ADVANCED ANALYTICAL RESEARCH
2517 Advance Rd, Ste A
Madison WI 53718
www.aarlab.com

HOP CERTIFICATE OF ANALYSIS

Customer : Wisconsin Hop Exchange Growers Cooperative

Sample ID: 20TRI03WI-01LH

Variety: Triple Perle

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

Date : 1/25/2021

Method			
Hops-4C	Moisture Analysis	% Moisture	9.5
		% Dry Matter	90.5
Hops-6A	Alpha and Beta Acids by SPEC	**% Alpha Acids**	**NT**
		% Beta Acids	**NT**
		a/b ratio	NT
Hops-12	Hop Storage Index	HSI	0.265
Hops-13	Essential Oil by Steam Distillation	**mL/100g**	**1.25**
Hops-14 ICE-3	Alpha and Beta Acids by HPLC	Cohumulone	20.9 (% of Total AA)
		% Alpha Acids	**10.04**
		Colupulone	47.9 (% of Total BA)
		% Beta Acids	**3.37**
		a/b ratio	2.98

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

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HOP QUALITY REPORT

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		Typical Range	
% Moisture	9.5	8 - 12%	✓
Total Oil ml/100g @ 10%	1.24	1.1 - 1.8 mL	✓
cohumulone	20.9	20 - 25%	✓
Alpha Acids @ 10%	9.98	9.0 - 11.5%	✓
Beta Acids @ 10%	3.35	3.3 - 4.2%	✓

AROMA QUALITY (AQ)

	% Area		
B-Pinene	NT	0.40 - 1.00 %	NT
Myrcene	NT	40.00 - 55.00%	NT
Linalool	NT	0.50 - 1.00 %	NT
Caryophyllene	NT	3.00 - 5.00 %	NT
Farnesene	NT	0.01 - 1.00 %	NT
Humulene	NT	7.00 - 11.00 %	NT
Geraniol	NT	0.40 - 1.00 %	NT
	mg/mL		
B-Pinene	NT	4 - 10	NT
Myrcene	NT	400 - 550	NT
Linalool	NT	5 - 10	NT
Caryophyllene	NT	30 - 50	NT
Farnesene	NT	0.1 - 10	NT
Humulene	NT	70 - 110	NT
Geraniol	NT	4 - 10	NT
	mg/100g @ 10% Moisture		
B-Pinene	NT	4.4 - 18	NT
Myrcene	NT	440 - 990	NT
Linalool	NT	5.5 - 18	NT
Caryophyllene	NT	33 - 90	NT
Farnesene	NT	0.11 - 18	NT
Humulene	NT	77 - 198	NT
Geraniol	NT	4.4 - 18	NT

Signed: _____

Zachary Lilla - Lab Manager - TTB Certified Chemist