Dark Matter. Dunkles Weissbier (AG) 23 L

Created: Sunday July 14th 2024

League of Brewers

Method: **All Grain** Style: **Dunkles Weissbier** Boil Time: **90 min** Batch Size: **23 liters** (fermentor volume) Pre Boil Size: **29.15 liters**

Post Boil Size: **25 liters** Pre Boil Gravity: **1.045** (recipe based estimate) Post Boil Gravity: **1.052** (recipe based estimate) Efficiency: **75%** (brew house)

Source: **LoB Kits** Calories: **240 calories** (Per 500ml) Carbs: **21.8 g** (Per 500ml)

Original Gravity:	Final Gravity:	ABV (standard):	IBU (tinseth):	SRM (morey):	Mash pH	Cost $
1.052	**1.010**	**5.5%**	**15.6**	**18.7**	**5.2**	**n/a**

Fermentables

Amount	Fermentable	Cost	PPG	°L	Bill %
0.18 kg	Weyermann - Carafa Special Type II		29.9	425	3.4%
2.80 kg	Bestmalz - DE - Bestmalz - BEST Wheat Malt		37.7	1.8	52.8%
2 kg	Weyermann - Weyermann - Munich Type II (Dark)		35.88	9	37.7%
0.20 kg	Gladfield - NZ - Gladfield - Medium Crystal Malt		35.88	52.5	3.8%
0.12 kg	Gladfield - Sour Grapes Acid Malt		12	2	2.3%

5.30 kg / $ 0.00

Hops

Amount	Variety	Cost	Type	AA	Use	Time	IBU	Bill %
50 g	Tettnang		Pellet	2.7	Boil	60 min	15.63	100%

50 g / $ 0.00

Other Ingredients

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

Yeast

Lallemand - LALBREW® MUNICH CLASSIC WHEAT BEER YEAST

Amount: 2 Each **Cost:** **Attenuation (avg):** 78% **Flocculation:** Low **Optimum Temp:** 18 - 22 °C **Starter:** No

Fermentation Temp: 20 °C **Pitch Rate:** 0.75 *(M cells / ml / ° P)* 222 B cells required

Priming

Method: co2 Amount: 0.97 bar Temp: 4 °C CO_2 Level: 2.7 Volumes

Target Water Profile Balanced Profile

Ca^{+2} 72 **Mg^{+2}** 3 **Na^{+}** 10 **Cl^{-}** 66 **SO_4^{-2}** 72 **HCO_3^{-}** 40

Mash Guidelines

Amount	Description	Type	Start Temp	Target Temp	Time
14.3 L	Ferulic acid rest. See special note No1.	Strike	43 °C	43 °C	20 min
	Starch conversion.	Temperature	43 °C	65 °C	60 min
	Mash out.	Temperature	65 °C	77 °C	15 min
20.1 L		Sparge	--	77 °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	14.3
Mash volume with grains	17.8
Grain absorption losses	-5.3
Remaining sparge water volume	20.1
Pre boil volume	29.2
Boil off losses	-3.8
Hops absorption losses (first wort, boil, aroma)	-0.4
Post boil Volume	25
Kettle losses	-2
Going into fermentor	23
Total:	**34.5**
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 (balanced) water profile in ppm is shown above.

Special note No1: the mash schedule for this recipe includes a ferulic acid rest to help release ferulic acid from the malt. Ferulic acid is a precursor for 4-vinyl guaiacol and is an important step in encouraging the yeast to produce the phenolics characteristic of the style (i.e. cloves).

Special note No2: This recipe utilises a 90 min boil which is generally recommended for beers brewed with large proportions of light coloured malts (i.e. wheat). The longer boil time helps drive off the precursor of dimethyl sufide (DMS) = cooked corn flavour/aroma. No hops are added until 60 minutes in order to keep the IBU levels in check, without reducing the amount of hops used.

Advanced note: a decoction mash is traditionally used in the brewing of a Dunkles Weissbier and will help bring out the bready malty flavours. There are a number of approaches available, some more complicated than others, but for the slightly more adventurous brewer a simple double decoction can be added to the mash schedule as follows. 15-20 minutes protein rest (50 deg C), then pull a thick mash sample (approximately 1/3 of the mash without lots of the liquor and enzymes) and heat in a separate vessel to 65 deg C (there is no need to raise the temperature of the main mash yet). Hold the decoction at 65 deg C for 20 min and then bring it to the boil. Slowly return the decoction to the main mash raising the temperature to 65 deg C (for 1 hour). Any remaining decoction volume can be left to cool some more before returning to the main mash. At the end of the main 65 deg C infusion, pull a wet mash sample (1/3 of the mash with plenty of liquor) and bring it to the boil. Carefully return the boiled mash to the main mash, raising the temperature to mash out.

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. 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).
3. We recommend you add kettle finings (whirlflock, Irish Moss) and yeast nutrient 15 min before the end of boil.
4. Cool the wort to 18 deg C and promptly transfer to a fermenter
5. 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, allow temperature to rise to 20 deg C and ferment at this temperature until complete. Expect this to take
   around 1 week for the beer to finish. It is always important not to rush the beer. Giving the beer another week at primary fermentation temperature is always a good idea. 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 (2-3 days rest).
6. When ready, rack the beer to a CO2 purged keg (finings can be added if needed) and force carbonate to around 2.7 vols CO2.