BREWSHEET v3.4 (2014-12-14)

user input
calculated

Brew			
Name:	Hoppy Kolsch		
Brew Date:	2017 January 28	Collected (gal):	5.50
Rack Date:		Racked (gal):	
Keg/Bottle Date:	2017 February 19	Kegged/Bottled (gal):	5.00

Estimated		Actual	
ABV (%):	4.6%	ABV (%):	4.7%
OG (SG):	1.047	OG (SG):	1.047
FG (SG):	1.012	FG (SG):	1.011
IBU:	21.0	IBU:	20.9
SRM:	4.4	SRM:	4.4
IBU/Gravity Ratio:	0.45	IBU/Gravity Ratio:	0.44

Grain	Pounds	Potential	SG Share	Color	% Bill
Pilsner (2-Row) Germany	4.34	1.037	0.020	2.0	44.12%
German wheat	4.00	1.039	0.020	1.8	40.64%
Munich Malt 10L	1.00	1.035	0.004	10.0	10.16%
Flaked oats	0.50	1.033	0.002	2.2	5.08%

Hop	Type	Ounces	Boil Time	Alpha %	IBU	% Bill
Hallertauer Blanc	P	0.50	95	7.2%	12.5	16.67%
Hallertauer Blanc	P	1.00	10	7.2%	8.4	33.33%
Hallertauer Blanc	P	1.00	0	7.2%	0.0	33.33%
Hallertauer Blanc	P	0.50	dry	7.2%	0.0	16.67%

Design Notes

Batch Variables and Calculations	
Batch Size (gal):	5.50
Grain Temperature (F):	59
Total Grain Weight (lbs):	9.84
Mash	
Mash Time (min):	60
Desired Mash Temperature (F):	150
Strike Water (gal):	5.72
Strike Temperature (F):	165
Mash Ratio (qts/lb):	2.33
Grain Absorption (gal):	1.23
Mash Volume (gal):	6.51
Mash-out Temperature (F):	168
Estimated First Runnings (gal):	4.35
First Runnings (gal):	4.40
First Runnings Gravity (Brix):	8.00
First Runnings Gravity (SG):	1.031
Sparge	
Desired Sparge Temperature (F):	168
Sparge Water (gal):	3.88
Sparge Water Temperature (F):	172
Estimated Second Runnings (gal):	4.35
Second Runnings (gal):	4.25
Second Runnings Gravity (Brix):	5.60
Second Runnings Gravity (SG):	1.022
Estimated Preboil Volume (gal):	8.71
Estimated Preboil Gravity (Brix):	6.82
Preboil Volume (gal):	8.65
Preboil Gravity (Brix):	9.00
Preboil Gravity (SG):	1.035
Extraction Efficiency (%):	82%
Boil	
Boil Time (min):	95
Estimated Evaporation Loss (gal):	2.33
Hop Absorption (gal):	0.06
Volume Left in Kettle (gal):	0.00
Actual Evaporation Rate (gal/hr):	1.44
Actual Evaporation Loss (gal):	2.28
Original Gravity (Brix):	12.19
Batch Size Efficiency (%):	71%
Actual Efficiency (%):	71%
Fermentation	
Primary Fermentation (days):	14
Primary Fermentation Temperature (F):	60
Gravity After Primary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Secondary Fermentation (days):	28
Secondary Fermentation Temperature (F):	32
Gravity After Secondary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Tertiary Fermentation (days):	
Tertiary Fermentation Temperature (F):	
Final Gravity (SG):	1.011
Temperature of Reading (F):	39
Corrected SG:	1.011
Target Fermentation for Diacetyl Rest (%):	
Target Gravity for Diacetyl Rest (SG):	
Calories per Pint:	156
12 oz. Bottles Required:	51
Carbonation	
Bottling Temperature (F):	
Volumes of CO2:	2.55
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):	1.47
Leaf Hop Absorption Ratio (qts/oz):	0.40
Pellet Hop Absorption Ratio (qts/ oz):	0.10
Cooling Losses (%):	4%
Hydrometer Correction (SG):	0.001

BJCP Style Guidelines	
Style:	Kölsch
Code:	6C
OG:	1.044-1.050
FG:	1.007-1.011
IBU:	20.0-30.0
SRM:	4.0-5.0
ABV:	4.4-5.2%
CO2:	2.4-2.7

Yeast Strain	
Yeast Strain:	White Labs WLP029 (German Ale/Kolsch)
Type:	German Ale/Kolsch
Attenuation (%):	72-78%
Actual Attenuation (%):	77%
Fermentation Temp (F):	65-69F
Flocculation:	medium

Required Amounts	
Cell Count (billions):	181
Vials (White Labs/Wyeast):	4.0
Dry Yeast (g):	9.1
Yeast Starter/Slurry	
Vials (White Labs/Wyeast):	2
Date Yeast Produced:	2016 November 6
Yeast Viability (%):	46%
Yeast Growth Rate:	1.99
Yeast Innoculation Rate (million/ml):	125.27
Starter Volume Required (ml);	**1000**
DME Required (oz):	**3.25**
Yeast slurry concentration (billion/ml):	2.5
Non-yeast Percentage (%):	20%
Yeast Slurry Required (ml):	193

User Variables

Batch Scaling				
Desired OG:	1.045	Total Weight (lbs):		9.44
Batch Size (gal):	5.50	Total Bill:		100.00%
Brewhouse Efficiency (%):	70%			
Grain	**Pounds**	**Potential**	**Color**	**% Bill**
Pilsner (2-Row) Germany	4.01	1.037	2.0	42.50%
German wheat	4.01	1.039	1.8	42.50%
Munich Malt 10L	0.94	1.035	10.0	10.00%
Flaked oats	0.47	1.033	2.2	5.00%

Poundage		
Goal (lbs):	4.00	
Amount (lbs | oz.f_oz):	3	0.54
Amount (lbs | oz.f_oz):		
Amount (lbs | oz.f_oz):		
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Amount (lbs | oz.f_oz):		
Needed (lbs | oz.f_oz):	0	15.46

Hydrometer Correction		
SG:	1.046	
Temperature (F):	67	
Corrected SG:	1.047	

Gravity Calculator			
Brix:	11.20	12.19	
Specific Gravity:	1.043	1.047	
Degrees Plato:	10.79	11.70	

Brix Ethanol Correction	
Original Brix:	
Current Brix:	
SG:	

Brewing Notes

1/22: made 1000mL starter (called for 613mL).
1/28: brewed; increased boil by 5 min to reach target gravity; 90 min hops became 95 min hops.
10 min hops were added at flame-out; 0 min hops were added after a 10 min whirlpool; immediately cooled and collected.
2/11: dry hopped.
2/16: cold crashed.