

HOP QUALITY REPORT CERTIFICATE OF ANALYSIS



To: White Crow Hops

Sample ID: Cascade Harvest 2023

Variety: Cascade

Product: Whole Cone

Date : 8/31/2023

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

<u>Method</u>			
Hops-4C	Moisture Analysis	% Moisture	10.0
		% Dry Matter	90.0
AAR	Xanthohumol by HPLC		NT mg/g
Hops-12	Hop Storage Index	HSI	0.238
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.71
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	34.6 (% of Total AA)
ICE-3		% Alpha Acids	9.29
		Colupulone	55.7 (% of Total BA)
		% Beta Acids	5.55
		a/b ratio	1.67
Hops-17	Hop Essential Oil by GC-FID (as is)	% area	mg/100g
		B-Pinene	0.71 10.57
		Myrcene	55.53 933.15
		Linalool	0.34 5.98
		Caryophyllene	5.42 83.71
		Farnesene	6.61 125.79
		Humulene	12.43 190.18
		Geraniol	0.08 1.45

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 : White Crow Hops

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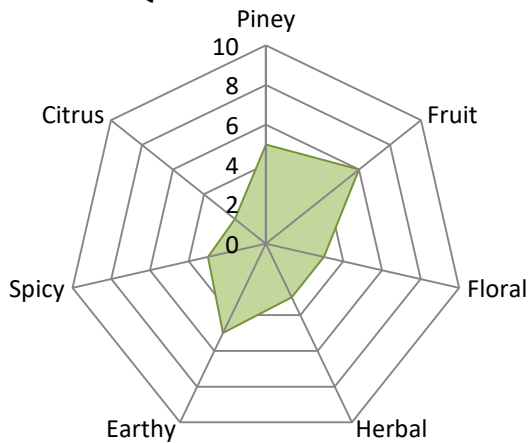
Certifying Officer: Zach Lilla - Lab Manager
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	Typical Range	
% Moisture <input style="width: 100px;" type="text" value="10.0"/>	8 - 12 %	<input checked="" type="checkbox"/>
HOP QUALITY (adjusted to 10% moisture)		
Total Oil ml/100g <input style="width: 100px;" type="text" value="1.71"/>	0.8 - 2.5 mL	<input checked="" type="checkbox"/>
cohumulone <input style="width: 100px;" type="text" value="34.6"/>	30 - 35%	<input checked="" type="checkbox"/>
Alpha Acids <input style="width: 100px;" type="text" value="9.29"/>	5.5 - 9%	<input type="checkbox" value="↑"/>
Beta Acids <input style="width: 100px;" type="text" value="5.55"/>	6.0 - 7.5%	<input type="checkbox" value="↓"/>
Myrcene <input style="width: 100px;" type="text" value="55.53"/>	45.00 - 60.00 %	<input checked="" type="checkbox"/>

AROMA QUALITY (AQ)

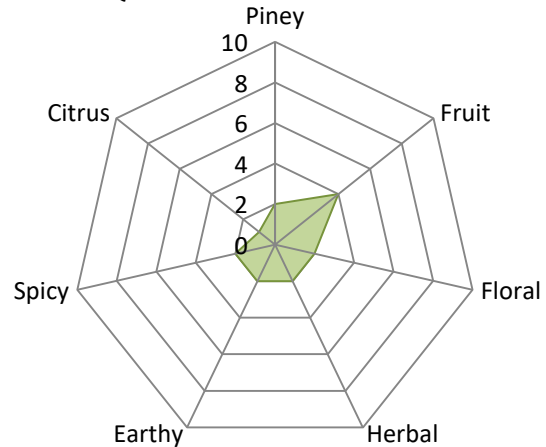
	% Area		mg/mL of Hop Oil			mg/100g of Hops (@10%H2O)		
B-Pinene	0.71	0.50 - 0.80 %	6.17	5 - 8	10.58	4 - 20		
Myrcene	55.53	45.00 - 60.00 %	544.43	450 - 600	933.52	360 - 1500		
Linalool	0.34	0.30 - 0.60 %	3.49	3 - 6	5.98	2.4 - 15		
Caryophyllene	5.42	5.00 - 9.00 %	48.84	50 - 90	83.74	40 - 225		
Farnesene	6.61	6.00 - 9.00 %	73.39	60 - 90	125.84	48 - 225		
Humulene	12.43	14.00 - 20.00 %	110.96	140 - 200	190.26	112 - 500		
Geraniol	0.08	0.01 - 0.30 %	0.85	0.1 - 3	1.45	0.08 - 7.5		

AQ vs VARIETY SPECS



Aroma Intensity= 15

AQ vs ALL HOP VARIETIES



Aroma Intensity= 5

Signed: _____

Zachary Lilla - Lab Manager - TTB Certified Chemist

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2517 Advance Rd Ste. A Madison WI 53718

info@aarlab.com

www.aarlab.com



608-622-7522