



YAKIMA CHIEF - HOPUNION LLC

# CERTIFICATE OF ANALYSIS

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Supplier: Yakima Chief-Hopunion, LLC  
203 Division Street  
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Date of Issue: 15-Nov-2017

Product Name: Type 90 Hop Pellets

Lot Number: P92-ABEEKG5278  
Variety: UK East Kent Golding  
Crop Year: 2016

<u>Characteristic</u>	<u>Typical Analysis</u>	<u>Actual Analysis</u>
Alpha Acids:	2.5 - 17.5% (w/w) UV Spectro by ASBC HOPS - 6A	6.1%
Beta Acids:	3.0 - 9.0% (w/w) UV Spectro by ASBC HOPS - 6A	3.0%
Hop Storage Index	Varies by Variety and Time from Harvest Hop Storage Index by ASBC Hops - 12	0.290
Oil by Distillation:	Varies by Variety ASBC Hops - 13 (%v/w)	0.4%
Oil Profile by GC, EBC Analytica V 7.12:	<b>B-Pinene:</b> 0.4 % <b>Myrcene:</b> 28.1 % <b>Linalool:</b> 0.6 % <b>Caryophyllene:</b> 12.5 %	<b>Farnesene:</b> 0.1 % <b>Humulene:</b> 38.3 % <b>Geraniol:</b> 0.1 %

Lead:	< 1.0 ppm	passes test
Arsenic:	< 0.5 ppm	passes test
Cadmium:	< 0.03 ppm	passes test
Total Heavy Metals:	< 10 ppm (asPb)	passes test

Missy Raver  
Quality Control Manager