

CERTIFICATE OF ANALYSIS

Order Type: Medical Cannabis
Order ID: OR2019-1762

Customer ID: 39
Customer Name: Twisted Extracts

Harvest/Extract Lot: None
Harvest/Extract Batch: None

Cultivar (Strain): Distillate 1006
Sample Date: 07/16/2019

Lab ID: SA2019-5981
Date Received: 07/15/2019

Sample Matrix: Concentrate
Date Completed: 07/18/2019

Remarks:

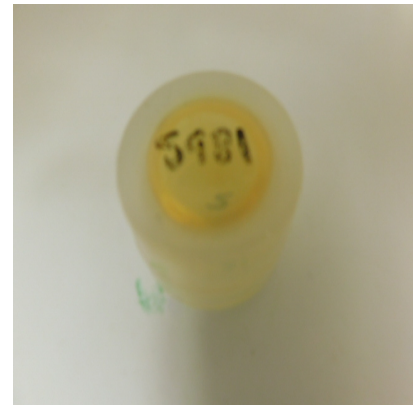
CANNABINOID (POTENCY) PROFILE

Analysis Date/Time: 07/16/2019 1810
Analyst: OL

Method: HPLC/DAD (Internal Method-001)
Instrument: Agilent 1100

Moisture Content (%): -
Water Activity (aw): -

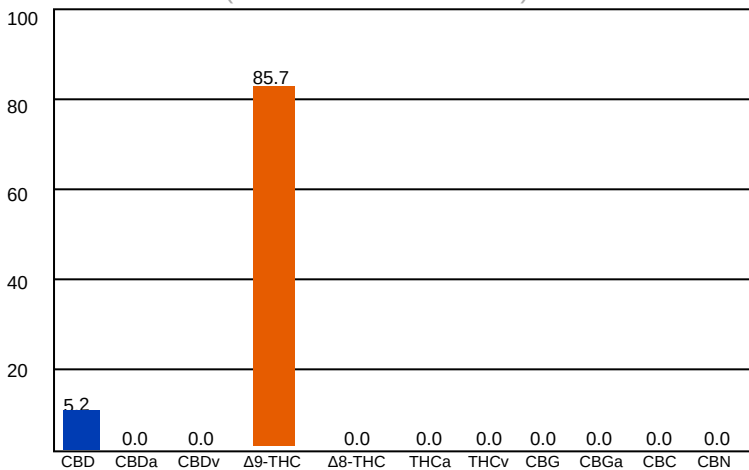
Cannabinoid	Result (%)	Result (mg/g)	Reporting Limit (mg/g)	Result (mg/mL)	Per Unit (mg)
CBD	5.2	052	1.43	-	052
CBDa	-	-	1.43	-	-
CBDv	-	-	1.43	-	-
Δ9-THC	85.7	857	1.43	-	857
Δ8-THC	-	-	1.43	-	-
THCa	-	-	1.43	-	-
THCv	-	-	1.43	-	-
CBC	-	-	1.43	-	-
CBG	-	-	1.43	-	-
CBGa	-	-	1.43	-	-
CBN	-	-	1.43	-	-
TOTAL	90.9	909			909
TOTAL THC	85.7	857			857
TOTAL CBD	5.2	052			052



UNIT MASS (g): 1

"-" Not detected above RL.

Cannabinoid Distribution
(% of Total Cannabinoids)



Deviations from standard operating procedure: None

Recoveries for all analyte standards: 90-110%
Replicate Uncertainties: <5% RSD, <20% RPD
Sample/Reagent Blanks: <RL for all analytes

Values for plant matter are adjusted for moisture content.

Total THC = (THCa x 0.877) + Δ9-THC
Total CBD = (CBDa x 0.877) + CBD

Percentage results are reported by mass.
mg/g results are reported as mass component per mass material.

