Milky Way (AG) 23L

Created Tuesday April 18th 2023

League of Brewers

Method: **All Grain** Style: **Sweet Stout** Boil Time: **60 min** Batch Size: **23 liters** (fermentor volume) Pre Boil Size: **28.18 liters**

Post Boil Size: **25 liters** Pre Boil Gravity: **1.052** (recipe based estimate) Post Boil Gravity: **1.058** (recipe based estimate)

Efficiency: **75%** (brew house) Source: **LoB kits** Calories: **274 calories** (Per 500ml) Carbs: **33.9 g** (Per 500ml)

Original Gravity:	Final Gravity:	ABV (standard):	IBU (tinseth):	SRM (morey):	Mash pH	Cost $
1.058	**1.020**	**5.0%**	**25.7**	**34.9**	**5.3**	**n/a**

Fermentables

Amount	Fermentable	Cost	PPG	°L	Bill %
0.30 kg	New Zealand - Rolled Oats		12.4	1.4	5%
0.25 kg	Gladfield - Roasted Barley		33	488	4.1%
0.35 kg	Lactose (Milk Sugar)		41	1	5.8%
4.50 kg	Gladfield - NZ - Gladfield - Ale Malt		35.88	2.85	74.4%
0.20 kg	Gladfield - NZ - Gladfield - Light Chocolate Malt		32.7	475	3.3%
0.25 kg	Gladfield - NZ - Gladfield - Dark Crystal Malt		35.88	100	4.1%
0.20 kg	Gladfield - NZ - Gladfield - Brown Malt		34	85	3.3%

6.05 kg / $ 0.00

Hops

Amount	Variety	Cost	Type	AA	Use	Time	IBU	Bill %
35 g	Barth-Haas - Fuggles		Pellet	4.2	Boil	60 min	15.95	41.2%
25 g	Fuggles		Pellet	4.2	Boil	15 min	5.65	29.4%
25 g	Barth-Haas - Fuggles		Pellet	4.2	Boil	10 min	4.13	29.4%

85 g / $ 0.00

Other Ingredients

Amount	Name	Cost	Type	Use	Time
5 g	Calcium Chloride (dihydrate)		Water Agt	Mash	1 hr.
3 g	Gypsum		Water Agt	Mash	1 hr.

Yeast

Lallemand - LALBREW® WINDSOR BRITISH-STYLE BEER YEAST

Amount: 1 Each **Cost:** **Attenuation (avg):** 70% **Flocculation:** Low **Optimum Temp:** 15 - 22 °C **Starter:** No

Fermentation Temp: - **Pitch Rate:** 0.35 *(M cells / ml / ° P)* 115 B cells required

Priming

CO_2 Level: 2.2 Volumes

Target Water Profile London (Porter, dark ales)

Ca^{+2} 74.6 **Mg^{+2}** 3 **Na^{+}** 10 **Cl^{-}** 82.1 **SO_4^{-2}** 57 **HCO_3^{-}** 40

Mash Guidelines

Amount	Description	Type	Start Temp	Target Temp	Time
15.3 L		Infusion	--	64 °C	60 min
	Mash out	Temperature	64 °C	76 °C	10 min
18.3 L		Sparge	--	76 °C	--

Starting Mash Thickness: 2.7 L/kg
Starting Grain Temp: 20 °C

Quick Water Requirements

Water	Liters
Strike water volume at mash thickness of 2.7 L/kg	15.4
Mash volume with grains	19.2
Grain absorption losses	-5.7
Remaining sparge water volume	18.3
Volume increase from sugar/extract (early additions)	0.2
Pre boil volume	28.2
Boil off losses	-2.5

Water	Liters
Hops absorption losses (first wort, boil, aroma)	-0.7
Post boil Volume	25
Kettle losses	-2
Going into fermentor	23
Total:	**33.6**
Equipment Profile Used:	G30

Notes

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

Special note: This recipe is for a Sweet Stout, otherwise known as a Milk Stout. The sweetness in this example is achieved through (a) The use of a yeast which does not utilize the sugar maltotriose (=10-15% of all malt worts). (b) The addition of lactose (milk sugar), which will also raise the OG from 1.053 to 1.058. Since lactose is also un-fermentable, this will further raise the finishing gravity to ~1.020 for a sweet smooth finish.

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 ~5.2-5.3. 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 10 g of Fuggles 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 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/10l lactic acid depending on water source).
4. We recommend you add kettle finings (whirlflock, Irish Moss). and yeast nutrient 15 min before the end of boil.
5. Add the lactose 10 min before the end of the boil.
6. Cool the wort to 18 deg C and promptly transfer to a fermenter.
7. 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 18 deg C and allow to rise to 20 deg C.
8. When the primary ferment is complete, hold the fermentation temperature at 20 deg C for 7-14 days. Two-three weeks from start to finish is a good rule of thumb.
9. When ready, rack the beer to a CO2 purged keg and force carbonate to around 2.4 vols CO2. Alternatively, bottle or keg conditioning with priming sugar is a great option. 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.