My Cheapo Brewsheet

While simple yet very powerful brewing programs exist, they lack a universal platform. Programs must be installed on whatever computer you are using, programs are incompatible with each other, and online calculators require an internet connection. I want something I can take anywhere and access on any computer, either online or offline. I also want a file format where I could copy the recipe info and easily paste into a variety of formats. That is why I chose to go with an Excel workbook. If I want to work on a recipe on my lunch break, I don't need to hack my work computer to download and install a program. If I'm brewing outside without internet access and need to change a recipe on the fly, I can do that. I can view and modify my recipes on any laptop, smartphone, or tablet. At my homebrew club meeting, I can access my files via Dropbox or a cloud server and get any recipe info I need.

Many brewing spreadsheets exist, but I found most of them either too simple or too complex. They either didn't have all the information to formulate a recipe or the spreadsheet was so busy I got lost in it. Therefore, I decided to make my own brewing spreadsheet. I wanted a recipe formulator that was simple, easy to read.

However, there are some disadvantages to simplified Excel worksheet. The program does not allow the streamlined feel that most brewing programs have. I could circumvent some of this by using macros, but macro-enabled spreadsheets make some people (rightfully) uncomfortable. Therefore, I am left with a multi-tabbed workbook to handle most recipe formulation needs. Despite these drawbacks, this workbook fits my brewing needs.

Please note that the workbook has been designed around my brewing setup (cooler mash tun, batch sparging, yeast starter from glycerol stock w/ stir plate). I have validated all the parameters, and they work well in my system. Your mileage may vary. I hope you find it handy; if not, delete it – it's free.

Jared Spidel

Shanty Brewery
www.shantybrewery.com

Formulae

The formulae for ABV, ABW, and calories are common formulae found on the internet.
The water temperature calculations are from John Palmer's How to Brew.
The yeast pitching rate is 750,000 (ale), 1,000,000 (hybrid) or 1,500,000 (lager) cells per milliliter per degree Plato.
Conversion of Brix to OG and FG in the Brew Day Worksheet are from Sean Terrill (seanterrill.com).
The remaining formulae are either common equations found on the internet or are logical.
The data for the malts, extracts, and sugars are from the manufacturer's websites.
The data for the hops are from homebrewtalk.com, wikipedia.org, and various hops suppliers on the internet.

Using the Sheets

Note:
You can edit any cell, add row/columns, reformat, etc., but you first need to unprotect each worksheet under the Review menu tab.

Recipe

- Choose your units in either US or metric.
- Fill in the darker cells with the appropriate data. The final data of interest are calculated in the lighter cells.
- The Gravity and SRM cells are protected from accidental deletion. To update these values, see the Updating Grains/Extracts/Yeast/Styles section below.
- The amount of hops can be added in ounces or grams, just click on the heading to choose the units.
- For hop boil times, fill in the time in minutes or use the drop-down menu for mash hops, first wort hops (FWH), or dry hops.
- In the Water Volume & Temp section, the water volume of Mash Temp 2 and 3 is based on the temperature of the water in the °F column. The value is defaulted at boiling.
- Grain absorption value is defaulted at 0.100 gal/lb grain, which is what I see with my system. Adjust accordingly.
- The Target Pre-boil Vol is calculated based on the post-boil wort volume, boil time, and evaporation rate. The calculation does not take into account the thermal expansion of water. However, at boiling the expansion of water is only about 1 cup per 5 gallons.
- The Sparge Vol is defaulted to be ½ of the Target Pre-boil Vol. The value can be changed based on your 1st runnings volume to hit your Target Pre-boil Vol, i.e. if you have a large amount of grain, the 1st runnings may be greater than ½ of the Targeted Pre-boil Vol, in which case you can use a decreased Sparge Volume, if you wish.
- The units for the water:grist ratio is quarts per pound for US units, and liters per kilograms for metric units.
- Scale recipe to takes into account wort adsorption from the hops and gives a suggested volume to scale to in order to achieve your desired final volume.
- The default yeast cell density is 125 million cells/ml. This is the average amount of cells I have seen when I make a starter on a stir plate from my glycerol stocks. Go to mrmalty.com for a pitching rate calculator if you are using smack-packs or vials.
- All units for calculating priming sugar or vol of CO_2 are able to be changed in their own dropdown menus.
- I did not include a water calculator, as there are several great ones available on the internet. I did, however, include cells to record your water data and mineral additions. Click on "lime" to change to chalk if you use chalk.