Abbreviations: UV - Ultraviolet, HPLC - High Pressure Liquid Chromatography, RL - Reporting Limit, RPD - Relative Percent Difference, RSD - Relative Standard Deviation

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Kyle W. Felling
Kyle W. Felling, Ph.D.
Laboratory Director

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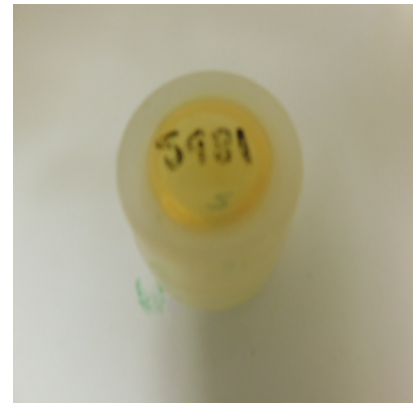
TERPENOID PROFILE

Analysis Date/Time: 07/16/2019 1810
Analyst: OL

Method: HS/GC/FID (Internal Method-002)
Instrument: Agilent 6890

Deviations from SOP:
None

<u>Terpene</u>	<u>Result (µg/g)</u>	<u>Result (%)</u>	
α-Bisabolol	-	-	
Camphene	14	0.00142	
δ-3-Carene	-	-	
β-Caryophyllene	125	0.0125	
Caryophyllene oxide	-	-	
p-Cymene	-	-	
Eucalyptol	73	0.00731	
Geraniol	-	-	
Guaiol	-	-	
α-Humulene	51	0.00508	
Isopulegol	-	-	
d-Limonene	54	0.00541	
Linalool	82	0.00219	
β-Myrcene	-	-	
cis-Nerolidol	53	0.00532	
trans-Nerolidol	-	-	
α-Ocimene	-	-	
β-Ocimene	-	-	
α-Pinene	34	0.00138	
β-Pinene	-	-	
α-Terpinene	-	-	
γ-Terpinene	-	-	
Terpinolene	-	-	
TOTAL	486	0.0486	



Abbreviations: HS - Headspace, GC - Gas Chromatography, MS - Mass Spectrometry, RL - Reporting Limit

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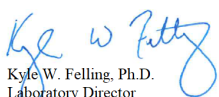
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"-" Not detected above RL.

Reporting Limit (µg/g): 10.1

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Remarks:

RESIDUAL SOLVENT PROFILE

Analysis Date/Time: 07/16/2019 1810
Analyst: OL

Method: USP <467>
Instrument: Agilent 6890

Deviations from SOP:
None

Solvent	Result (µg/g)	Action Level (µg/g)
Acetone (67-64-1)	-	1000
Benzene (71-43-2)	-	2
n-Butane (106-97-2)	-	1000
2,2-Dimethylbutane (75-83-2)	-	60
2,3-Dimethylbutane (79-29-8)	-	60
Ethyl benzene (100-41-4)	-	430
n-Heptane (142-82-5)	-	1000
n-Hexane (110-54-3)	-	60
Isobutane (75-28-5)	-	1000
Isopropanol (67-63-0)	-	1000
2-Methylbutane (78-78-4)	-	1000
2-Methylpentane (107-83-5)	-	60
3-Methylpentane (96-10-0)	-	60
n-Pentane (109-66-0)	-	1000
n-Propane (74-98-6)	-	1000
Toluene (108-88-3)	-	180
o-Xylene (95-47-6)	-	430
m,p-Xylene (108-38-3 or 106-42-3)	-	430
Xylenes* (1330-20-7)	-	430

