



CERTIFICATE of ANALYSIS



205 Junes Way Suite 1 Whitefish, MT 59937

406-862-4677

qc@glacierhopsranch.com

www.glacierhopsranch.com

Origin of Product: WHITEFISH, MT UNITED STATES of AMERICA

Variety:	Hopzoil™ Amarillo®	Production Date:	9/15/2019
Lot #:	19WA358AMA1-M7	Best Before Date:	9/15/2024
Sample ID:	201323	Test Analysis Date:	8/4/2021

Organoleptic

Sensory Profile	Testing Method	Specifications	Results
Color	Organoleptic	Light Golden/Golden	Conforms
Aroma	Organoleptic	Citrus/Floral	Conforms
Flavor	Organoleptic	N/A	N/A
Viscosity	Organoleptic	Fluid	Conforms
Ext Material	Organoleptic	< 0.01%	< 0.01%

Biological

Microbiological	Testing Method	Specifications	Results
Coliform	AOAC 990.12	< 100 cfu/g	< 10 cfu/g
Total Plate Count	AOAC 991.14	< 100,000 cfu/g	< 100 cfu/g
<i>E. coli</i>	AOAC 991.14	< 10 cfu/g	< 10 cfu/g
<i>Staphylococcus aureus</i>	FDA/BAM	< 10 cfu/g	< 10 cfu/g
<i>Salmonella ssp.</i>	FDA/BAM	NEG per 25g	NEG per 25g
Yeast	FDA/BAM	< 1,000 cfu/g	< 100 cfu/g
Mold	FDA/BAM	< 1,000 cfu/g	< 100 cfu/g

Test Performed By: **Nutri-Biome Analytical Labs**

Terpenes

Compounds	Testing Method	Results	Compounds	Testing Method	Results
α-Pinene	GC-FID	0.16	Nerolidol 2	GC-FID	0.00
β-Pinene	GC-FID	1.55	Humulene	GC-FID	7.45
Myrcene	GC-FID	73.43	Geraniol	GC-FID	0.03
Limonene	GC-FID	0.26	Geranyl Acetate 1	GC-FID	0.00
Farnesene	GC-FID	2.00	Geranyl Acetate 2	GC-FID	0.49
Ocimene	GC-FID	0.11	Caryophyllene	GC-FID	3.34
Terpinolene	GC-FID	0.02	Caryophyllene Oxide	GC-FID	0.05
β-Ionone	GC-FID	0.02	Methyl Thio Hexanoate	GC-FID	0.14
Linalool	GC-FID	0.64	Methyl Heptanoate	GC-FID	0.57
2-Undecanone	GC-FID	0.44	Methyl Laurate	GC-FID	0.00
Citral	GC-FID	0.01	Methyl Octanoate	GC-FID	0.05
Citronellene	GC-FID	0.00	Unidentified	GC-FID	9.30
Citronellol	GC-FID	0.01			
Nerol	GC-FID	0.00	Test Performed By: Hollingbery & Son, Inc.		
Nerolidol 1	GC-FID	0.00			



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Chemical

Heavy Metals	Testing Method	Specifications	Results
Arsenic	ICP-MS	NMT < 0.5 ppm	< 0.03 ppm
Cadmium	ICP-MS	NMT < 0.03 ppm	< 0.01 ppm
Lead	ICP-MS	NMT < 1.0 ppm	0.01 ppm
Mercury	ICP-MS	NMT < 0.2 ppm	< 0.01 ppm

