

HOP AROMA QUALITY (AQ) CERTIFICATE OF ANALYSIS

To: Randy Urness - Fine Bine Farms

Sample ID: AGDSTE102622021

Variety: Sterling

Date : 10/28/2021

Certifying Officer: Zach Lilla - Lab Manager
TTB Certified Chemist - Member AOAC - ASBC - BJCP



Method			
Hops-4C	Moisture Analysis	% Moisture	17.2
		% Dry Matter	82.8
AAR	Xanthohumol by HPLC	NT	mg/g
Hops-12	Hop Storage Index	HSI	0.298
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.47
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	22.8 (% of Total AA)
ICE-3		% Alpha Acids	6.00
		Colupulone	43.7 (% of Total BA)
		% Beta Acids	4.01
		a/b ratio	1.49
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	0.49 9.23
		Myrcene	42.33 792.09
		Linalool	0.64 12.05
		Caryophyllene	6.81 127.43
		Farnesene	19.63 367.34
		Humulene	18.99 355.43
		Geraniol	0.18 3.35

NT=NOT TESTED

Signed:

Zachary Lilla - Lab Manager - TTB Certified Chemist
AAR LAB - ADVANCED ANALYTICAL RESEARCH
2517 Advance Rd Ste. A Madison WI 53718



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% Moisture	17.2	Typical Range 8 - 12%	↑
Total Oil ml/100g @ 10%	1.60	1.0 - 2.0 mL	✓
cohumulone	22.8	22 - 27%	✓
Alpha Acids @ 10%	6.51	5.5 - 8.5%	✓
Beta Acids @ 10%	4.36	4.5 - 6.0%	↓
AROMA QUALITY (AQ)			
	% Area		
B-Pinene	0.49	0.30 - 0.60 %	✓
Myrcene	42.33	35.00 - 45.00 %	✓
Linalool	0.64	0.50 - 1.00 %	✓
Caryophyllene	6.81	5.00 - 8.00 %	✓
Farnesene	19.63	15.00 - 19.00 %	↑
Humulene	18.99	16.00 - 18.00 %	↑
Geraniol	0.18	0.10 - 0.30 %	✓
	mg/mL		
B-Pinene	6.27	3 - 6	↑
Myrcene	538.21	350 - 450	↑
Linalool	8.19	5 - 10	✓
Caryophyllene	86.58	50 - 80	↑
Farnesene	249.60	150 - 190	↑
Humulene	241.51	160 - 180	↑
Geraniol	2.28	1 - 3	✓
	mg/100g @ 10% Moisture		
B-Pinene	10.03	3 - 12	✓
Myrcene	860.75	350 - 900	✓
Linalool	13.10	5 - 20	✓
Caryophyllene	138.47	50 - 160	✓
Farnesene	399.18	150 - 380	↑
Humulene	386.24	160 - 360	↑
Geraniol	3.64	1 - 6	✓

Signed: _____

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