League Greenbacker (AG)

American Pale Ale (18 B)

Type: All Grain
Batch Size: 23.00 L
Boil Size: 28.50 L
Boil Time: 60 min
Final Bottling Vol: 22.00 L
Fermentation: Cal Common - Ale

Date: 15 Nov 2020
Efficiency: 75.00 %
Est Mash Efficiency: 81.5 %



Brewing Notes:
This recipe uses a lager yeast that is tolerant of warmer fermentation temperatures while maintaining a clean fermentation profile. The average temperature of the 20 min hop stand should be around 90C.

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 Ca - 100, Mg - 10, Na - 10, SO4 - 150, Cl - 60.

1. If available, add sufficient lactic acid to the sparge water to lower the pH to 5.6 prior to heating (~ 0.5 - 1.5 ml depending on water source).
2. If flavour minerals are available, add to boil only as mash pH is taken care of with acid malt.
3. If available, add kettle finings and yeast nutrient 15 min before the end of boil.
4. Cool the wort to 90C, add the whirlpool hops and maintain the temp at 90C for 20 min before continuing to chill to pitching temp.
5. It is recommended that the yeast be rehydrated per the manufacturers instructions. Pitch at 15C - 16C and maintain until fermentation is nearing completion.
6. Once fermentation slows (~7 days), add the dry hops and raise the temperature to 18C - 19C for a diacetyl rest.
7. Once fermentation is complete, cold crash to 2C and hold for a week before packaging.
8. Carbonate to 2.6 - 2.7 volumes of CO2.

Mash or Steep Grains

Mash Ingredients

Amt	Name	Type	#	%/IBU	Volume
3.000 kg	Gladfield American Ale Malt (4.7 EBC)	Grain	1	55.6 %	1.96 L
0.850 kg	Gladfield Munich Malt (15.5 EBC)	Grain	2	15.7 %	0.55 L
0.850 kg	Gladfield Wheat Malt (4.2 EBC)	Grain	3	15.7 %	0.55 L
0.500 kg	Gladfield Supernova Malt (115.0 EBC)	Grain	4	9.3 %	0.33 L
0.200 kg	Gladfield Sour Grapes Malt (acid malt) (4.0 EBC)	Grain	5	3.7 %	0.13 L

Mash Steps

Name	Description	Step Temperature	Step Time
Saccharification	Add 18.08 L of water at 72.1 C	67.0 C	60 min
Mash Out	Heat to 76.0 C over 10 min	76.0 C	10 min

◯ Fly sparge with 15.83 L water at 75.6 C

◯ Add water to achieve boil volume of 28.50 L
◯ Estimated pre-boil gravity is 1.047 SG

Boil Ingredients

Amt	Name	Type	#	%/IBU	Volume
10.00 g	Mosaic (HBC 369) [10.80 %] - Boil 60.0 min	Hop	6	11.5 IBUs	-
8.50 g	Gypsum (Calcium Sulfate) (Boil)	Water Agent	7	-	-
3.40 g	Calcium Chloride (Boil)	Water Agent	8	-	-
0.50 Items	Whirlfloc Tablet (Boil 15.0 mins)	Fining	9	-	-
1.50 g	Yeast Nutrient (Boil 15.0 mins)	Other	10	-	-

Steeped Hops

Amt	Name	Type	#	%/IBU	Volume
150.00 g	Nelson Sauvin [9.70 %] - Steep/Whirlpool 20.0 min, 90.…	Hop	11	44.9 IBUs	-

◯ Estimated Post Boil Vol: 26.00 L and Est Post Boil Gravity: 1.054 SG

Cool and Transfer Wort

◯ Cool wort to fermentation temperature
◯ Transfer wort to fermenter
◯ Add water if needed to achieve final volume of 23.00 L

Pitch Yeast and Measure Gravity and Volume

Fermentation Ingredients

Amt	Name	Type	#	%/IBU	Volume
2.0 pkg	California Lager (Mangrove Jack's #M54)	Yeast	12	-	-

◯ Measure Actual Original Gravity _____ (Target: 1.054 SG)
◯ Measure Actual Batch Volume _____ (Target: 23.00 L)

Fermentation

◯ 15 Nov 2020 - Primary Fermentation (7.00 days at 16.0 C ending at 16.0 C)
◯ 22 Nov 2020 - Secondary Fermentation (5.00 days at 19.0 C ending at 19.0 C)

Dry Hop and Bottle/Keg

Dry Hop/Bottling Ingredients

Amt	Name	Type	#	%/IBU	Volume
90.00 g	Mosaic (HBC 369) [10.80 %] - 5.0 Days Before Bottling…	Hop	13	0.0 IBUs	-

◯ Measure Final Gravity: _____ (Estimate: 1.010 SG)
◯ Date Bottled/Kegged: - Carbonation: Bottle with 155.90 g Corn Sugar