppm Ca, 14 ppm Mg, 84 ppm SO₄, 80 ppm Cl, 48 ppm Na. SO₄/Cl=1.05 See [EZ-water-calculator-Robust Porter-164.xlsx](#). Took pH sample 20 min. in, got pH = 5.46, after mash, perfect!, but 1st batch pH = 5.22, 2nd batch pH = 5.39, and 5.31 avg., 5.18 after boil. Estimated 5.52.
- 5) **Mash-Out** Added 1.75 gal. ~180°F H₂O, for 165-170°F. I got 1??°F. Vorlauf 7 min., got 8.5 gal.
- 6) **2nd Sparge** – Add 6.5 gal., for 15 gal. total, got 15.4 gal., put 14 gal. in brew pot. Expect 70% extr., got 75%.
I.G. target = 1.063. Adjust for S.G = 1.064, so get S.G. = 1.052 avg. runnings, plus no table sugar (+0 pts) & yeast (-1pts), got 1.058 avg. 6 pt. high. Post boil 1.070, without cane sugar, so I added 2.9 qt. H₂O. Got 4 pt. high, due to ?? Good process, and good base malts.
- 7) **Boil Adds** (75 min. total boil, 4 min. added for non-boil time)
 - 4 oz **Magnum (13.2%)** pellets, no bag **38 min. boil left**
 - Added 0.75 gal. sweet wort, to raise volume to 14.75 gal. **16 min. boil left**
 - Cu whirlpool pipe **15 min. boil left**
 - ½ **Whirlfloc**, 2 tsp **Yeast Nutrient** & ½ **Zn tablet** **12 min. boil left**
 - 2.3 oz **Chinook (9.7%)**, whole, no bag **8 min. boil left**
- 8) **Rehydrate the Yeast** – Not this time, re-pitched US-05, 950 ml. Just warmed to RT on brew day. (Mr. Malty said 490 ml) <__ hr. long lag time, due to old age. 11 days on #163 finished, plus 14 days in fridge, not long.
- 7) **Hop Back**, loaded with 3 oz. **HG Cascade** ~5% AA, whole.
- 9) **Whirlpool for 7 min.**, settled 11 min., along with avg. time to cool, +10 min. to hop boiling times for IBU
- 10) **Counterflow Cool** wort to 63°F, into 2 6.5 gal. carboys (ground water 59°F)
- 11) **Oxygenate**, 1.5 min. 0.7 liter/min. pure O₂, (ha, 5 hrs. later), add blow-off. pH = 5.18
- 12) Carboy with blow-off, 63°F, in chamber, <16 hrs. lag time, but gradual finish.
- 13) Dry hopped 3 days in w/4 oz. EKG pellets, no affect.

Fermentation

- 1) **Primary** @63 - 66°F for 4days, then over 4 days, raised to 70°F, held for 6 days, 64°F for 3 days.
- 2) **Kegged** 5/26/18 (2.0 hr), no dry hop. Got 11.5 gal. pH = 4.7.

Results



- 1) Brewed 5/6/18, got 79% grain extraction.
- 2) 1.066 to 1.0175 is 73% apparent attenuation, OK atten., low I.G., lots of dark malts & Carabrown
- 3) Good roast, chocolate flavors, smooth, good bitterness, 2x CaraBrown Malt helped.