BREWSHEET v3.3 (2012-03-18)

user input
calculated

Brew			
Name:	Heil Bier!		
Brew Date:	2012 February 22	Collected (gal):	5.50
Rack Date:	2012 April 15	Racked (gal):	5.10
Keg/Bottle Date:	2012 May 18	Kegged/Bottled (gal):	5.00
Estimated		**Actual**	
ABV (%):	4.9%	ABV (%):	5.9%
OG (SG):	1.049	OG (SG):	1.052
FG (SG):	1.012	FG (SG):	1.007
IBU:	24.8	IBU:	24.8
SRM:	3.7	SRM:	3.8
IBU/Gravity Ratio:	0.50	IBU/Gravity Ratio:	0.48

Grain	Pounds	Potential	SG Share	Color	% Bill
Pilsner (2-Row) Germany	10.00	1.037	0.047	2.0	90.91%
Carapils/Dextrine	0.50	1.033	0.002	2.0	4.55%
Rice hulls	0.50	1.000	0.000	0.0	4.55%

Hop	Type	Ounces	Boil Time	Alpha %	IBU	% Bill
Magnum (GR)	P	0.50	60	12.5%	19.8	33.33%
Hallertauer (GR)	P	0.50	20	4.3%	4.1	33.33%
Saaz (CZ)	P	0.32	5	2.5%	0.5	21.33%
Saaz (CZ)	P	0.18	5	3.0%	0.3	12.00%

Design Notes

Warsteiner "clone."
Target: 3 SRM, 4.8%ABV and 30 IBUs.
I wonder if I should just wait on this one and pitch with slurry from Clorona?

Batch Variables and Calculations	
Batch Size (gal):	5.50
Grain Temperature (F):	68
Total Grain Weight (lbs):	11.00
Mash	
Mash Time (min):	60
Desired Mash Temperature (F):	150
Strike Water (gal):	6.35
Strike Temperature (F):	164
Mash Ratio (qts/lb):	2.31
Grain Absorption (gal):	1.38
Mash Volume (gal):	7.23
Mash-out Temperature (F):	168
Estimated First Runnings (gal):	4.83
First Runnings (gal):	4.40
First Runnings Gravity (Brix):	13.40
First Runnings Gravity (SG):	1.052
Sparge	
Desired Sparge Temperature (F):	170
Sparge Water (gal):	4.36
Sparge Water Temperature (F):	175
Estimated Second Runnings (gal):	4.83
Second Runnings (gal):	4.32
Second Runnings Gravity (Brix):	4.75
Second Runnings Gravity (SG):	1.018
Estimated Preboil Volume (gal):	9.67
Estimated Preboil Gravity (Brix):	9.11
Preboil Volume (gal):	8.72
Preboil Gravity (Brix):	9.40
Preboil Gravity (SG):	1.036
Extraction Efficiency (%):	82%
Boil	
Boil Time (min):	117
Estimated Evaporation Loss (gal):	3.32
Estimated Hop Absorption (gal):	0.04
Volume Left in Kettle (gal):	-0.15
Actual Evaporation Rate (gal/hr):	1.29
Actual Evaporation Loss (gal):	2.80
Original Gravity (Brix):	13.40
Batch Size Efficiency (%):	74%
Actual Efficiency (%):	72%
Fermentation	
Primary Fermentation (days):	14
Primary Fermentation Temperature (F):	50
Gravity After Primary Fermentation (SG):	1.020
Temperature of Reading (F):	48
Corrected SG:	1.018
Secondary Fermentation (days):	3
Secondary Fermentation Temperature (F):	65
Gravity After Secondary Fermentation (SG):	1.006
Temperature of Reading (F):	73
Corrected SG:	1.007
Tertiary Fermentation (days):	28
Tertiary Fermentation Temperature (F):	35
Final Gravity (SG):	1.009
Temperature of Reading (F):	41
Corrected SG:	1.007
Target Fermentation for Diacetyl Rest (%):	80%
Target Gravity for Diacetyl Rest (SG):	1.020
Calories per Pint:	169
12 oz. Bottles Required:	51
Carbonation	
Bottling Temperature (F):	
Volumes of CO2:	2.50
Priming Sugar (oz):	
DME (oz):	
Forced Carbonation (lbs):	

System Variables	
Brewhouse Efficiency (%):	70%
Volume in Hoses (gal):	0.22
Volume in Wort Chiller (gal):	0.19
Volume in HERMS Coil (gal):	0.25
Mash/Lauter Tun Deadspace (gal):	0.14
Strike to Sparge Volume Ratio (%):	50%
Trub Loss (gal):	0.16
FWH IBU Factor (%):	10%
Strike Temperature Factor (F):	7
Sparge Temperature Factor (F):	4
Estimated Evaporation Rate (gal/hr):	1.70
Leaf Hop Absorption Ratio (qts/oz):	0.20
Pellet Hop Absorption Ratio (qts/ oz):	0.10
Cooling Losses (%):	4%
Hydrometer Correction (SG):	-0.001