Harvest Ale — *My Cheapo Brewsheet*

	SG	Plato	Brix									
Pre-boil SG:	1.051	12.66	13.2	SRM:	22.0°	ABV:	5.6%	Gallons:	11.00	Units:	US
OG:	1.057	14.07	14.7	IBU:	49.79	ABW:	4.5%	Adjusted:	10.10	Color:	Weyermann
FG:	1.014	3.52	7.9	BU:GU:	0.87	Calories:	189	Efficiency:	80%	Bittering:	Tinseth

Preferences

BJCP style:	19 A American Amber Ale				
OG:	1.045-60	SRM:	10-17	Vol CO2:	2.2-2.8
FG:	1.010-15	IBU:	25-40		
ABV:	4.5-6.2	BU:GU	0.63		

Fermentables

Type	Ingredient	°L	lbs	oz	%	Gravity
Pale	Briess Brewers Malt	1.8°	12	8	57.8%	0.033
NonBarley	Briess Wheat Malt	2.5°	3	8	16.2%	0.010
Caramel	Weyermann CARAMUNICH Type 1	34.5°	2		9.2%	0.005
Caramel	Briess Caramel Malt 120L	120.0°		8	2.3%	0.001
Flaked	Thomas Fawcett & Sons Ltd Flaked Maize	2.3°	2		9.2%	0.005
NonBarley	Malteries Franco-Belges Oatmeal	1.0°	1		4.6%	0.002
Roasted	Weyermann CARAFA Special Type 3 (dehusked)	525.5°		2	0.6%	0.000
Grains (lbs): 21.63	Sugars/Extracts (lbs):	Total Fermentables (lbs): 21.63			100%	1.057

Hops

Boil Time	Variety	AA%	Format	oz	AAU	IBU
60	Cascade	5.7%	Pellet	4.00	22.80	36.94
15	Cascade	5.7%	Pellet	2.00	11.40	9.17
5	Cascade	5.7%	Pellet	2.00	11.40	3.68
				Total	45.60	49.79

Mash

	Mash °F	H2O:grist	H2O °F	Gallons	Pounds	Mash Vol	Grain absorption
Mash Temp 1	154.0°	1.60	164.5°	8.65	72.2	10.34	0.100 (gal/lb)
Mash Temp 2		1.60					Grain Temp
Mash Temp 3		1.60					70.0° (°F)
Sparge	168.0°	1.12	170.5°	6.05	50.5	7.74	

Water Volumes

Mash Tun Loss (gal):	0.25	1st Runnings Vol (gal):	6.24
Hop Absorption (gal):	0.40	2nd Runnings Vol (gal):	6.05
Kettle Loss (gal):	0.50	Preboil, Target (gal):	12.10
Evaporation Rate/hr:	10%	Preboil, Actual (gal):	12.29
Boil Time (min):	60	Scale recipe to (gal):	11.93

Yeast

1056 American Ale				Attenuation:	75.0%
Ale	billion cells:	439.40	1E6 cells/ml: 125.0	Starter:	3.52 L

Water Treatments

	Ca	Mg	Na	SO4	Cl	HCO3	SO4/Cl
current ppm	24.7	8.4	44.3	18.0	49.0	117.7	0.37
target ppm	61.5	8.4	44.3	106.5	49.0	117.7	2.17
lactic acid (ml)		mash:	3.6	sparge:	3.0	Very Bitter	

	Gypsum	Epsom	NaCl	CaCl2	MgCl2	Soda	Lime
g/mash	2.6						
g/sparge	1.8						
g total	4.4						

Other Ingredients/Notes

Carbonation

Vol CO2	2.5	Beer Vol (gal)	11.00	Beer Temp (F)	65.0°
oz sugar	9.4	Sugar	Corn sugar (glucose/dextrose)		
CO2 PSI	9.2	Serving Temp (F)	34.0°		

Brew Day Datasheet

- I added this worksheet to take notes throughout the brew day and to provide a simple printout.
- Fill in the gray cells with data from your brew day.
- SRM and IBUs are calculated based off observed data for the wort volume and original gravity.
- Since using a hydrometer is not practical with hot wort, I use a refractometer and record the first/second runnings and the pre-boil SG data in Brix.
- *Important:* You are given the option to report your original and final gravities in SG from a hydrometer or Brix from a refractometer. Once you add your observed value in the cell, you cannot change your reading method, i.e., the formula in the SG or Brix cell is overwritten. If you need to reapply that formula you will need to copy it from an unedited worksheet. I know it's a pain, but that's one of the limitations of Excel without macros.

