

HOP QUALITY REPORT CERTIFICATE OF ANALYSIS



To: Wisconsin Hop Exchange

Sample ID: 24EMS1087-01LH

Variety: Emerald Spire™

Product: T-90 Pellet

Date : 3/15/2025

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

<u>Method</u>			
Hops-4C	Moisture Analysis	% Moisture	10.9
		% Dry Matter	89.1
AAR	Xanthohumol by HPLC		NT mg/g
Hops-12	Hop Storage Index	HSI	0.282
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.15
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	35.5 (% of Total AA)
ICE-3		% Alpha Acids	6.29
		Colupulone	60.6 (% of Total BA)
		% Beta Acids	3.84
		a/b ratio	1.64
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	0.54 6.40
		Myrcene	36.09 482.31
		Linalool	0.42 5.83
		Caryophyllene	7.36 90.32
		Farnesene	0.25 3.74
		Humulene	12.46 151.67
		Geraniol	0.44 6.10

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



Customer : Wisconsin Hop Exchange

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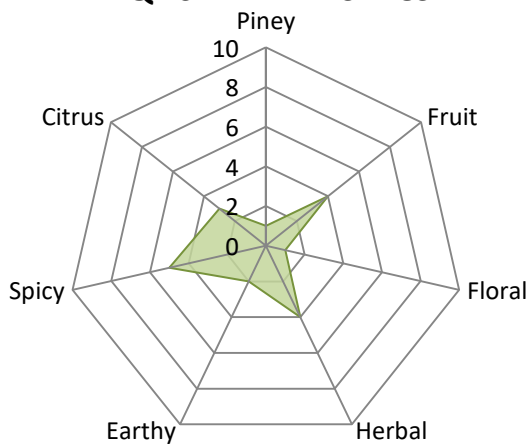
Certifying Officer: Zach Lilla - Lab Manager
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	Typical Range	
% Moisture <input type="text" value="10.9"/>	8 - 12 %	<input checked="" type="checkbox"/>
HOP QUALITY (adjusted to 10% moisture)		
Total Oil ml/100g <input type="text" value="1.16"/>	1.0 - 2.0 mL	<input checked="" type="checkbox"/>
cohumulone <input type="text" value="35.5"/>	35 - 37%	<input checked="" type="checkbox"/>
Alpha Acids <input type="text" value="6.35"/>	9.0 - 13%	<input type="checkbox" value="↓"/>
Beta Acids <input type="text" value="3.88"/>	3.5 - 4.5%	<input checked="" type="checkbox"/>
Myrcene <input type="text" value="36.09"/>	30.00 - 40.00 %	<input checked="" type="checkbox"/>

AROMA QUALITY (AQ)

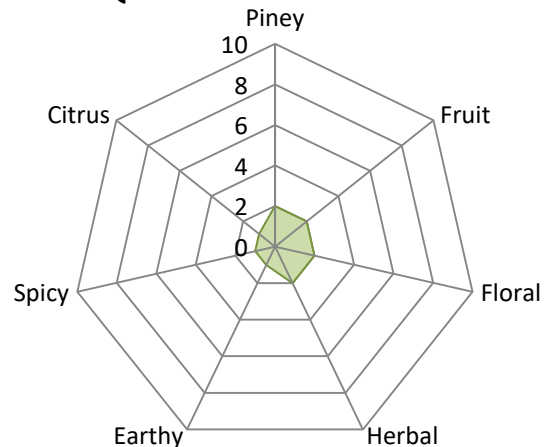
	% Area		mg/mL of Hop Oil			mg/100g of Hops (@10%H2O)			
B-Pinene	0.54	0.50 - 1.00 %	<input checked="" type="checkbox"/>	5.57	5 - 10	<input checked="" type="checkbox"/>	6.47	5 - 20	<input checked="" type="checkbox"/>
Myrcene	36.09	30.00 - 40.00 %	<input checked="" type="checkbox"/>	419.69	300 - 400	<input type="checkbox" value="↑"/>	487.31	300 - 800	<input checked="" type="checkbox"/>
Linalool	0.42	0.70 - 1.20 %	<input type="checkbox" value="↓"/>	5.07	7 - 12	<input type="checkbox" value="↓"/>	5.89	7 - 24	<input type="checkbox" value="↓"/>
Caryophyllene	7.36	6.00 - 8.00 %	<input checked="" type="checkbox"/>	78.59	60 - 80	<input checked="" type="checkbox"/>	91.26	60 - 160	<input checked="" type="checkbox"/>
Farnesene	0.25	0.01 - 1.00 %	<input checked="" type="checkbox"/>	3.26	0.1 - 10	<input checked="" type="checkbox"/>	3.78	0.1 - 20	<input checked="" type="checkbox"/>
Humulene	12.46	9.00 - 12.00%	<input type="checkbox" value="↑"/>	131.98	90 - 120	<input type="checkbox" value="↑"/>	153.24	90 - 240	<input checked="" type="checkbox"/>
Geraniol	0.44	0.20 - 1.00 %	<input checked="" type="checkbox"/>	5.31	2 - 10	<input checked="" type="checkbox"/>	6.16	2 - 20	<input checked="" type="checkbox"/>

AQ vs VARIETY SPECS



Aroma Intensity= 7

AQ vs ALL HOP VARIETIES



Aroma Intensity= 3

Signed: _____

Zachary Lilla - Lab Manager - TTB Certified Chemist

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