



YAKIMA CHIEF - HOPUNION LLC

# CERTIFICATE OF ANALYSIS

203 Division Street  
Yakima, WA 98902  
P // 509 453 4792  
F // 509 453 1551  
hops@ychhops.com  
ychhops.com

Date Issued: **01/04/2018**

Analysis Results Issued To: Denis Gayte

## Brewing Values and Total Oil

Sample ID	Analysis Date	Variety	Description	Alpha Acids	Beta Acids	HSI	Oil %
HC170365	11/28/2017		Chinook	10.6	3.5	0.299	1.7
HC170366	11/28/2017		Backa	2.1	3.0	0.369	0.4
HC170367	11/28/2017		Robusta	3.8	3.2	0.265	0.7
HC170368	11/28/2017		Aroma	3.9	3.8	0.382	0.8
HC170369	11/28/2017		Cascade	5.8	7.2	0.279	1
HC170370	11/28/2017		Centennial	7.1	3.7	0.377	1.4
HC170371	11/28/2017		CTZ	16.5	6.0	0.281	1.4

## GC Analysis of Oil

Sample ID	Variety	B-Pinene %	Myrcene %	Linalool %	Caryophyllene %	Farnesene %	Humulene %	Geraniol %
HC170365		0.54	39.16	0.35	8.59	0.39	18.09	0.18
HC170366		0.37	24.37	0.29	12.38	0.09	35.02	0.31
HC170367		0.63	42.24	0.34	10.35	0.27	26.07	0.15
HC170368		0.70	43.84	0.33	10.1	0.07	25.45	0.18
HC170369		0.64	45.55	0.23	7.25	6.57	18.93	0.07
HC170370		1.09	61.96	0.41	5.32	0.14	11.61	0.26
HC170371		0.83	60.05	0.27	5.66	0.29	9.75	0.15

## Method of Analysis

ASBC Hops 6A –  $\alpha$ -acids/ $\beta$ -acids by Spectrophotometry

ASBC Hops 13 – Total Oil by Distillation



YAKIMA CHIEF - HOPUNION LLC  
**CERTIFICATE OF ANALYSIS**

---

203 Division Street  
Yakima, WA 98902  
P // 509 453 4792  
F // 509 453 1551  
hops@ychhops.com  
ychhops.com

ASBC Hops 17 – Hops Essential Oils by GC-FID

Issued By

A handwritten signature in black ink that reads "Ashley Trenkenschuh".

Ashley Trenkenschuh  
Quality Control Data Coordinator