



YAKIMA CHIEF - HOPUNION LLC

CERTIFICATE OF ANALYSIS

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Supplier: Yakima Chief-Hopunion, LLC
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Product Name: LupuLN2™ Powder

Lot Number: PL1-ZJUMOS0010
Variety: Mosaic® Brand
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	20.5%
Beta Acids:	3.0 - 9.0% (w/w) UV Spectro by ASBC HOPS - 6A	6.2%
Hop Storage Index	Varies by Variety and Time from Harvest Hop Storage Index by ASBC Hops - 12	0.240
Oil by Distillation:	Varies by Variety ASBC Hops - 13 (%v/w)	4.0%
Oil Profile by GC, EBC Analytica V 7.12:	B-Pinene: 0.9 % Myrcene: 66.2 % Linalool: 0.5 % Caryophyllene: 3.5 %	Farnesene: 0.1 % Humulene: 9.0 % Geraniol: 0.6 %

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