Style: 20C. Imperial Stout

Brewer: BEER-N-BBQ by Larry
Brew Date: November 6, 2021

Brew System: Blichmann BrewEasy, 10 Gal, Electric, 75% Power
Chiller: JaDeD Scylla **Fermenter(s):** FK 35L Snubnose, Spike Flex+

Grain Bill, Adjuncts, & Sugars

Type	Qty lb	% of Bill
Pale Malt: Brewers Malt, 2-row (Briess)	16.00	71.1%
Munich Malt: Dark Munich Malt (Avangard Malz)	2.50	11.1%
Caramel Malt: Caramel Malt 80L (Briess)	1.00	4.4%
Flaked Oats (Briess)	1.00	4.4%
Caramel Malt: Caramel Malt 120L (Briess)	1.00	4.4%
Chocolate Malt: Chocolate Malt (Briess)	0.75	3.3%
Roasted Malt: Midnight Wheat Malt (Briess)	0.25	1.1%

Recipe Outputs

	Design	Actual	BJCP Guide Min	BJCP Guide Max
Extract Eff.:	70.0%	55.5%		
Brewhouse Eff:	63.6%	56.6%		
O.G.:	1.084	1.081	1.075	1.115
F.G.:	**1.016**	**1.015**	1.018	1.030
Ferm Vol:	25.0	23.0		
Batch Vol:	20.0	20.0		
App Atten:	81.0%	80.9%		
IBUs:	**33**	**34**	50	90
ABV:	8.8%	8.5%	8.0%	12.0%
SRM:	34	35	30	40
Calories per US Pint:		397		

Water Information

Chicago (Lake Michigan)

ppm (mg/L)	Orig.	Adj.
Calcium	37	108
Magnesium	12	22
Sodium	9	9
Choride	16	120
Sulfate	25	97
Alkalinity	102	
Cl/SO_4 Ratio	0.64	1.24

Water Additions (grams)

	Mash	Sparge
Gypsum	1.0	1.3
Cal Chloride	4.0	5.2
Epson Salt	2.0	2.6
Slaked Lime	0.0	0.0
Baking Soda	0.0	0.0
Chalk	0.0	0.0
Lactic Acid	0	mL

Total Water Required

Design	44.4	qt	68.0	°F	Actual	44.0	qt	68.0	°F

Mash Schedule & Water Infusions

Step #	Schedule Temp °F	Schedule Time min	Strike Water (Preheated Tun) Design qt	Design °F	Actual qt	Actual °F	Mash Actual °F	Mash pH Design	Mash pH Actual
1	156	75	19.7	175	20.0	68.0		5.5	
2	172	10							
3									
4									
5									

Lautering Process (Wort Separation)

		Design qt	Design °F	Actual qt	Actual °F	Corrected qt	Corrected °F
No Sparge	Sparge Water Req'd	25.7	172.0	24.0	68.0	24.6	172.0
	-	-	-				
	-	-	-				
	-	-	-				
	Wort Collected	35.1	172.0	33.0	170.0	33.0	172.0
	Grain Absorb Rate	0.38	qt/lb	0.46	qt/lb		
Grains Only Contribution	S.G. Hydrometer	1.066		1.057	53.5 °F		**1.055**
	S.G. Refractometer	16.1	° Brix	14.0	° Brix		1.057
	Mash Extract Efficiency	70%		**55.5%**	Hydrometer		
				56.8%	Refractometer		

Boil Process

		Design		Actual		Corrected	
Boil	Start Volume	35.6	qt	34.0	qt		
	Time	90	min	60	min		
	End Volume (w/ IC)	29.5	qt	29.0	qt		
	Boil off Rate	5.4	qt/hr	5.0	qt/hr		
Post Boil	Chilled Volume	26.5	qt		qt	0.0	qt
		75	°F		°F	75	°F
O.G.	Hydrometer	1.084			°F		
	Refractometer	20.2		19.6	° Brix		**1.081**

Fermentation & Clarification

	Design qt	Design °F	Actual qt	Actual °F	Corrected	
Into Fermenter	25.0	75.0	23.0	75.0		
Into Bright Tank or Aging Vessel			21.0	72.0		
F.G. Hydrometer	1.016		1.016	65.0 °F		**1.015**
F.G. Refractometer	4.1	° Brix		° Brix		
Packaged Beer	20.0	qt	20.0	qt		

Hop Bill & Schedule

Species	Type	Alpha (%)	Qty oz	AAU	Time (min)
Columbus	Pellet	16.2	0.75	12.2	60
Northern Brewer (U.S.)	Pellet	7.5	0.50	3.8	10
Columbus	Pellet	16.2	0.25	4.1	10

Other Ingredients/Additions

Other Ingredients/Additions	Amount	When
Whirlfloc tablets	1	15 min
yeast nutrient	.5 tsp	15 min
dry yeast (See yeast info for strain)	2 pkg	pitch
oak chips	2 oz	post-ferment
Bourbon	See notes	post-ferment

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Yeast Information

Fermentis
SafAle US-05
Ferm Temp: 64-82 °F

Forced Carbonation

CO2 Volume	2.3	
Temperature	38.0	°F
Pressure	9.1	PSI

NOTES:
- Optionally, to avoid astringency, either add roasted grains late in mash or make a cold steeped tea in advance and add to boil.
- Ferment out and rest (~14 days).
- While fermenting, soak oak chips in just enough bourbon to cover them for ~2 weeks or longer. Use air tight jar.
- Rack to another vessel, and add soaked chips and most (or all) of the bourbon for a couple of weeks or longer. Taste over time to ensure it doesn't become too oaky. Use a sanitized mesh bag to keep tubing from clogging during transfer later. A bag also allows removal if flavor gets to become too strong. Or, if not using bag, rack again to get beer off oak if necessary.
- Keg. Use closed system transfer if possible to prolong shelf life since it may take to while to drink all of this.
- Had to add 1.5 lb DME to bring OG up to where we want it.