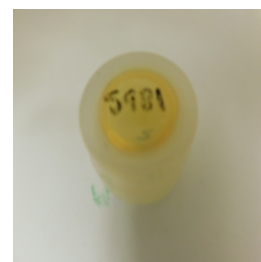
Color Key

RESULT < 1/2 AL
1/2 AL < RESULT < AL
RESULT > AL

Reporting Limit (µg/g)
1/2 of AL

"-" not detected above reporting limit

"*" - o,m,p-Xylene and Ethylbenzene



Solvent	Synonym(s)	Solvent	Synonym(s)	Solvent	Synonym(s)
Acetonitrile	Methyl Cyanide, ACN	2-Ethoxyethanol	Cellosolve, Ethyl glycol	Methanol	Methyl alcohol
1-Butanol	n-Butanol, Butyl Alcohol	Ethyl ether	Diethyl ether, Ether	2-Methylbutane	Isopentane
2-Butanol	sec-Butyl alcohol	Ethyl acetate	EtOAc	Methylene chloride	Dichloromethane
2-Butanone	Methyl ethyl ketone, MEK	Ethyl benzene	Phenylethane	2-Methylpentane	Isohexane
1,2-Dimethoxyethane	Monoglyme	Ethylene glycol	1,2-Ethanediol	1-Pentanol	n-Amyl alcohol
2,3-Dimethylbutane	Neohexane	Ethylene oxide	Oxirane	1-Propanol	Propyl alcohol
2,3-Dimethylbutane	Diisopropyl	Isobutane	2-Methylpropane	Tetrahydrofuran	THF
N,N-Dimethylformamide	DMF	Isopropanol	2-Propanol, IPA	Tetramethylene sulfone	Sulfolane
Dimethylsulfoxide	DMSO	Isopropyl Acetate	Acetic acid isopropyl ester	Xylene	Dimethylbenzene

Abbreviations: HS-Headspace, GC-Gas Chromatography, MS-Mass Spectrometry, RL-Reporting Limit, AL-Action Level
CAS-Chemical Abstract Services

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Remarks:

PESTICIDES PROFILE

Analysis Date/Time: 07/16/2019 1810

Analyst: OL

Method: LC/MS/MS and GC/MS

Instrument: Waters Acquity/TQD

Deviations from SOP:

None

<u>Pesticide</u>	<u>Result</u> (µg/g)	<u>Action Level</u> (µg/g)
Abamectin (71751-41-2)	-	0.5
Azoxystrobin (131860-33-8)	-	0.5
Bifenazate* (149877-41-8)	-	0.5
Etoxazole (153233-91-1)	-	0.5
Imazalil (35554-44-0)	-	0.5
Imidacloprid (138261-41-3)	-	0.5
Malathion (121-75-5)	-	0.5
Myclobutanil (88671-89-0)	-	0.5
Permethrins* (52645-53-1)	-	0.5
Spinosad A (168316-95-8)	-	0.5
Spinosad D (168316-95-8)	-	0.5
Spiromesifen (283594-90-1)	-	0.5
Spirotetramat (203313-25-1)	-	0.5
Tebuconazole (80443-41-0)	-	0.5

Color Key

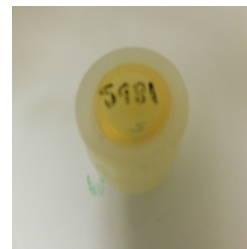
RESULT < 1/2 AL
1/2 AL < RESULT < AL
RESULT > AL

Reporting Limit (µg/g)
1/2 of AL

"-" not detected above reporting limit

"*" analyzed by GC/MS (all others analyzed by LC/MS/MS)

Permethrins measured as the cumulative residue of the *cis*- and *trans*-permethrin isomers.



Abbreviations: LC - Liquid Chromatography, GC - Gas Chromatography, MS - Mass Spectrometry, RL - Reporting Limit, AL - Action Level, CAS - Chemical Abstract Services

<u>Pesticide</u>	<u>Synonym(s)</u>	<u>Pesticide</u>	<u>Synonym(s)</u>	<u>Pesticide</u>	<u>Synonym(s)</u>
Cyfluthrin	Baythroid	Myclobutanil	Systhane	Propiconazole	Tilt
DDVP	Dichlorvos	Naled	Dibrom	Propoxur	Baygon
Ethoprophos	Prophos	Phosmet	Imidan		

