

## HOP QUALITY REPORT CERTIFICATE OF ANALYSIS

To: Wisconsin Hop Exchange

Sample ID: 22CRY1093-01LH

Variety: Crystal

Whole Cone

Date : 12/12/2022

Pellet



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

<u>Method</u>			
Hops-4C	Moisture Analysis	% Moisture	9.4
		% Dry Matter	90.6
AAR	Xanthohumol by HPLC		<b>NT</b> mg/g
Hops-12	Hop Storage Index	HSI	0.274
Hops-13	Essential Oil by Steam Distillation	mL/100g	<b>1.62</b>
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	24.2 (% of Total AA)
ICE-3		<b>% Alpha Acids</b>	<b>4.43</b>
		Colupulone	34.5 (% of Total BA)
		<b>% Beta Acids</b>	<b>7.16</b>
		a/b ratio	0.62
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: 22CRY1093-01LH

Variety: Crystal

Whole Cone

Pellet

Date : 12/12/2022

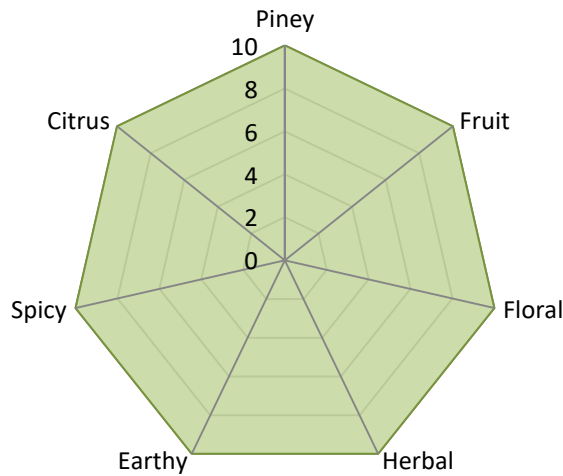
Certifying Officer: Zach Lilla - Lab Manager  
TTB Certified Chemist - Member AOAC - ASBC - BJCP

% Moisture	9.4	Typical Range	8 - 12%	<input checked="" type="checkbox"/>
<b>HOP QUALITY (adjusted to 10% moisture)</b>				
Total Oil ml/100g	1.61		0.8 - 2.3 mL	<input checked="" type="checkbox"/>
cohumulone	24.2		23 - 26%	<input checked="" type="checkbox"/>
Alpha Acids	4.40		3.0 - 6%	<input checked="" type="checkbox"/>
Beta Acids	7.11		6.0 - 8.5%	<input checked="" type="checkbox"/>

### AROMA QUALITY (AQ)

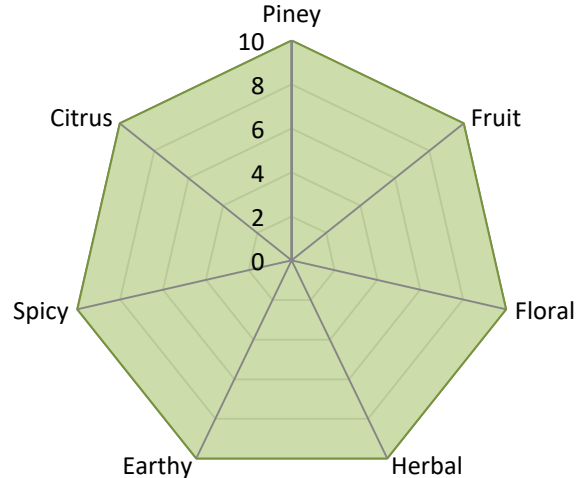
	% Area		mg/mL of Hop Oil		mg/100g of Hops (@10%H2O)	
B-Pinene	NT	0.40 - 1.00 %	NT	4 - 10	NT	3.2 - 23
Myrcene	NT	30.00 - 55.00 %	NT	300 - 550	NT	240 - 1265
Linalool	NT	0.50 - 1.00 %	NT	5 - 10	NT	4 - 23
Caryophyllene	NT	5.00 - 12.00 %	NT	50 - 120	NT	40 - 276
Farnesene	NT	0.01 - 1.00 %	NT	0.1 - 10	NT	0.08 - 23
Humulene	NT	20.00 - 30.00 %	NT	200 - 300	NT	160 - 690
Geraniol	NT	0.30 - 0.80 %	NT	3 - 8	NT	2.4 - 18.4

### AQ vs VARIETY SPECS



**Aroma Intensity= 100**

### AQ vs ALL HOP VARIETIES



**Aroma Intensity= 100**

Signed:   
Zachary Lilla - Lab Manager - TTB Certified Chemist