BJCP Style Guidelines	
Style:	German Pilsner (Pils)
Code:	2A
OG:	1.044-1.050
FG:	1.008-1.013
IBU:	25.0-45.0
SRM:	2.0-5.0
ABV:	4.4-5.2%
CO2:	2.5-2.5

Yeast Strain	
Yeast Strain:	White Labs WLP830 (German Lager)
Type:	German Lager
Attenuation (%):	74-79%
Actual Attenuation (%):	87%
Fermentation Temp (F):	50-55F
Flocculation:	medium

Required Amounts	
Cell Count (billions):	379
Vials (White Labs/Wyeast):	5.2
Dry Yeast (g):	19.0

Yeast Starter/Slurry	
Vials (White Labs/Wyeast):	2
Date Yeast Produced:	2012 January 11
Yeast Viability (%):	72%
Yeast Growth Rate:	2.62
Yeast Innoculation Rate (million/ml):	68.61
Starter Volume Required (ml);	2112
DME Required (oz):	6.86
Yeast slurry concentration (billion/ml):	2.5
Non-yeast Percentage (%):	20%
Yeast Slurry Required (ml):	235

User Variables

Batch Scaling				
Desired OG:		Total Weight (lbs):		
Batch Size (gal):		Total Bill:		
Brewhouse Efficiency (%):				
Grain	**Pounds**	**Potential**	**Color**	**% Bill**

Poundage		
Goal (lbs):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
Needed (lbs | oz.f_oz):		

Hydrometer Correction		
SG:	1.012	
Temperature (F):	68	
Corrected SG:	1.012	

Gravity Calculator			
Brix:			
Specific Gravity:			
Degrees Plato:			

Brix Ethanol Correction	
Original Brix:	
Current Brix:	
SG:	

Brewing Notes	
Accidentally pitched yeast on hot wort when making starter; so pitching 3 new vials.	1.018 SG 12 hours later; diacetyl rest.
2/22: This time, payed attention to mashout temps (raised to 168F) and sparge water temp (raised to 175F).	3/4: 1.013 SG; checking for diacetyl.
T-71 min: ~8.35 gal @ 9.5 Brix (1.037 SG).	Definitely some diacetyl present in the heated sample; continue the rest and check in 3 days.
T-60 min: ~8.2 gal @ 9.6 Brix (1.037 SG).	Raised temp to 68F.
Extended boil by 30 min to account for lower evaporation rate (~1 gal/hr).	3/8: 1.012 SG (66.5F); 5.3% ABV.
Need ~6.35 gal postboil for 5.5 gal collection.	Still diacetyl present, although perhaps not quite as much as before; moved to ambient (~70F).
T-74 min: ~7.7 gal @ 10.9 Brix (1.042 SG).	Check again in 1 week.
Reduced boil by 3 mins (it was close to 60 min so I added the 60 min hops).	3/13: still diacetyl present, but a little less; check again in 4 days.
Plus, the volume evaporated much faster after I increased the gas.	If diacetyl still significantly present, add some yeast to try to get it cleaned up.
T-42 min: ~6.8 gal @ 11.585 Brix (1.045 SG).	3/15: stirred a bit to rouse the yeast.
Refrac OG: 12 Brix (1.047 SG).	3/18: barely perceptible diacetyl in the warmed sample; none in the cooled one; encouraging!
Hydro OG: 1.053 SG.	Check again in a few days.
Pushed ~0.15 gal through hoses to collect 5.5 gal.	3/23: 1.012 SG; 5.2% ABV; 77% attenuation; no diacetyl present in either sample!
Pitched 3 vials at 66F; put at 49F ambient.	4/15: finally racked and lagering!
Monitor daily for 1.021 SG (until 80% fermentation done) for diacetyl rest at 65F.	No diacetyl, but has some sort of slight banana type of flavor and is reminiscent of a wheat beer?
Noted that my hydrometer is off by 0.001 with RO water; made appropriate changes to brewsheets.	We'll see how she lagers...
2/27: 1.035 SG (0.017 SG in 5 days: 0.0034/day); check again in 4 days.	Perhaps the flavor is more "grainy."
2/29: 1.024 SG (0.011 SG in 2 days: 0.0055/day); at 70% fermentation; check again tomorrow morning.	Crystal clear.
3/1: 1.020 SG; diacetyl; rest in 12 hours.	5/18: banana still there, but very slight; we'll see.