

HOP QUALITY REPORT CERTIFICATE OF ANALYSIS

To: Wisconsin Hop Exchange

Sample ID: 23WIL02WI-010LH

Variety: Willamette

Product: T-90 Pellet

Date : 12/4/2023



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

<u>Method</u>			
Hops-4C	Moisture Analysis	% Moisture	9.8
		% Dry Matter	90.2
AAR	Xanthohumol by HPLC		NT mg/g
Hops-12	Hop Storage Index	HSI	0.264
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.17
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	33.1 (% of Total AA)
ICE-3		% Alpha Acids	4.76
		Colupulone	51.3 (% of Total BA)
		% Beta Acids	4.72
		a/b ratio	1.01
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	NT
		Myrcene	NT
		Linalool	NT
		Caryophyllene	NT
		Farnesene	NT
		Humulene	NT
		Geraniol	NT

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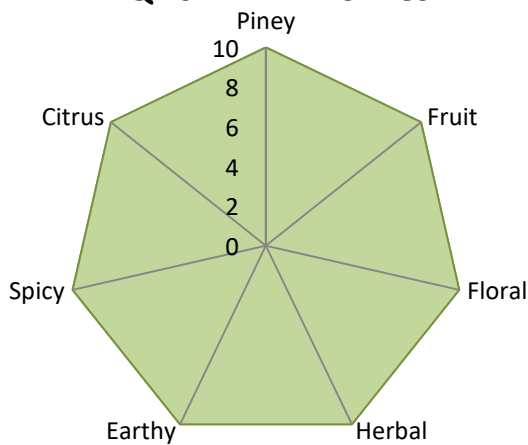
Certifying Officer: Zach Lilla - Lab Manager
TTB Certified Chemist - Member AOAC - ASBC - BJCP

		Typical Range	
% Moisture	9.8	8 - 12 %	<input checked="" type="checkbox"/>
HOP QUALITY (adjusted to 10% moisture)			
Total Oil ml/100g	1.16	0.6 - 1.6 mL	<input checked="" type="checkbox"/>
cohumulone	33.1	28 - 32%	<input type="checkbox"/>
Alpha Acids	4.75	4.5 - 6.5%	<input checked="" type="checkbox"/>
Beta Acids	4.71	3.0 - 4.5%	<input type="checkbox"/>
Myrcene	NT	21.00 - 33.00 %	<input type="checkbox"/>

AROMA QUALITY (AQ)

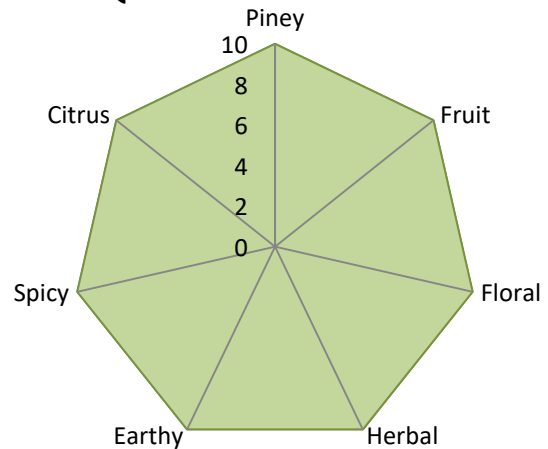
		% Area	mg/mL of Hop Oil			mg/100g of Hops (@10%H2O)		
B-Pinene	NT	0.20 - 0.50 %	NT	2 - 5	NT	1.2 - 8		
Myrcene	NT	21.00 - 33.00 %	NT	210 - 330	NT	126 - 528		
Linalool	NT	0.40 - 0.70 %	NT	4 - 7	NT	2.4 - 11.2		
Caryophyllene	NT	11.00 - 15.00 %	NT	110 - 150	NT	66 - 240		
Farnesene	NT	7.00 - 10.00 %	NT	70 - 100	NT	42 - 160		
Humulene	NT	31.00 - 35.00 %	NT	310 - 350	NT	186 - 560		
Geraniol	NT	0.05 - 0.35 %	NT	0.5 - 3	NT	0.3 - 4.8		

AQ vs VARIETY SPECS



Aroma Intensity= 100

AQ vs ALL HOP VARIETIES



Aroma Intensity= 100

Signed: _____

Zachary Lilla - Lab Manager - TTB Certified Chemist

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