



YAKIMA CHIEF - HOPUNION LLC
CERTIFICATE OF ANALYSIS

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

Product Name: Type 90 Hop Pellets

Lot Number: 16-145
Variety: Czech Saaz
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	3.4%																
Beta Acids:	3.0 - 9.0% (w/w) UV Spectro by ASBC HOPS - 6A	5.0%																
Hop Storage Index	Varies by Variety and Time from Harvest Hop Storage Index by ASBC Hops - 12	0.336																
Oil by Distillation:	Varies by Variety ASBC Hops - 13 (%v/w)	0.3%																
Oil Profile by GC, EBC Analytica V 7.12:	<table border="0"> <tr> <td>B-Pinene:</td> <td>0.0 %</td> <td>Farnesene:</td> <td>23.8 %</td> </tr> <tr> <td>Myrcene:</td> <td>0.8 %</td> <td>Humulene:</td> <td>33.2 %</td> </tr> <tr> <td>Linalool:</td> <td>0.1 %</td> <td>Geraniol:</td> <td>0.3 %</td> </tr> <tr> <td>Caryophyllene:</td> <td>8.8 %</td> <td></td> <td></td> </tr> </table>	B-Pinene:	0.0 %	Farnesene:	23.8 %	Myrcene:	0.8 %	Humulene:	33.2 %	Linalool:	0.1 %	Geraniol:	0.3 %	Caryophyllene:	8.8 %			
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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