Precision. Geman Pils. (AG) 23L

Created: Sunday October 6th 2024

League of Brewers

Method: **All Grain** Style: **German Pilsner (Pils)** Boil Time: **60 min** Batch Size: **23 liters** (fermentor volume) Pre Boil Size: **28.08 liters**

Post Boil Size: **25 liters** Pre Boil Gravity: **1.041** (recipe based estimate) Post Boil Gravity: **1.046** (recipe based estimate)

Efficiency: **75%** (brew house) Source: **LoB Kits** Calories: **210 calories** (Per 500ml) Carbs: **17.3 g** (Per 500ml)

Original Gravity:	Final Gravity:	ABV (standard):	IBU (tinseth):	SRM (morey):	Mash pH	Cost $
1.046	**1.007**	**5.1%**	**40.1**	**3.5**	**5.2**	**n/a**

Fermentables

Amount	Fermentable	Cost	PPG	°L	Bill %
4.40 kg	Bestmalz - DE - Bestmalz - BEST Pilsen		36.8	2	91.1%
0.25 kg	Gladfield - NZ - Gladfield - Chit Malt		15	1.52	5.2%
0.18 kg	Gladfield - NZ - Gladfield - Sour Grapes Acid Malt		12	2	3.7%

4.83 kg / $ 0.00

Hops

Amount	Variety	Cost	Type	AA	Use	Time	IBU	Bill %
23 g	Hallertau Magnum		Pellet	12.5	Boil	60 min	34.5	31.5%
25 g	Hopsteiner - Tettnanger		Pellet	2.7	Boil	15 min	4.02	34.2%
25 g	Hopsteiner - Tettnanger		Pellet	2.7	Boil	5 min	1.61	34.2%

73 g / $ 0.00

Other Ingredients

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

Yeast

Fermentis - Saflager - German Lager Yeast W-34/70

Amount: 3 Each **Cost:** **Attenuation (avg):** 83% **Flocculation:** High **Optimum Temp:** 9 - 22 °C **Starter:** No

Fermentation Temp: - **Pitch Rate:** 1.5 *(M cells / ml / ° P)* 395 B cells required

Priming

Method: co2 Amount: 1.91 bar Temp: 20 °C CO_2 Level: 2.5 Volumes

Target Water Profile Light colored and hoppy

Ca^{+2} 80 **Mg^{+2}** 5 **Na^{+}** 10 **Cl^{-}** 40 **SO_4^{-2}** 125 **HCO_3^{-}** 0

Mash Guidelines

Amount	Description	Type	Start Temp	Target Temp	Time
13 L	Starch conversion	Infusion	64 °C	64 °C	60 min
	Mash out	Temperature	64 °C	76 °C	15 min
19.9 L		Sparge	--	--	--

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	13
Mash volume with grains	16.2
Grain absorption losses	-4.8
Remaining sparge water volume	19.9
Pre boil volume	28.1
Boil off losses	-2.5
Hops absorption losses (first wort, boil, aroma)	-0.6
Post boil Volume	25
Kettle losses	-2
Going into fermentor	23
Total:	**32.9**

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/4g of calcium chloride will be a close approximation. The mineral additions are designed to target an optimal mash pH of ~5.2. 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 27 g of Hallertau Magnum hops. You may wish to use some of them to adjust the bittering if the current stocks of hops are a lower alpha acid %, and/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. This recipe utilises a 90 min boil. Note that no hops are required until the 60 bittering addition. We recommend you add kettle finings (whirlflock, Irish Moss) and yeast nutrient 15 min before the end of boil.
5. Cool the wort to 12 deg C and promptly transfer to a fermenter (you will likely need to finish cooling in your fermenter fridge).
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 12 deg C and ferment at this temperature until complete. Expect this to take
   around 2 weeks for the beer to finish properly. It is always important not to rush the beer. While it shouldn't be necessary if the pitch rate and fermentation guidelines are followed, some brewers may choose to slowly raise the beer temperature by 2-3 degrees towards the end of the ferment (diacetyl rest), especially if you have had any issues with an unhealthy ferment/have performed a sensory test and picked up diacetly. If you do this, we recommend you give the beer plenty of time (6-7 days rest) at these cooler temperatures.
7. When the primary ferment is complete, lager at 2 deg C for 4-6 weeks for a smooth lager finish. A keg is perfect for this.
8. When ready, rack the beer to a CO2 purged keg (finings can be added if needed) and force carbonate to around 2.4 vols CO2.