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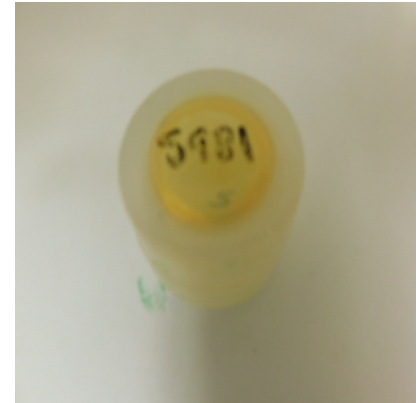
MYCOTOXIN PROFILE

Analysis Date/Time: 07/16/2019 1810
Analyst: OL

Method: LC/MS/MS
Instrument: Waters Acquity/TQD

Deviations from SOP:
None

<u>Mycotoxin</u>	<u>Result</u> (µg/kg)	<u>Action Level</u> (µg/kg)
Aflatoxin	B1 -	20
Aflatoxin	B2 -	20
Aflatoxin	G1 -	20
Aflatoxin	G2 -	20
Ochratoxin A	-	20



Abbreviations: EC - Escherichia Coli, CFU - Colony-Forming Unit,
RL - Reporting Limit, AL - Action Level

Color Key

RESULT < 1/2 AL
1/2 AL < RESULT < AL
RESULT > AL

Reporting Limit (CFU/g)

1

"-" not detected above reporting limit

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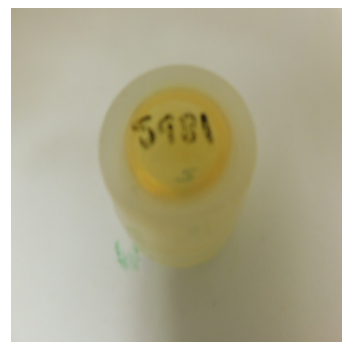
HEAVY METAL PROFILE

Analysis Date/Time: 07/16/2019 1810
Analyst: OL

Method: ICP/MS
Instrument: PerkinElmer Elan 9000

Deviations from SOP:
None

<u>Heavy Metal</u>	<u>Result (µg/kg)</u>	<u>Action Level (µg/kg)</u>
Arsenic (As)	-	400
Cadmium (Cd)	-	440
Lead (Pb)	-	1000
Mercury (Hg)	-	200



Abbreviations: ICP - Inductively-Coupled Plasma, OES - Optical Emission Spectroscopy, MS - Mass Spectroscopy, RL - Reporting Limit, AL - Action Level

Color Key

RESULT < 1/2 AL
1/2 AL < RESULT < AL
RESULT > AL

Reporting Limit (µg/kg)
50

"-" not detected above reporting limit

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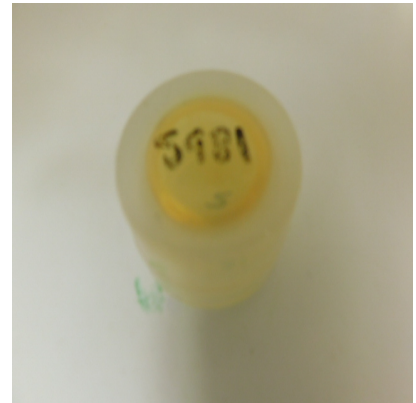
MICROBIOLOGICAL PROFILE

Analysis Date/Time: 07/16/2019 1810
Analyst: OL

Method: Hardy Diagnostics CompactDry
Instrument: Thermo Incubator

Deviations from SOP:
None

<u>Bacteria/Microbe</u>	<u>Result (CFU/g)</u>	<u>Action Level (CFU/g)</u>
Aerobic Plate Count, Total	NT	-
Escherichia Coli (E. Coli)	Absent	1
Mold	Absent	10000
Yeast	Absent	10000
Salmonella spp.	Absent	1



Abbreviations: EC - Escherichia Coli, CFU - Colony-Forming Unit, RL - Reporting Limit, AL - Action Level, NT - Not Tested

Color Key

RESULT < 1/2 AL
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RESULT > AL

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