Harvest Ale

My Cheapo Brewsheet

Date:

Beer Stats

ABV:	5.8%
SRM:	22.0°
IBU:	49.85
BU:GU:	0.87
Calories:	193

Water Treatments

	Gypsum	Epsom	NaCl	CaCl2	MgCl2	Soda	Lime
g total	4.4						

	Ca	Mg	Na	SO4	Cl	HCO3	SO4/Cl
Final ppm	61.5	8.4	44.3	106.5	49.0	117.7	2.2

Very Bitter

pH adjustments: mash pH 5.3 | lactic acid (ml) | mash: 3.6 | sparge: 3

BJCP style: 19 A American Amber Ale

OG:	*1.045-60*	SRM: *10-17*	Vol CO2:
FG:	*1.010-15*	IBU: *25-40*	*2.2-2.8*
ABV:	*4.5-6.2*	BU:GU *0.63*	

Mash Data

	Temp	Volume	Time
Step 1	154.0°	8.65	
Step 2			
Step 3			
Sparge	168.0°	6.05	

Mash Efficiency

	Sugar Content				Efficiency			Volume		
	SG	Brix	Predicted	Accuracy	Observed	Predicted	Accuracy	Observed	Predicted	Accuracy
1st Runnings (Brix):	1.064	16.4	1.063	1.1%	51%	50%	2.1%	6.3	6.24	1.0%
2nd Runnings (Brix):	1.032	8.2	1.032	-2.0%	24%	25%	-2.8%	6.0	6.05	-0.8%
Pre-boil (SG):	1.052	13.4	1.051	1.7%	81%	80%	1.8%	12.3	12.3	0.1%
OG (SG):	1.057	14.7	1.057	-0.2%	80%	80%	-0.2%	11.0	11	Spot On!

Pull-down menu gives choice between recording in Brix or specific gravity

Boil Data

	Observed	Predicted	Accuracy
% Evaporation:	12%	10%	18.2%
Boil time:	60		

Clarity Ferm: 16.61 mL

For bulk-packaged Clarity Ferm, not the 10-ml homebrew package

Fermentation Data

	SG	Brix	Predicted	Accuracy
FG (SG):	1.013	7.5	1.014	9.9%
Attenuation:	77%		75%	2.9%
Temperature:	67°			

Yeast: 1056 American Ale

Ale	billion cells to pitch:	438.46

Volume Correction		Hydrometer Correction	
Wort Temp (°F)	60.0°	Calibration Temp	60.0°
Wort Vol	11.5	Wort Temp °F	180.0°
Final Temp	75.0°	Measured SG	1.022
Final Vol	11.52	Actual SG	1.052

Fermentables

Ingredient	lbs	oz	%
Briess Brewers Malt	12	8	57.8%
Briess Wheat Malt	3	8	16.2%
Weyermann CARAMUNICH Type 1	2		9.2%
Briess Caramel Malt 120L		8	2.3%
Thomas Fawcett & Sons Ltd Flaked Maize	2		9.2%
Malteries Franco-Belges Oatmeal	1		4.6%
Weyermann CARAFA Special Type 3 (dehusked)		2	0.6%
Total Fermentables (lbs):	21.63		

Hops

Boil Time	Variety	AA%	oz
60	Cascade	5.7%	4.00
15	Cascade	5.7%	2.00
5	Cascade	5.7%	2.00
			8.00

Notes

Convert Units

- All values are copied from the Recipe worksheet, then converted to the opposite units.
- The converted values are available to be copied, then pasted into the Recipe worksheet.

