

KPU - AGC Hops Service

Certificate of Analysis

Report Number:

38-GS

| | |
|-------------------|-------------|
| Customer: | Guy Shepard |
| Date of Arrival: | Oct. 28, 22 |
| Date of Analysis: | Oct. 28, 22 |
| Date of Report: | Nov. 4, 22 |
| Hop/Sample Name: | Blend #2 |
| Sample Form: | Dried Cones |
| Mass of Hops (g): | 215 |



Applied
Genomics
Centre

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Alpha/Beta Acid Analysis - ASBC Hops-14 Method

Percent (%) by Mass

| Alpha Acids | |
|--------------------------|-------------|
| Cohumulone | 2.45 |
| n+Adhumulone | 6.81 |
| Total Alpha Acids | 9.26 |
| Beta Acids | |
| Colupulone | 1.87 |
| n+Adlupulone | 2.06 |
| Total Beta Acids | 3.93 |
| HSI | 0.22 |

Essential Oil Analysis - EBC 7.12 Method

 $\mu\text{g per g of Hops}$

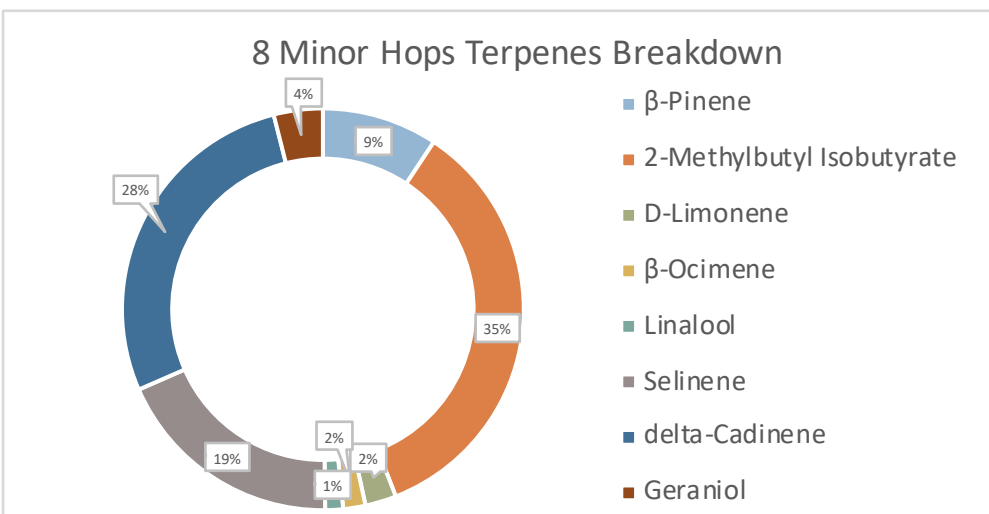
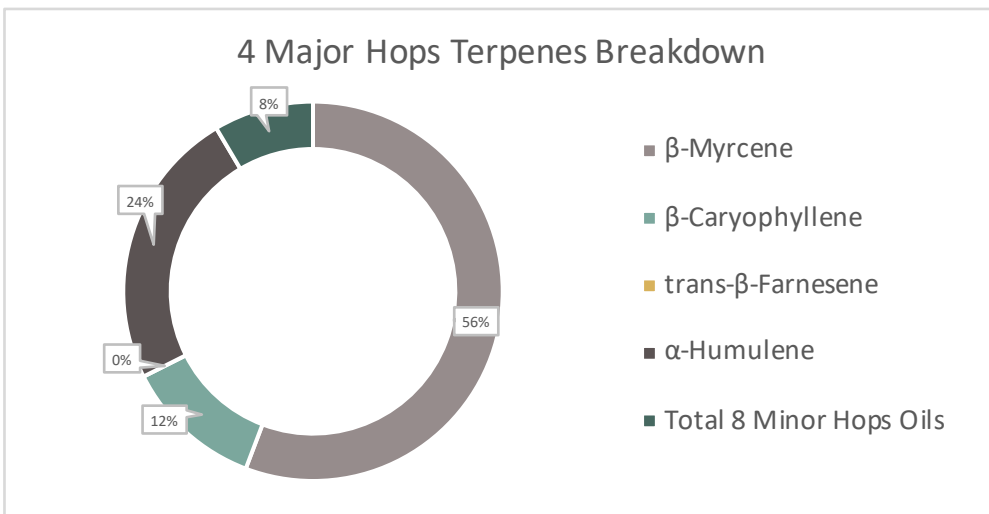
Percent (%) by Hops Mass

| | $\mu\text{g per g of Hops}$ | Percent (%) by Hops Mass |
|--------------------------------|-----------------------------|--------------------------|
| β -Myrcene | 1827 | 0.18 |
| β -Caryophyllene | 387 | 0.04 |
| trans- β -Farnesene | 0 | 0.00 |
| α -Humulene | 783 | 0.08 |
| Total 4 Major Hops Oils | 2997.00 | 0.30 |

Relative Conc. of 8 "Other" Oils to β -Myrcene $\mu\text{g per g of Hops}$

Percent (%) by Hops Mass

| | $\mu\text{g per g of Hops}$ | Percent (%) by Hops Mass |
|--------------------------------|-----------------------------|--------------------------|
| β -Pinene | 26 | 0.003 |
| 2-Methylbutyl Isobutyrate | 97 | 0.010 |
| D-Limonene | 7 | 0.001 |
| β -Ocimene | 5 | 0.001 |
| Linalool | 4 | 0.000 |
| Selinene | 52 | 0.005 |
| delta-Cadinene | 77 | 0.008 |
| Geraniol | 11 | 0.001 |
| Total 8 Minor Hops Oils | 279 | 0.03 |



Analytical methods as noted in link below:

https://www.kpu.ca/sites/default/files/Applied%20Genomics%20Centre/KPU_Hops_Testing_Info.pdf

Terms and Conditions:

https://www.kpu.ca/sites/default/files/Applied%20Genomics%20Centre/KPU_Hops_Testing_Services_Terms_and_Conditions.pdf

Samples kept for 1 month post-testing

Data reviewed by:

Mathias Schuetz, PhD

Director of Hops Research and Development