

## HOP QUALITY REPORT CERTIFICATE OF ANALYSIS



To: Wisconsin Hop Exchange

Sample ID: 24NUG03WI-01LH

Variety: Nugget US

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	0.272
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.55
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	25.2 (% of Total AA)
ICE-3		% Alpha Acids	11.60
		Colupulone	49.3 (% of Total BA)
		% Beta Acids	4.13
		a/b ratio	2.81
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	0.35 5.81
		Myrcene	30.29 573.57
		Linalool	0.61 11.96
		Caryophyllene	10.96 190.54
		Farnesene	0.08 1.68
		Humulene	23.27 401.11
		Geraniol	0.14 2.70

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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Variety: Nugget US

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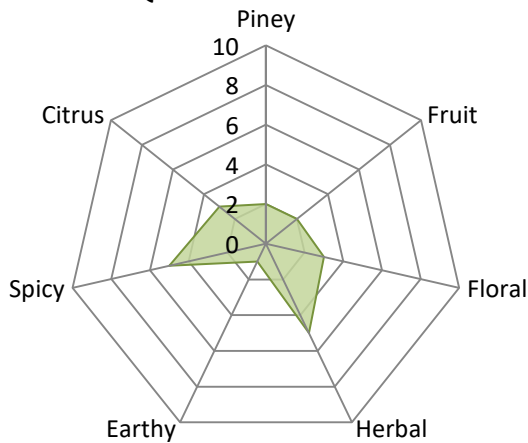
Certifying Officer: Zach Lilla - Lab Manager  
TTB Certified Chemist - Member AOAC - ASBC - BJCP

% Moisture	10.9	Typical Range	8 - 12 %	✓
<b>HOP QUALITY (adjusted to 10% moisture)</b>				
Total Oil ml/100g	1.57		1.0 - 3.0 mL	✓
cohumulone	25.2		22 - 26%	✓
Alpha Acids	11.72		13.5 - 16%	↓
Beta Acids	4.18		4.4 - 5.5%	↓
Myrcene	30.29		40.00 - 50.00 %	↓

### AROMA QUALITY (AQ)

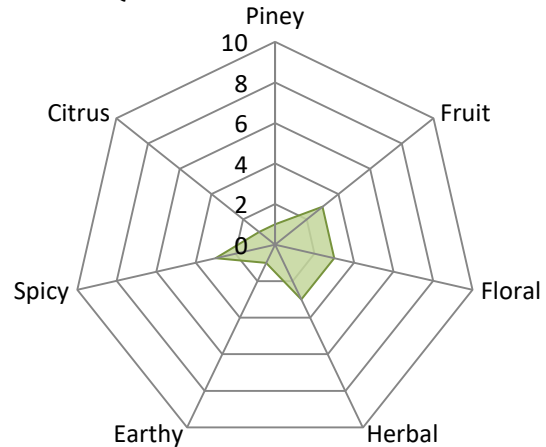
	% Area			mg/mL of Hop Oil		mg/100g of Hops (@10%H2O)			
B-Pinene	0.35	0.30 - 0.90 %	✓	3.74	3 - 9	✓	5.87	3 - 27	✓
Myrcene	30.29	40.00 - 50.00 %	↓	369.62	400 - 500	↓	579.66	400 - 1500	✓
Linalool	0.61	0.70 - 1.00 %	↓	7.71	7 - 10	✓	12.09	7 - 30	✓
Caryophyllene	10.96	9.00 - 11.00 %	✓	122.79	90 - 110	↑	192.56	90 - 330	✓
Farnesene	0.08	0.01 - 1.00 %	✓	1.09	0.1 - 10	✓	1.70	0.1 - 30	✓
Humulene	23.27	18.00 - 22.00 %	↑	258.49	180 - 220	↑	405.38	180 - 660	✓
Geraniol	0.14	0.01 - 0.30 %	✓	1.74	0.1 - 3	✓	2.73	0.1 - 9	✓

### AQ vs VARIETY SPECS



**Aroma Intensity= 8**

### AQ vs ALL HOP VARIETIES



**Aroma Intensity= 4**

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

Zachary Lilla - Lab Manager - TTB Certified Chemist

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