Harvest Ale

My Cheapo Brewsheet

	SG	Plato	Brix									
Pre-boil SG:	1.050	12.48	13.0	SRM:	21.6°	ABV:	5.6%	Liters:	41.64	Units:	Metric
OG:	1.057	14.07	14.7	IBU:	49.79	ABW:	4.5%	Adjusted:	39.63	Color:	Efficiency
FG:	1.014	3.52	7.9	BU:GU:	0.87	Calories:	189	Efficiency:	80%	Bittering:	Tinseth

Preferences

BJCP style: 19 A American Amber Ale

OG:	*1.045-60*	SRM:	*10-17*	Vol CO2:	*2.2-2.8*
FG:	*1.010-15*	IBU:	*25-40*		
ABV:	*4.5-6.2*	BU:GU	*0.63*		

Fermentables

Type	Ingredient	°L	kg	g	%	Gravity
Pale	Briess Brewers Malt	1.8°	5	670	57.8%	0.033
NonBarley	Briess Wheat Malt	2.5°	1	588	16.2%	0.010
Caramel	Weyermann CARAMUNICH Type 1	34.5°		907	9.2%	0.005
Caramel	Briess Caramel Malt 120L	120.0°		227	2.3%	0.001
Flaked	Thomas Fawcett & Sons Ltd Flaked Maize	2.3°		907	9.2%	0.005
NonBarley	Malteries Franco-Belges Oatmeal	1.0°		454	4.6%	0.002
Roasted	Weyermann CARAFA Special Type 3 (dehusked)	525.5°		57	0.6%	0.000

Grains (kg): 9.81 | Sugars/Extracts (kg): | Total Fermentables (kg): 9.81 | 100% | 1.057

Hops

Boil Time	Variety	AA%	Format	grams	AAU	IBU
60	Cascade	5.7%	Pellet	113.40	22.80	36.94
15	Cascade	5.7%	Pellet	56.70	11.40	9.17
5	Cascade	5.7%	Pellet	56.70	11.40	3.68
				Total	45.60	49.79

Mash

	Mash °C	H2O:grist	H2O °C	Liters	Kgs	Mash Vol	Grain absorption
Mash Temp 1	67.8°	3.34	73.6°	32.74	32.7	39.17	0.835 (L/kg)
Mash Temp 2		3.34					Grain Temp
Mash Temp 3		3.34					21.1° (°C)
Sparge	75.6°	2.33	75.9°	22.90	22.9	29.33	

Water Volume

Mash Tun Loss (L):	0.25	1st Runnings Vol (L):	24.31
Hop Absorption (L):	1.51	2nd Runnings Vol (L):	22.90
Kettle Loss (L):	0.50	Preboil, Target (L):	45.80
Evaporation Rate/hr:	10%	Preboil, Actual (L):	47.21
Boil Time (min):	60	scale recipe to (L):	43.73

Yeast

1056 American Ale — Attenuation: 75.0%

Ale — billion cells: 439.40 — 1E6 cells/ml: 125.0 — Starter: 3.52 L

Water Treatments

	Ca	Mg	Na	SO4	Cl	HCO3	SO4/Cl
current ppm	24.7	8.4	44.3	18.0	49.0	117.7	0.37
target ppm	61.5	8.4	44.3	106.5	49.0	117.7	2.17

lactic acid (ml) mash: 3.6 sparge: 3.0 Very Bitter

	Gypsum	Epsom	NaCl	CaCl2	MgCl2	Soda	Lime
g/mash	2.6						
g/sparge	1.8						
g total	4.4						

Other Ingredients/Notes

Carbonation

Vol CO2	2.5	Beer Vol (L)	41.64	Beer Temp (C)	18.3°
g sugar	266.9	Sugar	Corn sugar (glucose/dextrose)		
CO2 PSI	9.2	Serving Temp (C)	1.1°		

Scale-up

- All values are copied from the Recipe worksheet.
- You can use this to scale your recipe from the suggested “Scale recipe to:” value in the first sheet
- Enter the new volume of wort, and the new values for the amount of malts/extracts/sugars/hops are calculated.
- The amount of yeast required for fermentation of the new volume is also calculated.
- All recalculated weights and volumes are available to be copied and repasted into the Recipe worksheet.

