

## HOP QUALITY REPORT CERTIFICATE OF ANALYSIS

To: Wisconsin Hop Exchange

Sample ID: 24PAR1087-01LH

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	11.8
		% Dry Matter	88.2
AAR	Xanthohumol by HPLC		NT mg/g
Hops-12	Hop Storage Index	HSI	0.362
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.02
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	33.5 (% of Total AA)
ICE-3		% Alpha Acids	6.13
		Colupulone	56.1 (% of Total BA)
		% Beta Acids	4.00
		a/b ratio	1.53
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	0.38 3.73
		Myrcene	26.49 297.55
		Linalool	0.23 2.71
		Caryophyllene	5.91 60.96
		Farnesene	0.11 1.37
		Humulene	6.65 68.04
		Geraniol	0.21 2.50

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

Sample ID: 24PAR1087-01LH

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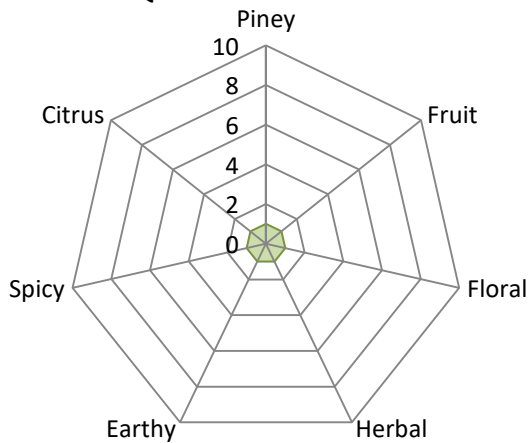
Certifying Officer: Zach Lilla - Lab Manager  
TTB Certified Chemist - Member AOAC - ASBC - BJCP

	Typical Range	
% Moisture <input style="width: 80px;" type="text" value="11.8"/>	8 - 12 %	<input checked="" type="checkbox"/>
<b>HOP QUALITY (adjusted to 10% moisture)</b>		
Total Oil ml/100g <input style="width: 80px;" type="text" value="1.04"/>	1.0 - 2.0 mL	<input checked="" type="checkbox"/>
cohumulone <input style="width: 80px;" type="text" value="33.5"/>	35 - 37%	<input type="checkbox"/>
Alpha Acids <input style="width: 80px;" type="text" value="6.26"/>	9.0 - 13%	<input type="checkbox"/>
Beta Acids <input style="width: 80px;" type="text" value="4.09"/>	3.5 - 4.5%	<input checked="" type="checkbox"/>
Myrcene <input style="width: 80px;" type="text" value="26.49"/>	30.00 - 40.00 %	<input type="checkbox"/>

### AROMA QUALITY (AQ)

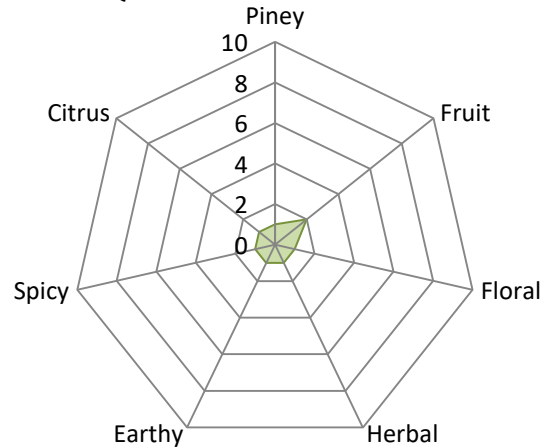
	% Area		mg/mL of Hop Oil			mg/100g of Hops (@10%H2O)			
B-Pinene	0.38	0.50 - 1.00 %	↓	3.65	5 - 10	↓	3.80	5 - 20	↓
Myrcene	26.49	30.00 - 40.00 %	↓	291.22	300 - 400	↓	303.72	300 - 800	<input checked="" type="checkbox"/>
Linalool	0.23	0.70 - 1.20 %	↓	2.65	7 - 12	↓	2.76	7 - 24	↓
Caryophyllene	5.91	6.00 - 8.00 %	↓	59.66	60 - 80	↓	62.22	60 - 160	<input checked="" type="checkbox"/>
Farnesene	0.11	0.01 - 1.00 %	<input checked="" type="checkbox"/>	1.34	0.1 - 10	<input checked="" type="checkbox"/>	1.40	0.1 - 20	<input checked="" type="checkbox"/>
Humulene	6.65	9.00 - 12.00%	↓	66.59	90 - 120	↓	69.45	90 - 240	↓
Geraniol	0.21	0.20 - 1.00 %	<input checked="" type="checkbox"/>	2.44	2 - 10	<input checked="" type="checkbox"/>	2.55	2 - 20	<input checked="" type="checkbox"/>

### AQ vs VARIETY SPECS



**Aroma Intensity= 1**

### AQ vs ALL HOP VARIETIES



**Aroma Intensity= 1**

Signed: \_\_\_\_\_

Zachary Lilla - Lab Manager - TTB Certified Chemist

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