Wee Willy (AG) 23L

Created Saturday May 27th 2023

League of Brewers

Method: **All Grain** Style: **Wee Heavy** Boil Time: **60 min** Batch Size: **21 liters** (fermentor volume) Pre Boil Size: **28.5 liters**

Pre Boil Gravity: **1.051** (recipe based estimate) Post Boil Gravity: **1.070** (recipe based estimate) Efficiency: **75%** (brew house) Source: **LoB kits**

Calories: **328 calories** (Per 500ml) Carbs: **34.3 g** (Per 500ml)

Original Gravity:	Final Gravity:	ABV (standard):	IBU (tinseth):	SRM (morey):	Mash pH	Cost $
1.070	**1.018**	**6.8%**	**14.9**	**23.5**	**5.6**	**n/a**

Fermentables

Amount	Fermentable	Cost	PPG	°L	Bill %
5 kg	Bairds - GB - Bairds - Maris Otter Finest Ale Malt		37.49	2.5	78.9%
0.34 kg	Gladfield - NZ - Gladfield Golden Oat Malt		32.2	12	5.4%
0.30 kg	Gladfield - NZ - Gladfield - Red Back Malt		35.88	32.5	4.7%
0.30 kg	Gladfield - NZ - Gladfield - Dark Crystal Malt		35.88	100	4.7%
0.30 kg	Gladfield - NZ - Gladfield - Medium Crystal Malt		35.88	52.55	4.7%
0.10 kg	Gladfield - NZ - Gladfield - Roasted Barley		33	675	1.6%

6.34 kg / $ 0.00

Hops

Amount	Variety	Cost	Type	AA	Use	Time	IBU	Bill %
25 g	East Kent Goldings		Pellet	5	Boil	60 min	14.92	100%

25 g / $ 0.00

Other Ingredients

Amount	Name	Cost	Type	Use	Time
5.48 g	Calcium Chloride (dihydrate)		Water Agt	Mash	1 hr.
3.29 g	Gypsum		Water Agt	Mash	1 hr.
4.38 g	Baking Soda		Water Agt	Mash	1 hr.

Yeast

Mangrove Jack - Empire Ale M15

Amount: 3 Each **Cost:** **Attenuation (avg):** 72.5% **Flocculation:** Med-High **Optimum Temp:** 21 - 24 °C **Starter:** No

Fermentation Temp: - **Pitch Rate:** 0.35 *(M cells / ml / ° P)* 125 B cells required

Priming

CO_2 Level: 1.9 Volumes

Target Water Profile Dark, sweet and malty

Ca^{+2} 75 **Mg^{+2}** 3 **Na^{+}** 42 **Cl^{-}** 80 **SO_4^{-2}** 55 **HCO_3^{-}** 120

Mash Guidelines

Amount	Description	Type	Start Temp	Target Temp	Time
17.1 L			--	67 °C	60 min
17.7 L		Sparge	--	78 °C	--

Starting Mash Thickness: 2.7 L/kg

Quick Water Requirements

Water	Liters
Strike water volume at mash thickness of 2.7 L/kg	17.1
Mash volume with grains	21.3
Grain absorption losses	-6.3
Remaining sparge water volume (equipment estimates 14.9 L)	17.7
Pre boil volume (equipment estimates 25.7 L)	28.5
Boil off losses	-2.5
Hops absorption losses (first wort, boil, aroma)	-0.2
Post boil Volume	23
Kettle losses	-2
Going into fermentor	21
Total:	**34.8**

Water	Liters
Equipment Profile Used:	G30

Notes

The suggested mineral additions assume an average NZ water profile and should be fine for most NZ water sources. The target water profile in ppm is shown above.

1. This recipe is designed to include mineral additions in the mash. If you do not have scales, 1 flat tsp for every 4g will give a close approximation for gypsum, calcium chloride and baking soda. The mineral additions are designed to target an mash pH of 5.6. Calcium is also essential for stabilising mash enzymes and for yeast health. The mineral additions are also very important for the flavour profile of the beer. If you do not have brewing salts in your home brewery, these are available for purchase on The League of Brewers website and will last a great many brews for a small cost.
2. All of our hops are packaged in 50, 100 and 200 g packs. This means that for this recipe you will have an extra 25 g of East Kent Goldings. You may choose to adjust the IBU's if the current stocks of hops have lower AAU percentages than those stated in the recipe, or keep them for another brew.
3. If you wish (particularly if your system requires excessive sparging, below SG 1.012), add sufficient lactic acid to the sparge water to lower the pH to 5.6 prior to heating (~ 0.5 - 1.0 ml/10 L, depending on water source).
4. We recommend adding kettle finings (whirlflock, Irish Moss) and yeast nutrient 15 min before the end of boil.
5. Quickly cool the wort to 18C and promptly transfer to a fermenter. We strongly recommend that the yeast be rehydrated in sterile warm water per the manufacturer's instructions. If not, you may lose up to 50% cell viability. Pitch into well aerated wort at 18C and allow the temperature to rise to 20C.

   7.When the primary ferment begins to slow (3 -5days), raise the fermentation temperature to 22 deg C and hold for 5-7 days or until a stable final gravity is reached. Note that Empire Ale yeast can be slow to finish. Don't rush it.
6. When ready, rack the beer to a CO2 purged keg and force carbonate, targeting 2.4 parts. Note that over carbonation will reduce the smooth full drinkability of this beer. This beer is also well suited to bottle conditioning.