Harvest Ale

My Cheapo Brewsheet

	SG	Plato	Brix								
Pre-boil SG:	1.051	12.64	13.2	SRM:	21.6°	ABV:	5.6%	Gallons:	11.93	Units:	US
OG:	1.057	14.07	14.7	IBU:	49.79	ABW:	4.5%	Adjusted:	11.00	Color:	Efficiency
FG:	1.014	3.52	7.9	BU:GU:	0.87	Calories:	189	Efficiency:	80%	Bittering:	Tinseth

Preferences

BJCP style: 19 A American Amber Ale

OG:	*1.045-60*	SRM:	*10-17*	Vol CO2:	*2.2-2.8*
FG:	*1.010-15*	IBU:	*25-40*		
ABV:	*4.5-6.2*	BU:GU	*0.63*		

Fermentables

Type	Ingredient	°L	lbs	oz	%	Gravity
Pale	Briess Brewers Malt	1.8°	13	9	57.8%	0.033
NonBarley	Briess Wheat Malt	2.5°	3	13	16.2%	0.010
Caramel	Weyermann CARAMUNICH Type 1	34.5°	2	3	9.2%	0.005
Caramel	Briess Caramel Malt 120L	120.0°		9	2.3%	0.001
Flaked	Thomas Fawcett & Sons Ltd Flaked Maize	2.3°	2	3	9.2%	0.005
NonBarley	Malteries Franco-Belges Oatmeal	1.0°	1	1	4.6%	0.002
Roasted	Weyermann CARAFA Special Type 3 (dehusked)	525.5°		2	0.6%	0.000
Grains (lbs): 23.46	ugars/Extracts (lbs):		Total Fermentables (lbs): 23.46		100%	1.057

Hops

Boil Time	Variety	AA%	Format	oz	AAU	IBU
60	Cascade	5.7%	Pellet	4.34	24.74	36.94
15	Cascade	5.7%	Pellet	2.17	12.37	9.17
5	Cascade	5.7%	Pellet	2.17	12.37	3.68
Formula: Tinseth				*Total*	49.47	49.79

Mash

	Mash °F	H2O:grist	H2O °F	Gallons	Pounds	Mash Vol	Grain absorption
Mash Temp 1	154.0°	1.60	164.5°	9.38	78.3	11.22	0.100 (gal/lb)
Mash Temp 2		1.60					Grain Temp
Mash Temp 3		1.60					70.0° (°F)
Sparge	168.0°	1.12	170.5°	6.56	54.8	8.40	

Water Volumes

Mash Tun Loss (gal):	0.25	1st Runnings Vol (gal):	6.79
Hop Absorption (gal):	0.43	2nd Runnings Vol (gal):	6.56
Kettle Loss (gal):	0.50	Preboil, Target (gal):	13.13
Evaporation Rate/hr:	10%	Preboil, Actual (gal):	13.35
Boil Time (min):	60	Scale recipe to (gal):	12.90

Yeast

1056 American Ale				Attenuation:	75.0%
Ale	billion cells:	476.70	1E6 cells/ml: 125.0	Starter:	3.81 L

Water Treatments

	Ca	Mg	Na	SO4	Cl	HCO3	SO4/Cl
current ppm	24.7	8.4	44.3	18.0	49.0	117.7	0.37
target ppm	61.5	8.4	44.3	106.5	49.0	117.7	2.17
lactic acid (ml)		mash:	3.6	sparge:	3.0	Very Bitter	

	Gypsum	Epsom	NaCl	CaCl2	MgCl2	Soda	Lime
g/mash	2.8						
g/sparge	2.0						
g total	4.8						

Other Ingredients/Notes

Carbonation

Vol CO2	2.5	Beer Vol (gal)	11.93	Beer Temp (F)	65.0°
oz sugar	10.2	Sugar	Corn sugar (glucose/dextrose)		
CO2 PSI	9.2	Serving Temp (F)	34.0°		

Updating Grains/Extracts/Yeast/Styles

- To update the Grains and Extracts tabs, unhide the tabs
- To add a new malt or extract, insert a new row and add the required data.
- Add/edit the data in the Grains or Extract tabs, then add/edit the Fermentables tab. Descending sort column B and “expand the selection” to include columns C and D
- You will also need to redefine the name tags under Formulas>Name Manager
- Updating the yeast and BJCP styles requires some more work, which I’m not going into detail here. Unless you figure it out for yourself, don't mess with these.