

HOP QUALITY REPORT CERTIFICATE OF ANALYSIS

To: Wisconsin Hop Exchange

Sample ID: 24WIL1104-01LH

Variety: Willamette

Product: T-90 Pellet

Date : 2/20/2025



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

<u>Method</u>			
Hops-4C	Moisture Analysis	% Moisture	11.3
		% Dry Matter	88.7
AAR	Xanthohumol by HPLC		NT mg/g
Hops-12	Hop Storage Index	HSI	0.284
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.08
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	32.8 (% of Total AA)
ICE-3		% Alpha Acids	4.71
		Colupulone	50.5 (% of Total BA)
		% Beta Acids	4.43
		a/b ratio	1.06
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	0.58 5.88
		Myrcene	44.15 506.47
		Linalool	0.48 5.69
		Caryophyllene	8.57 90.23
		Farnesene	6.55 85.13
		Humulene	21.79 227.62
		Geraniol	0.24 2.92

NT=NOT TESTED

Signed:

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



AROMA QUALITY (AQ)

HOP QUALITY REPORT



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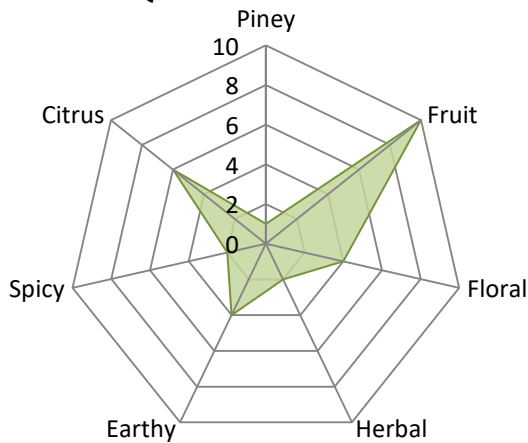
Certifying Officer: Zach Lilla - Lab Manager
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	Typical Range	
% Moisture 11.3	8 - 12 %	✓
HOP QUALITY (adjusted to 10% moisture)		
Total Oil ml/100g 1.09	0.6 - 1.6 mL	✓
cohumulone 32.8	28 - 32%	↑
Alpha Acids 4.78	4.5 - 6.5%	✓
Beta Acids 4.49	3.0 - 4.5%	✓
Myrcene 44.15	21.00 - 33.00 %	↑

AROMA QUALITY (AQ)

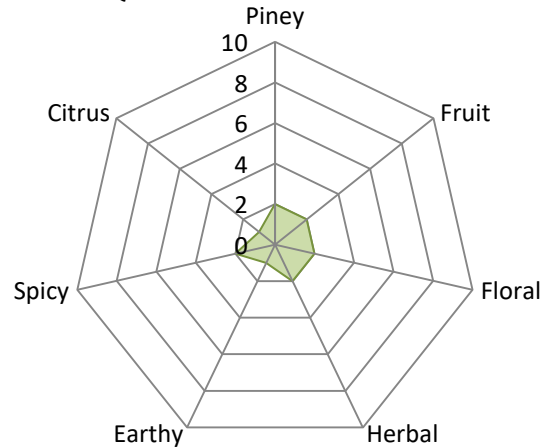
	% Area		mg/mL of Hop Oil			mg/100g of Hops (@10%H2O)			
B-Pinene	0.58	0.20 - 0.50 %	↑	5.46	2 - 5	↑	5.97	1.2 - 8	✓
Myrcene	44.15	21.00 - 33.00 %	↑	470.05	210 - 330	↑	513.72	126 - 528	✓
Linalool	0.48	0.40 - 0.70 %	✓	5.28	4 - 7	✓	5.77	2.4 - 11.2	✓
Caryophyllene	8.57	11.00 - 15.00 %	↓	83.75	110 - 150	↓	91.53	66 - 240	✓
Farnesene	6.55	7.00 - 10.00 %	↓	79.01	70 - 100	✓	86.35	42 - 160	✓
Humulene	21.79	31.00 - 35.00 %	↓	211.25	310 - 350	↓	230.88	186 - 560	✓
Geraniol	0.24	0.05 - 0.35 %	✓	2.71	0.5 - 3	✓	2.96	0.3 - 4.8	✓

AQ vs VARIETY SPECS



Aroma Intensity= 13

AQ vs ALL HOP VARIETIES



Aroma Intensity= 3

Signed: _____

Zachary Lilla - Lab Manager - TTB Certified Chemist

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2517 Advance Rd Ste. A Madison WI 53718

info@aarlab.com

www.aarlab.com



608-622-7522