

HOP QUALITY REPORT CERTIFICATE OF ANALYSIS

To: Wisconsin Hop Exchange

Sample ID: 23AAA1087-01LH

Variety: AlphaAroma

Product: T-90 Pellet

Date : 11/21/2023



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 | | NT mg/g |
| Hops-12 | Hop Storage Index | HSI | 0.274 |
| Hops-13 | Essential Oil by Steam Distillation | mL/100g | 1.03 |
| Hops-14 | Alpha and Beta Acids by HPLC | Cohumulone | 22.5 (% of Total AA) |
| ICE-3 | | % Alpha Acids | 10.21 |
| | | Colupulone | 49.6 (% of Total BA) |
| | | % Beta Acids | 3.40 |
| | | a/b ratio | 3.01 |
| 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

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: 23AAA1087-01LH

Variety: AlphAroma

Product: T-90 Pellet

Date : 11/21/2023



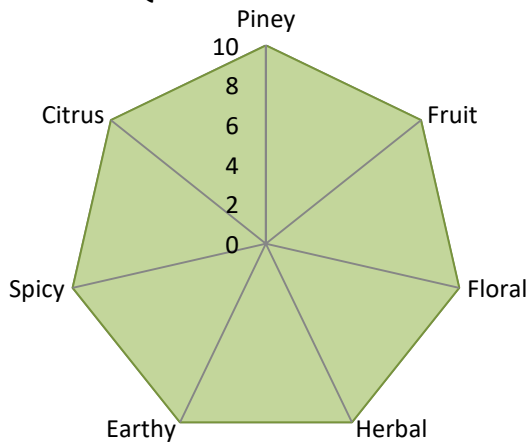
Certifying Officer: Zach Lilla - Lab Manager
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| | Typical Range | |
|--|-----------------|---|
| % Moisture <input style="width: 80px;" type="text" value="9.4"/> | 8 - 12 % | <input checked="checked" style="width: 40px; height: 20px;" type="checkbox"/> |
| HOP QUALITY (adjusted to 10% moisture) | | |
| Total Oil ml/100g <input style="width: 80px;" type="text" value="1.02"/> | 1.1 - 1.3 mL | <input style="width: 40px; height: 20px;" type="checkbox" value=""/> |
| cohumulone <input style="width: 80px;" type="text" value="22.5"/> | 25 - 28% | <input style="width: 40px; height: 20px;" type="checkbox" value=""/> |
| Alpha Acids <input style="width: 80px;" type="text" value="10.14"/> | 5.8 - 11% | <input checked="checked" style="width: 40px; height: 20px;" type="checkbox"/> |
| Beta Acids <input style="width: 80px;" type="text" value="3.37"/> | 2.5 - 4.9% | <input checked="checked" style="width: 40px; height: 20px;" type="checkbox"/> |
| Myrcene <input style="width: 80px;" type="text" value="NT"/> | 50.00 - 65.00 % | <input style="width: 40px; height: 20px;" type="checkbox" value=""/> |

AROMA QUALITY (AQ)

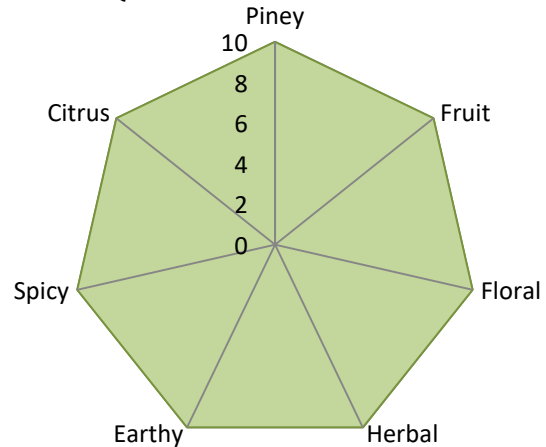
| | | % Area | mg/mL of Hop Oil | | | mg/100g of Hops (@10%H2O) | | |
|---------------|----|-----------------|------------------|-----------|----|---------------------------|--|--|
| B-Pinene | NT | 0.30 - 1.00 % | NT | 3 - 10 | NT | 3.3 - 13 | | |
| Myrcene | NT | 50.00 - 65.00 % | NT | 500 - 650 | NT | 550 - 845 | | |
| Linalool | NT | 0.50 - 1.00 % | NT | 5 - 10 | NT | 5.5 - 13 | | |
| Caryophyllene | NT | 3.00 - 8.00 % | NT | 30 - 80 | NT | 33 - 104 | | |
| Farnesene | NT | 4.00 - 6.00 % | NT | 40 - 60 | NT | 44 - 78 | | |
| Humulene | NT | 12.00 - 16.00 % | NT | 120 - 160 | NT | 132 - 208 | | |
| Geraniol | NT | 0.3 - 1.00 % | NT | 3 - 10 | NT | 3.3 - 13 | | |

AQ vs VARIETY SPECS



Aroma Intensity= 100

AQ vs ALL HOP VARIETIES



Aroma Intensity= 100

Signed: _____

Zachary Lilla - Lab Manager - TTB Certified Chemist

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