

## HOP QUALITY REPORT CERTIFICATE OF ANALYSIS



To: Wisconsin Hop Exchange

Sample ID: 23NUG02WI-001LH

Variety: Nugget US

Product: T-90 Pellet

Date : 12/13/2023

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

<u>Method</u>			
Hops-4C	Moisture Analysis	% Moisture	8.7
		% Dry Matter	91.3
AAR	Xanthohumol by HPLC		<b>NT</b> mg/g
Hops-12	Hop Storage Index	HSI	0.258
Hops-13	Essential Oil by Steam Distillation	mL/100g	<b>1.07</b>
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	23.5 (% of Total AA)
ICE-3		<b>% Alpha Acids</b>	<b>11.93</b>
		Colupulone	49.6 (% of Total BA)
		<b>% Beta Acids</b>	<b>4.02</b>
		a/b ratio	2.97
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



Customer : Wisconsin Hop Exchange

Sample ID: 23NUG02WI-001LH

Variety: Nugget US

Product: T-90 Pellet

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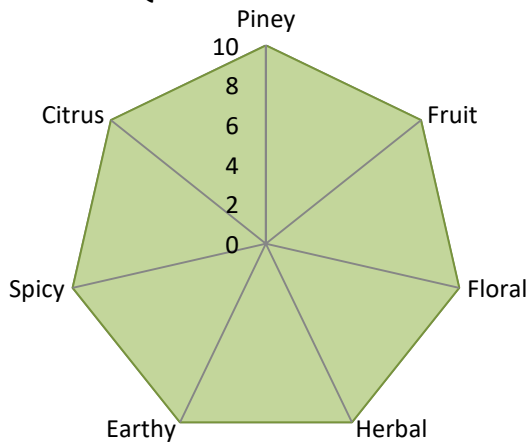
Certifying Officer: Zach Lilla - Lab Manager  
TTB Certified Chemist - Member AOAC - ASBC - BJCP

		Typical Range	
% Moisture	8.7	8 - 12 %	<input checked="" type="checkbox"/>
<b>HOP QUALITY (adjusted to 10% moisture)</b>			
Total Oil ml/100g	1.06	1.0 - 3.0 mL	<input checked="" type="checkbox"/>
cohumulone	23.5	22 - 26%	<input checked="" type="checkbox"/>
Alpha Acids	11.76	13.5 - 16%	<input type="checkbox"/>
Beta Acids	3.96	4.4 - 5.5%	<input type="checkbox"/>
Myrcene	NT	40.00 - 50.00 %	<input type="checkbox"/>

### AROMA QUALITY (AQ)

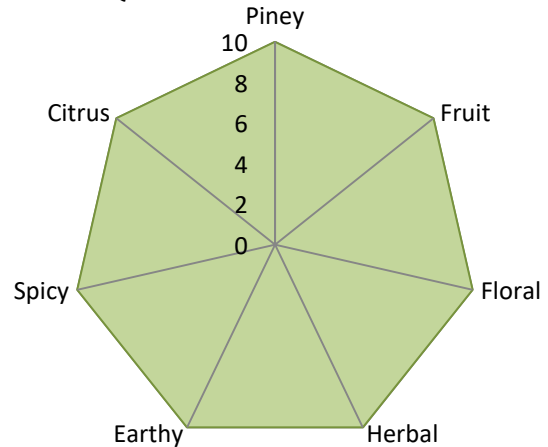
		% Area	mg/mL of Hop Oil			mg/100g of Hops (@10%H2O)		
B-Pinene	NT	0.30 - 0.90 %	NT	3 - 9	NT	3 - 27		
Myrcene	NT	40.00 - 50.00 %	NT	400 - 500	NT	400 - 1500		
Linalool	NT	0.70 - 1.00 %	NT	7 - 10	NT	7 - 30		
Caryophyllene	NT	9.00 - 11.00 %	NT	90 - 110	NT	90 - 330		
Farnesene	NT	0.01 - 1.00 %	NT	0.1 - 10	NT	0.1 - 30		
Humulene	NT	18.00 - 22.00 %	NT	180 - 220	NT	180 - 660		
Geraniol	NT	0.01 - 0.30 %	NT	0.1 - 3	NT	0.1 - 9		

#### 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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