BREWSHEET v3.3 (2012-03-18)

user input
calculated

Brew			
Name:	Dubbel Trouble		
Brew Date:	2012 March 3	Collected (gal):	5.50
Rack Date:		Racked (gal):	
Keg/Bottle Date:	2012 April 9	Kegged/Bottled (gal):	5.00

Estimated		Actual	
ABV (%):	7.3%	ABV (%):	7.8%
OG (SG):	1.072	OG (SG):	1.068
FG (SG):	1.016	FG (SG):	1.008
IBU:	20.3	IBU:	19.1
SRM:	17.1	SRM:	16.0
IBU/Gravity Ratio:	0.28	IBU/Gravity Ratio:	0.28

Grain	Pounds	Potential	SG Share	Color	% Bill
Pilsner (2-Row) Germany	12.50	1.037	0.059	2.0	79.37%
Munich Malt 10L	1.00	1.035	0.004	10.0	6.35%
Belgian aromatic malt	0.25	1.036	0.001	26.0	1.59%
Belgian Special "B"	0.25	1.030	0.001	220.0	1.59%
Belgian candi syrup d-90	1.00	1.032	**0.006**	90.0	6.35%
Rice hulls	0.50	1.000	0.000	0.0	3.17%
Belgian biscuit	0.25	1.035	0.001	24.0	1.59%

Hop	Type	Ounces	Boil Time	Alpha %	IBU	% Bill
Tettnanger (GR)	P	1.25	60	3.9%	12.5	55.56%
Tettnanger (GR)	P	1.00	30	3.9%	7.7	44.44%

Design Notes

Mash at 146F for 60 min then at 156F for 30 min; mash-out at 168F for 10 min.
Add candi syrup at 10 min left in boil.
Ferment at 64 for 24 to 48 hours; then let the yeast rise the temp to 78F until fermentation is done.
Rack to secondary for a month after fermentation is done.

Batch Variables and Calculations	
Batch Size (gal):	5.50
Grain Temperature (F):	68
Total Grain Weight (lbs):	15.75
Mash	
Mash Time (min):	90
Desired Mash Temperature (F):	**146**
Strike Water (gal):	6.47
Strike Temperature (F):	163
Mash Ratio (qts/lb):	1.64
Grain Absorption (gal):	1.97
Mash Volume (gal):	7.73
Mash-out Temperature (F):	168
Estimated First Runnings (gal):	4.36
First Runnings (gal):	4.55
First Runnings Gravity (Brix):	18.05
First Runnings Gravity (SG):	1.070
Sparge	
Desired Sparge Temperature (F):	170
Sparge Water (gal):	3.89
Sparge Water Temperature (F):	175
Estimated Second Runnings (gal):	4.36
Second Runnings (gal):	4.16
Second Runnings Gravity (Brix):	7.11
Second Runnings Gravity (SG):	1.028
Estimated Preboil Volume (gal):	8.71
Estimated Preboil Gravity (Brix):	12.82
Preboil Volume (gal):	8.71
Preboil Gravity (Brix):	14.20
Preboil Gravity (SG):	1.055
Extraction Efficiency (%):	87%
Boil	
Boil Time (min):	90
Estimated Evaporation Loss (gal):	2.35
Hop Absorption (gal):	0.06
Volume Left in Kettle (gal):	0.58
Actual Evaporation Rate (gal/hr):	1.18
Actual Evaporation Loss (gal):	1.76
Original Gravity (Brix):	17.53
Batch Size Efficiency (%):	67%
Actual Efficiency (%):	75%
Fermentation	
Primary Fermentation (days):	14
Primary Fermentation Temperature (F):	64-78
Gravity After Primary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Secondary Fermentation (days):	28
Secondary Fermentation Temperature (F):	65
Gravity After Secondary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Tertiary Fermentation (days):	3
Tertiary Fermentation Temperature (F):	40
Final Gravity (SG):	1.008
Temperature of Reading (F):	71
Corrected SG:	1.008
Target Fermentation for Diacetyl Rest (%):	80%
Target Gravity for Diacetyl Rest (SG):	1.026
Calories per Pint:	221
12 oz. Bottles Required:	51
Carbonation	
Bottling Temperature (F):	78
Volumes of CO2:	2.60
Priming Sugar (oz):	4.96
DME (oz):	6.95
Forced Carbonation (lbs):	35.3

