



# HOP CERTIFICATE OF ANALYSIS

Customer : Wisconsin Hop Exchange Growers Cooperative

Sample ID: 20ULT1087-01LH



Variety: Ultra

Certifying Officer: Zach Lilla - Lab Manager

Date : 1/25/2021

TTB Certified Chemist - Member AOAC - ASBC - BJCP

Method																											
Hops-4C	Moisture Analysis	% Moisture	11.3																								
		% Dry Matter	88.7																								
Hops-6A	Alpha and Beta Acids by SPEC	% Alpha Acids	NT																								
		% Beta Acids	NT																								
		a/b ratio	NT																								
Hops-12	Hop Storage Index	HSI	0.346																								
Hops-13	Essential Oil by Steam Distillation	mL/100g	1.02																								
Hops-14	Alpha and Beta Acids by HPLC	Cohumulone	33.9 (% of Total AA)																								
ICE-3		% Alpha Acids	1.57																								
		Colupulone	39.9 (% of Total BA)																								
		% Beta Acids	3.04																								
		a/b ratio	0.52																								
Hops-17	Hop Essential Oil by GC-FID (as is)	<table border="1"> <thead> <tr> <th></th> <th>% area</th> <th>mg/100g</th> </tr> </thead> <tbody> <tr> <td>B-Pinene</td> <td>NT</td> <td>NT</td> </tr> <tr> <td>Myrcene</td> <td>NT</td> <td>NT</td> </tr> <tr> <td>Linalool</td> <td>NT</td> <td>NT</td> </tr> <tr> <td>Caryophyllene</td> <td>NT</td> <td>NT</td> </tr> <tr> <td>Farnesene</td> <td>NT</td> <td>NT</td> </tr> <tr> <td>Humulene</td> <td>NT</td> <td>NT</td> </tr> <tr> <td>Geraniol</td> <td>NT</td> <td>NT</td> </tr> </tbody> </table>			% 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
	% area	mg/100g																									
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Farnesene	NT	NT																									
Humulene	NT	NT																									
Geraniol	NT	NT																									

NT=NOT TESTED

Signed: \_\_\_\_\_

Zachary Lilla - Lab Manager - TTB Certified Chemist





## HOP QUALITY REPORT

Customer : Wisconsin Hop Exchange Growers Cooperative

Sample ID: 20ULT1087-01LH




Variety: Ultra

Certifying Officer: Zach Lilla - Lab Manager

Date : 1/25/2021

TTB Certified Chemist - Member AOAC - ASBC - BJCP

% Moisture	<input type="text" value="11.3"/>	Typical Range 8 - 12%	<input type="text" value="✓"/>
Total Oil ml/100g @ 10%	<input type="text" value="1.03"/>	1.0 - 1.5 mL	<input type="text" value="✓"/>
cohumulone	<input type="text" value="33.9"/>	23 - 38%	<input type="text" value="✓"/>
Alpha Acids @ 10%	<input type="text" value="1.59"/>	3.0 - 5%	<input type="text" value="↓"/>
Beta Acids @ 10%	<input type="text" value="3.08"/>	3.0 - 5.0%	<input type="text" value="✓"/>
<b>AROMA QUALITY (AQ)</b>			
	% Area		
B-Pinene	<input type="text" value="NT"/>	0.50 - 1.20 %	<input type="text" value="NT"/>
Myrcene	<input type="text" value="NT"/>	50.00 - 60.00 %	<input type="text" value="NT"/>
Linalool	<input type="text" value="NT"/>	0.50 - 1.50 %	<input type="text" value="NT"/>
Caryophyllene	<input type="text" value="NT"/>	6.00 - 9.00 %	<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"/>	10.00 - 15.00 %	<input type="text" value="NT"/>
Geraniol	<input type="text" value="NT"/>	0.10 - 0.50 %	<input type="text" value="NT"/>
	mg/mL		
B-Pinene	<input type="text" value="NT"/>	5 - 12	<input type="text" value="NT"/>
Myrcene	<input type="text" value="NT"/>	500 - 600	<input type="text" value="NT"/>
Linalool	<input type="text" value="NT"/>	5 - 15	<input type="text" value="NT"/>
Caryophyllene	<input type="text" value="NT"/>	60 - 90	<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"/>	100 - 150	<input type="text" value="NT"/>
Geraniol	<input type="text" value="NT"/>	1 - 5	<input type="text" value="NT"/>
	mg/100g @ 10% Moisture		
B-Pinene	<input type="text" value="NT"/>	5 - 18	<input type="text" value="NT"/>
Myrcene	<input type="text" value="NT"/>	500 - 900	<input type="text" value="NT"/>
Linalool	<input type="text" value="NT"/>	5 - 22.5	<input type="text" value="NT"/>
Caryophyllene	<input type="text" value="NT"/>	60 - 135	<input type="text" value="NT"/>
Farnesene	<input type="text" value="NT"/>	0.1 - 15	<input type="text" value="NT"/>
Humulene	<input type="text" value="NT"/>	100 - 225	<input type="text" value="NT"/>
Geraniol	<input type="text" value="NT"/>	1 - 7.5	<input type="text" value="NT"/>

Signed:   
 Zachary Lilla - Lab Manager - TTB Certified Chemist