

## HOP QUALITY REPORT CERTIFICATE OF ANALYSIS



To: Wisconsin Hop Exchange

Sample ID: 25NUG02WI-01FB

Variety: Nugget US

Product: T-90 Pellet

Date : 2/23/2026

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

<u>Method</u>			
Hops-4C	Moisture Analysis	% Moisture	11.9
		% Dry Matter	88.1
AAR	Xanthohumol by HPLC		<b>NT</b> mg/g
Hops-12	Hop Storage Index	HSI	0.263
Hops-13	Essential Oil by Steam Distillation	mL/100g	<b>1.38</b>
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	25.1 (% of Total AA)
ICE-3		<b>% Alpha Acids</b>	<b>13.48</b>
		Colupulone	50.8 (% of Total BA)
		<b>% Beta Acids</b>	<b>3.93</b>
		a/b ratio	3.43
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	0.40 5.22
		Myrcene	37.86 558.92
		Linalool	0.66 10.17
		Caryophyllene	11.70 158.63
		Farnesene	0.12 2.07
		Humulene	25.96 348.91
		Geraniol	0.17 2.62

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: 25NUG02WI-01FB

Variety: Nugget US

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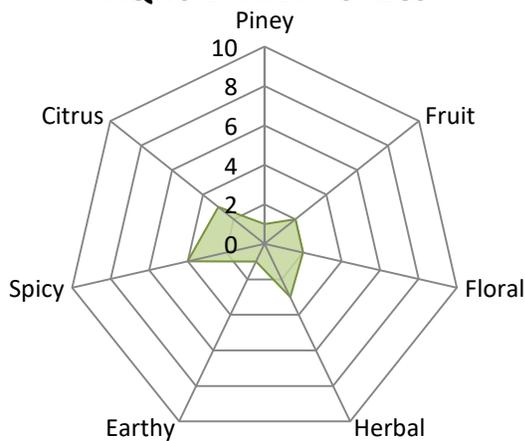
Certifying Officer: Zach Lilla - Lab Manager  
TTB Certified Chemist - Member AOAC - ASBC - BJCP

	Typical Range	
% Moisture <span style="border: 1px solid black; padding: 2px;">11.9</span>	8 - 12 %	<span style="background-color: green; color: white; padding: 2px;">✓</span>
<b>HOP QUALITY (adjusted to 10% moisture)</b>		
Total Oil ml/100g <span style="border: 1px solid black; padding: 2px;">1.41</span>	1.0 - 3.0 mL	<span style="background-color: green; color: white; padding: 2px;">✓</span>
cohumulone <span style="border: 1px solid black; padding: 2px;">25.1</span>	22 - 26%	<span style="background-color: green; color: white; padding: 2px;">✓</span>
Alpha Acids <span style="border: 1px solid black; padding: 2px;">13.77</span>	13.5 - 16%	<span style="background-color: green; color: white; padding: 2px;">✓</span>
Beta Acids <span style="border: 1px solid black; padding: 2px;">4.01</span>	4.4 - 5.5%	<span style="border: 1px solid black; padding: 2px;">↓</span>
Myrcene <span style="border: 1px solid black; padding: 2px;">37.86</span>	40.00 - 50.00 %	<span style="border: 1px solid black; padding: 2px;">↓</span>

### AROMA QUALITY (AQ)

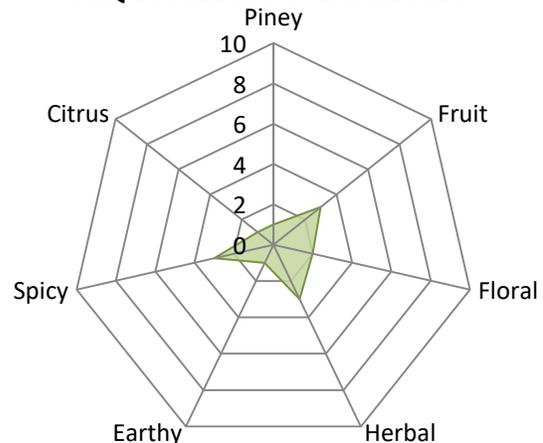
	% Area		mg/mL of Hop Oil			mg/100g of Hops (@10%H2O)			
B-Pinene	0.40	0.30 - 0.90 %	✓	3.79	3 - 9	✓	5.33	3 - 27	✓
Myrcene	37.86	40.00 - 50.00 %	↓	405.49	400 - 500	✓	570.79	400 - 1500	✓
Linalool	0.66	0.70 - 1.00 %	↓	7.38	7 - 10	✓	10.39	7 - 30	✓
Caryophyllene	11.70	9.00 - 11.00 %	↑	115.08	90 - 110	↑	161.99	90 - 330	✓
Farnesene	0.12	0.01 - 1.00 %	✓	1.51	0.1 - 10	✓	2.12	0.1 - 30	✓
Humulene	25.96	18.00 - 22.00 %	↑	253.13	180 - 220	↑	356.31	180 - 660	✓
Geraniol	0.17	0.01 - 0.30 %	✓	1.90	0.1 - 3	✓	2.67	0.1 - 9	✓

#### AQ vs VARIETY SPECS



**Aroma Intensity= 5**

#### AQ vs ALL HOP VARIETIES



**Aroma Intensity= 4**

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

Zachary Lilla - Lab Manager - TTB Certified Chemist

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