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):	1.56
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:	Belgian Dubbel
Code:	18B
OG:	1.062-1.075
FG:	1.008-1.018
IBU:	15.0-25.0
SRM:	10.0-17.0
ABV:	6.0-7.5%
CO2:	1.9-2.4

Yeast Strain	
Yeast Strain:	White Labs WLP530 (Abbey Ale)
Type:	Abbey Ale
Attenuation (%):	75-80%
Actual Attenuation (%):	88%
Fermentation Temp (F):	66-72F
Flocculation:	medium-high

Required Amounts	
Cell Count (billions):	273
Vials (White Labs/Wyeast):	3.2
Dry Yeast (g):	13.7

Yeast Starter/Slurry	
Vials (White Labs/Wyeast):	1
Date Yeast Produced:	2012 February 8
Yeast Viability (%):	84%
Yeast Growth Rate:	3.24
Yeast Innoculation Rate (million/ml):	43.09
Starter Volume Required (ml):	**1750**
DME Required (oz):	5.69
Yeast slurry concentration (billion/ml):	2.5
Non-yeast Percentage (%):	20%
Yeast Slurry Required (ml):	143

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):		
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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:		
Temperature (F):		
Corrected SG:		

Gravity Calculator			
Brix:			
Specific Gravity:			
Degrees Plato:			

Brix Ethanol Correction	
Original Brix:	
Current Brix:	
SG:	

Brewing Notes

3/3: accidentally added 0.25 lb Belgian biscuit; ah well!
Even with 0.5 lb rice hulls, recirculation flow slowed to a crawl; but it seems enough to collect 1st runnings.
Then all of a sudden it worked itself out somehow.
Lower OG due to lower evaporation rate and because I stopped the boil briefly to start the whirlpool.
Next time do whirlpool after the boil (especially for brews where hop aroma doesn't matter).
Water temp was 66.5F so fermentation started there, but I left it outside and it cooled to 65.5F a few hours late
Plan is to let it self-rise to 78F.
Cooled to 64.5 an hour later and 63.5 an hour after that; moved back to the house at ambient (~67F).
Quite active fermentation already.
3/4: Very active fermentation (3 bubbles/s) and temp is at 70F.
~4 hours later, 71.4F; had to switch to blowoff; extreme pressure; steadily bubbling away.
~6 hours later, 73.4F.
3/5: temp now at 70.3F; need to try to warm it up a bit; still some blowoff activity.
~7.5 hrs later, 68.3F; replaced large blowoff with a small one.
3/6: 68.5F; replaced small blowoff with an airlock.
3/8: 1.023 SG; 70.7F; still quite a bit (~1.5") of krausen on top.
3/10: 1.021 SG; 68F; ~0.75-1" of krausen on top.
3/13: 1.018 SG; 71.6F; ~0.25" of krausen on top.
I'd like to see this get down to about 1.012 SG.

3/18: 1.014 SG; 7.1% ABV; still a little krausen on top.
3/23: 1.012 SG; 7.4% ABV; 83% attenuation; still (!) a little krausen on top.
4/9: kegged; added 4.96 oz dextrose to the keg for priming and conditioning.
Should get me to 2.6 vols CO2; rest will be forced.
Didn't cold crash, but it's crystal clear!
Did not add gelatin.
Mold/pellicle on krausen ring, but I don't detect an infection in the sample.
Sample was warm (71F) and completely uncarbonated; it will be slightly different carbonated.
5/14: Decided to move back to room temp to dry out a bit.
Roused the yeast by shaking the keg several times over a month.
6/12: gorgeous brew! No residual sweetness. Ready to go!