League Miguel (AG)

American Lager (1 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: Steam Beer (California Common), Two stage

Date: 02 Dec 2019
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. If possible, ferment at the cool end of the range (12C - 15C). The beer will benefit from lagering for at least 2 weeks if kegged or after bottle conditioning is complete. It will continue to improve if stored cool.

1. If flavour minerals are available, add to boil only as mash pH is taken care of with acid malt.
2. If available, add kettle finings and yeast nutrient 15 min before the end of boil.
3. Cool the wort to 85C, add the whirlpool hops and maintain the temp at 85C for 20 min before continuing to chill to pitching temp.
4. It is recommended that the yeast be rehydrated per the manufacturers instructions. Pitch at 12C - 15C and maintain until fermentation is nearing completion.
5. Once fermentation slows (~7 - 10 days), raise temp to 18C for a diacetyl rest and add the dry hop addition.
6. After 7 days, cold crash to 2C and let lager for at least a week before packaging.
7. Carbonate to 2.7 volumes of CO2.

Water Prep

Amt	Name	Type	#	%/IBU	Volume
3.70 g	Calcium Chloride (CaCl2) (Mash)	Water Agent	1	-	-
3.40 g	Gypsum (CaSO4) (Mash)	Water Agent	2	-	-

Mash or Steep Grains

Mash Ingredients

Amt	Name	Type	#	%/IBU	Volume
0.150 kg	Rice Hulls (0.0 EBC)	Adjunct	3	3.0 %	0.15 L
2.700 kg	Gladfield Lager Light (2.8 EBC)	Grain	4	53.5 %	1.76 L
1.700 kg	Torrefied Maize, Flaked (1.0 EBC)	Grain	5	33.7 %	1.11 L
0.350 kg	Gladfield Sour Grapes Malt (acid malt) (4.0 EBC)	Grain	6	6.9 %	0.23 L
0.150 kg	Gladfield Munich Malt (15.5 EBC)	Grain	7	3.0 %	0.10 L

Mash Steps

Name	Description	Step Temperature	Step Time
Saccharification	Add 17.14 L of water at 72.3 C	67.0 C	60 min
Mash Out	Heat to 76.0 C over 10 min	76.0 C	10 min

Fly sparge with 16.42 L water at 76.0 C

Add water to achieve boil volume of 28.50 L
Estimated pre-boil gravity is 1.042 SG

Boil Ingredients

Amt	Name	Type	#	%/IBU	Volume
12.00 g	Motueka [6.60 %] - Boil 60.0 min	Hop	8	8.8 IBUs	-
0.50 Items	Whirlfloc Tablet (Boil 15.0 mins)	Fining	9	-	-
1.25 g	Yeast Nutrient (Boil 15.0 mins)	Other	10	-	-

Steeped Hops

Amt	Name	Type	#	%/IBU	Volume
32.00 g	Wakatu (Hallertau Aroma) [5.30 %] - Steep/Whirlpool 20.0 min, 85.0 C	Hop	11	3.7 IBUs	-
24.00 g	Motueka [6.60 %] - Steep/Whirlpool 20.0 min, 85.0 C	Hop	12	3.5 IBUs	-

Estimated Post Boil Vol: 26.00 L and Est Post Boil Gravity: 1.048 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	13	-	-

Measure Actual Original Gravity _____ (Target: 1.048 SG)
Measure Actual Batch Volume _____ (Target: 23.00 L)

Fermentation

02 Dec 2019 - Primary Fermentation (5.00 days at 15.0 C ending at 15.0 C)
07 Dec 2019 - Secondary Fermentation (10.00 days at 18.0 C ending at 18.0 C)

Dry Hop and Bottle/Keg

Dry Hop/Bottling Ingredients

Amt	Name	Type	#	%/IBU	Volume
18.00 g	Wakatu (Hallertau Aroma) [5.30 %] - Dry Hop 7.0 Days	Hop	14	0.0 IBUs	-
14.00 g	Motueka [6.60 %] - Dry Hop 7.0 Days	Hop	15	0.0 IBUs	-

Measure Final Gravity: _____ (Estimate: 1.011 SG)
Date Bottled/Kegged: - Carbonation: Keg with 17.22 PSI