Test Performed By: **Sora Laboratories LLC.**

Pesticides

Acephate	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Alachlor	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Aldrin and dieldrin (sum of)	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Azinphos-ethyl	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Azinphos-methyl	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
Bromophos-ethyl	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Bromophos-methyl	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Brompropylate	GM0166 (USP35)	NMT	3	ppm	< 3	ppm
Chlordane (sum)	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Chlorfenvinphos	GM0166 (USP35)	NMT	0.5	ppm	< 0.5	ppm
Chlorpyrifos-ethyl	GM0166 (USP35)	NMT	0.2	ppm	< 0.2	ppm
Chlorpyrifos-methyl	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Chlorthal-dimethyl	GM0166 (USP35)	NMT	0.01	ppm	< 0.01	ppm
Cyfluthrin (sum)	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
lamda-Cyhalothrin	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
Cypermethrin and isomers (sum)	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
DDT (sum)	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
Deltamethrin	GM0166 (USP35)	NMT	0.5	ppm	< 0.5	ppm
Diazinon	GM0166 (USP35)	NMT	0.5	ppm	< 0.5	ppm
Dichlofluanid	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Dichlorvos	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
Dicofol	GM0166 (USP35)	NMT	0.5	ppm	< 0.5	ppm
Dimethoate and omethoate (sum)	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Dithiocarbamates (expressed as	GM0166 (USP35)	NMT	2	ppm	< 2	ppm
Endosulfan (sum)	GM0166 (USP35)	NMT	3	ppm	< 3	ppm
Endrin	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Ethion	GM0166 (USP35)	NMT	2	ppm	< 2	ppm
Etrimfos	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Fenchlorophos (sum)	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Fenitrothion	GM0166 (USP35)	NMT	0.5	ppm	< 0.5	ppm



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Variety: HopzoiTM Amarillo[®]

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Fenpropathrin	GM0166 (USP35)	NMT	0.03	ppm	< 0.03	ppm
Fensulfothion (sum)	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Fenthion (sum)	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Fenvalerate	GM0166 (USP35)	NMT	1.5	ppm	< 1.5	ppm
Flucythrinate	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Fluvalinate	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Fonophos	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Heptachlor (sum)	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Hexachlorbenzene	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Hexachlorocyclohexane (sum of	GM0166 (USP35)	NMT	0.3	ppm	< 0.3	ppm
Lindane (Hexachlorocyclohexane	GM0166 (USP35)	NMT	0.6	ppm	< 0.6	ppm
Malathion and malaoxon (sum)	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
Mecarbam	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Methacriphos	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Methamidophos	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Methidathion	GM0166 (USP35)	NMT	0.2	ppm	< 0.2	ppm
Methoxychlor	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Mirex	GM0166 (USP35)	NMT	0.01	ppm	< 0.01	ppm
Monocrotophos	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Parathion-ethyl and Paroxon-e	GM0166 (USP35)	NMT	0.5	ppm	< 0.5	ppm
Parthion-methyl and Paraoxon-	GM0166 (USP35)	NMT	0.2	ppm	< 0.2	ppm
Pendimethalin	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Pentachloranisol	GM0166 (USP35)	NMT	0.01	ppm	< 0.01	ppm
Permethrin and isomers	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
Phosalone	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Phosmet	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Piperonyl Butoxide	GM0166 (USP35)	NMT	3	ppm	< 3	ppm
Pirimiphos-ethyl	GM0166 (USP35)	NMT	0.05	ppm	<0.05	ppm
Pirimiphos-methyl (sum)	GM0166 (USP35)	NMT	4	ppm	< 4	ppm
Procymidone	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Profenophos	GM0166 (USP35)	NMT	0.1	ppm	< 0.1	ppm
Prothiophos	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Pyrethrum (sum)	GM0166 (USP35)	NMT	3	ppm	< 3	ppm
Quinalphos	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Quintozene (sum)	GM0166 (USP35)	NMT	1	ppm	< 1	ppm
S-421	GM0166 (USP35)	NMT	0.02	ppm	< 0.02	ppm
Tecnazene	GM0166 (USP35)	NMT	0.05	ppm	< 0.05	ppm
Tetradifon	GM0166 (USP35)	NMT	0.3	ppm	< 0.3	ppm
Vinclozolin	GM0166 (USP35)	NMT	0.4	ppm	< 0.4	ppm
Bromides	GM0166 (USP35)	NMT	125	ppm	<125	ppm

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Quality Control Department

This information is presented in good faith and was compiled through testing methods in our laboratory or 3rd Party laboratory, and with the assistance of our suppliers, harvesters, and processors information. We confirm the identity with our in-house testing and laboratory outsourcing. The data in this analysis is offered solely for your verification and consideration.

Authorized By:  Verified on : 2/23/2022