White Wit-ch (AG) 60L

Created Saturday November 19th 2022

League Of Brewers

Method: **All Grain** Style: **Witbier** Boil Time: **90 min** Batch Size: **60 liters** (fermentor volume)

Pre Boil Size: **67.85 liters** Post Boil Size: **62 liters** Pre Boil Gravity: **1.047** (recipe based estimate)

Post Boil Gravity: **1.051** (recipe based estimate) Efficiency: **75%** (brew house) Source: **LoB Brewers Kits**

Calories: **237 calories** (Per 500ml) Carbs: **23.8 g** (Per 500ml)

Original Gravity:	Final Gravity:	ABV (standard):	IBU (tinseth):	SRM (morey):	Mash pH	Cost $
1.051	**1.012**	**5.1%**	**16.7**	**3.5**	**5.3**	**n/a**

Fermentables

Amount	Fermentable	Cost	PPG	°L	Bill %
4.50 kg	Gladfield - Raw Wheat		28	2	28.9%
8.30 kg	Gladfield - NZ - Gladfield - Lager Light		36	1.35	53.3%
1.60 kg	Harraways - Harraways - NZ Rolled Oats		33	2.2	10.3%
0.56 kg	Gladfield - NZ - Gladfield - Sour Grapes Malt		26	2	3.6%
0.60 kg	Gladfield - NZ - Gladfield - Oat hulls		0	0	3.9%

15.56 kg / $ 0.00

Hops

Amount	Variety	Cost	Type	AA	Use	Time	IBU	Bill %
120 g	Saaz		Pellet	3.2	Boil	60 min	16.7	100%

120 g / $ 0.00

Mash Guidelines

Amount	Description	Type	Temp	Time
42 L	Protein rest	Strike	50 °C	15 min
		Temperature	66 °C	60 min
	Mash out	Temperature	76 °C	--
41 L		Sparge	78 °C	--

Starting Mash Thickness: 2.7 L/kg

Other Ingredients

Amount	Name	Cost	Type	Use	Time
16 g	Coriander Seed		Spice	Boil	5 min.
80 g	Orange Zest		Spice	Boil	5 min.
11 g	Calcium Chloride (dihydrate)		Water Agt	Mash	1 hr.
11 g	Gypsum		Water Agt	Mash	1 hr.

Yeast

Mangrove Jack - Belgian Wit M21

Amount: 5 Each **Cost:** **Attenuation (custom):** 74% **Flocculation:** Med-Low

Optimum Temp: 18 - 25 °C **Starter:** No

Fermentation Temp: 22 °C **Pitch Rate:** 0.75 *(M cells / ml / ° P)* 568 B cells required

Priming

CO_2 Level: 2.2 Volumes

Target Water Profile Balanced Profile

Ca^{+2} 80 **Mg^{+2}** 3 **Na^{+}** 10 **Cl^{-}** 73.9 **SO_4^{-2}** 80.9 **HCO_3^{-}** 0.1

Quick Water Requirements

Water	Liters
Strike water volume at mash thickness of 2.7 L/kg	42
Grain absorption losses	-15.6
Remaining sparge water volume	41.4
Pre boil volume	67.9
Boil off losses	-5.3
Hops absorption losses (first wort, boil, aroma)	-0.6
Post boil Volume	62
Kettle losses	-2
Going into fermentor	60
Total:	**83.4**
Equipment Profile Used:	G70

Notes

This recipe requires the brewer to separately source the coriander seeds. These should be lightly crushed immediately prior to use. Fresh sweet oranges are also required for zesting. 8-10 oranges should be sufficient, but this will vary with size and zesting proficiency. This will add a brighter fresher citrus profile to the beer than dried bitter orange peel. The zest may be prepared either on brew day (but make sure you have plenty of oranges at hand) or ahead of time and stored in the freezer. Be careful to avoid the pith though, as this will add a bitter astringency.

The suggested mineral additions assume an average NZ water profile and should be fine for most NZ water sources. The target (balanced) 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/4g each of gypsum and calcium chloride will be a close approximation. The mineral additions are designed to target an optimal mash pH of 5.2 without the need for larger amounts of acidulated malt. 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, they are available for purchase on the LoB 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 30 g of Saaz hops. You may wish to use some of them to adjust the bittering if the current stocks of hops are a lower alpha acid %, or just save 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/10l lactic acid depending on water source).
4. This beer should be cloudy, so we recommend you don't add any kettle finings (whirlflock, Irish Moss). You may wish to add yeast nutrient 15 min before the end of boil.
5. Cool the wort to 18C and promptly transfer to a fermenter.
6. 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 to rise to 22C. 24
7. When the primary ferment is complete, hold the fermentation temperature at 20-22 deg C for 10-14 days. Three weeks from start to finish is a good rule of thumb. It is likely that there will be no need to crash cool your beer. Time is your friend.
8. When ready, rack the beer to a CO2 purged keg and force carbonate to around 2.7 vols CO2. Alternatively, bottle or keg conditioning with priming sugar is a very nice option for Belgian styles. Do not cold crash if you choose this option and do not rush the beer. A stable finishing gravity is a must (one week for clean beers is a good safety margin) and use a priming calculator to target around 2.7 vols C02.