



HOP CERTIFICATE OF ANALYSIS

Customer : Wisconsin Hop Exchange Growers Cooperative

Sample ID: 20MAK1087-01LH



Variety: Mackinac

Certifying Officer: Zach Lilla - Lab Manager

Date : 1/25/2021

TTB Certified Chemist - Member AOAC - ASBC - BJCP

Method			
Hops-4C	Moisture Analysis	% Moisture	10.0
		% Dry Matter	90.0
Hops-6A	Alpha and Beta Acids by SPEC	% Alpha Acids	NT
		% Beta Acids	NT
		a/b ratio	NT
Hops-12	Hop Storage Index	HSI	0.274
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.85
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	29.3 (% of Total AA)
ICE-3		% Alpha Acids	10.40
		Colupulone	55.6 (% of Total BA)
		% Beta Acids	3.18
		a/b ratio	3.27
Hops-17	Hop Essential Oil by GC-FID (as is)		
		% area	mg/100g
		B-Pinene	NT NT
		Myrcene	NT NT
		Linalool	NT NT
		Caryophyllene	NT NT
		Farnesene	NT NT
		Humulene	NT NT
		Geraniol	NT NT

NT=NOT TESTED

Signed: _____

Zachary Lilla - Lab Manager - TTB Certified Chemist





HOP QUALITY REPORT

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% Moisture	<input type="text" value="10.0"/>	Typical Range 8 - 12%	<input type="text" value="✓"/>
Total Oil ml/100g @ 10%	<input type="text" value="1.85"/>	1.2 - 1.8 ml	<input type="text" value="↑"/>
cohumulone	<input type="text" value="29.3"/>	27 - 32%	<input type="text" value="✓"/>
Alpha Acids @ 10%	<input type="text" value="10.40"/>	9.0 - 13%	<input type="text" value="✓"/>
Beta Acids @ 10%	<input type="text" value="3.18"/>	3.0 - 3.5%	<input type="text" value="✓"/>
AROMA QUALITY (AQ)			
	% Area		
B-Pinene	<input type="text" value="NT"/>	0.40 - 1.00 %	<input type="text" value="NT"/>
Myrcene	<input type="text" value="NT"/>	15.00 - 25.00 %	<input type="text" value="NT"/>
Linalool	<input type="text" value="NT"/>	0.6 - 1.20 %	<input type="text" value="NT"/>
Caryophyllene	<input type="text" value="NT"/>	9.00 - 12.00 %	<input type="text" value="NT"/>
Farnesene	<input type="text" value="NT"/>	0.01 - 1.00 %	<input type="text" value="NT"/>
Humulene	<input type="text" value="NT"/>	17.00 - 23.00 %	<input type="text" value="NT"/>
Geraniol	<input type="text" value="NT"/>	0.60 - 1.00 %	<input type="text" value="NT"/>
	mg/mL		
B-Pinene	<input type="text" value="NT"/>	4 - 10	<input type="text" value="NT"/>
Myrcene	<input type="text" value="NT"/>	150 - 250	<input type="text" value="NT"/>
Linalool	<input type="text" value="NT"/>	6 - 12	<input type="text" value="NT"/>
Caryophyllene	<input type="text" value="NT"/>	90 - 120	<input type="text" value="NT"/>
Farnesene	<input type="text" value="NT"/>	0.1 - 10	<input type="text" value="NT"/>
Humulene	<input type="text" value="NT"/>	170 - 230	<input type="text" value="NT"/>
Geraniol	<input type="text" value="NT"/>	6 - 10	<input type="text" value="NT"/>
	mg/100g @ 10% Moisture		
B-Pinene	<input type="text" value="NT"/>	4.8 - 18	<input type="text" value="NT"/>
Myrcene	<input type="text" value="NT"/>	180 - 450	<input type="text" value="NT"/>
Linalool	<input type="text" value="NT"/>	7.2 - 21.6	<input type="text" value="NT"/>
Caryophyllene	<input type="text" value="NT"/>	108 - 216	<input type="text" value="NT"/>
Farnesene	<input type="text" value="NT"/>	0.12 - 18	<input type="text" value="NT"/>
Humulene	<input type="text" value="NT"/>	204 - 414	<input type="text" value="NT"/>
Geraniol	<input type="text" value="NT"/>	7.2 - 18	<input type="text" value="NT"/>

Signed: 
 Zachary Lilla - Lab Manager - TTB Certified Chemist

