

CERTIFICATE OF ANALYSIS

SAMPLE	Tea Tree Oil
CUSTOMER	Projects Etc Pty (Japan)
CERTIFICATION DATE	10 January 2018
CUSTOMER LOT/BATCH No.	JF20817
LABORATORY REFERENCE	ARL180119
JOB No.	A180039

TEST	ISO 4730:2017(E)** SPECIFICATION	RESULTS	TEST METHOD
	Area %		
α -pinene	1.0 – 4.0	2.61	ARL-TM101-3*
sabinene	tr – 3.5	0.11	
α -terpinene	6.0 – 12.0	9.08	
limonene	0.5 – 1.5	1.03	
p-cymene	0.5 – 8.0	2.63	
1,8-cineole	tr – 10.0	2.89	
γ -terpinene	14.0 – 28.0	21.37	
terpinolene	1.5 – 5.0	3.35	
terpinen-4-ol	35.0 – 48.0	39.82	
α -terpineol	2.0 - 5.0	3.18	
aromadendrene	0.2 – 3.0	1.48	
ledene	0.1 – 3.0	1.04	
δ -cadinene	0.2 – 3.0	0.96	
globulol	tr – 1.0	0.35	
viridiflorol	tr – 1.0	0.27	

* Assay by GC (FID detection)

** ISO4730:2017(E)-Essential Oil of Melaleuca, terpinen-4-ol type (Tea Tree Oil)

tr - denotes trace



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MR BENDRIK BAUMEISTER
ANALYTICAL OFFICER



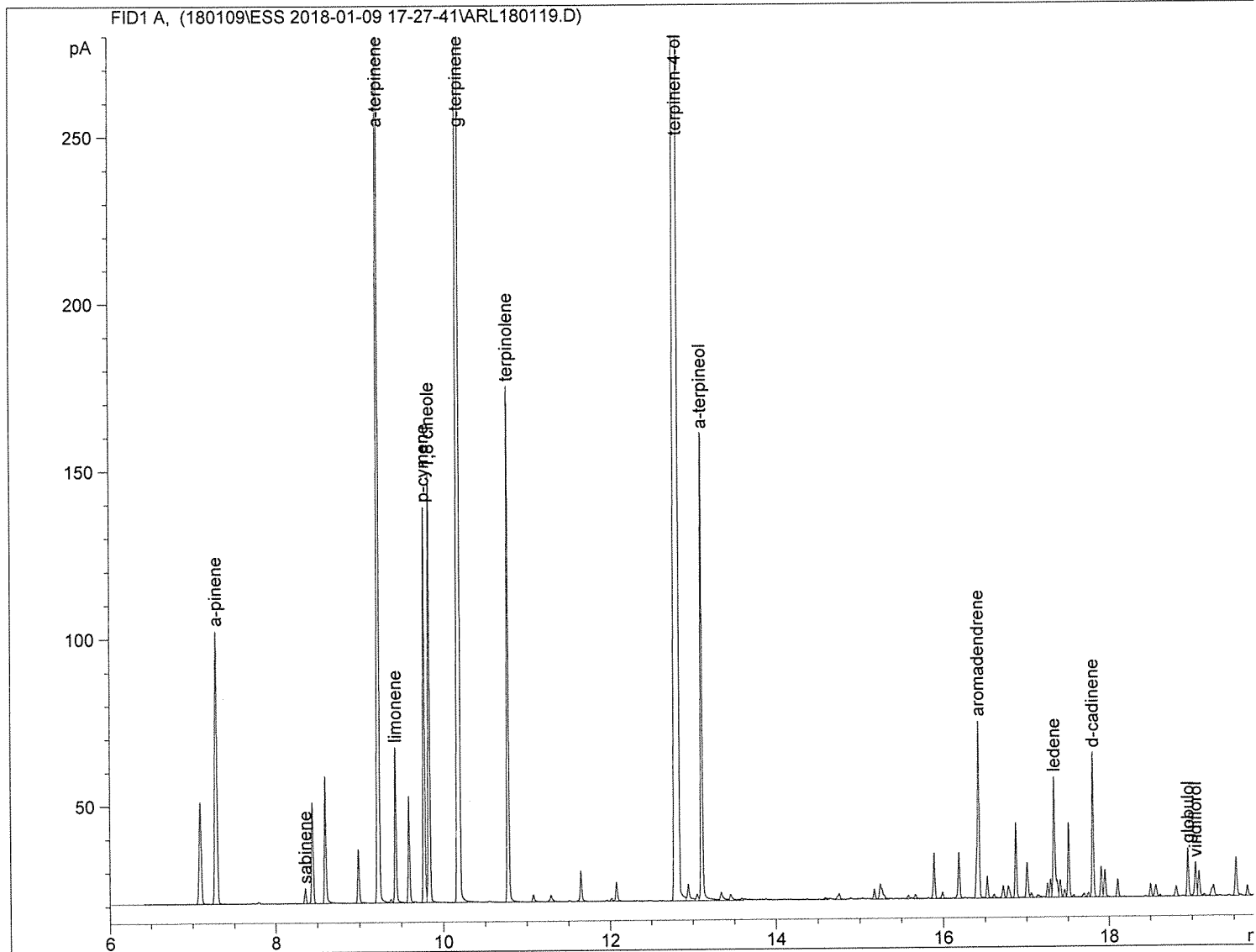
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MR ASHLEY DOWELL
MANAGER - ARL

Sample Name: TTO JF20817

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Acq. Operator   : SM BB                      Seq. Line :    2
Acq. Instrument : GC-3                      Location  : Vial 3
Injection Date  : 1/9/2018 6:07:38 PM       Inj       :    1
                                           Inj Volume: 1 µl

Acq. Method    : D:\GC-3_DATA\DATA\180109\ESS 2018-01-09 17-27-41\TTO.M
Last changed   : 1/3/2018 10:20:02 AM by SM BB
Analysis Method : D:\GC-3_DATA\METHODS\TTO.M
Last changed   : 1/3/2018 10:20:02 AM by SM BB
Method Info    : Method to analyse essential oils
    
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 Area Percent Report
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Sorted By      :      Signal
Calib. Data Modified : 1/3/2018 10:15:38 AM
Multiplier    :      1.0000
Dilution      :      1.0000
Use Multiplier & Dilution Factor with ISTDs
    
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Signal 1: FID1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	7.093	BB	0.0289	56.03751	0.96636	?
2	7.285	BB	0.0291	151.29033	2.60899	a-pinene
3	8.354	BV	0.0216	6.24244	0.10765	sabinene
4	8.441	VB	0.0227	43.30512	0.74679	?
5	8.595	BB	0.0206	50.92427	0.87818	?
6	8.988	VB	0.0212	22.30295	0.38461	?
7	9.231	BV	0.0211	526.51965	9.07978	a-terpinene
8	9.375	VV	0.0237	1.68144	0.02900	?
9	9.432	VB	0.0200	59.91153	1.03317	limonene
10	9.589	BV	0.0208	41.38780	0.71373	?
11	9.775	VV	0.0200	152.48663	2.62962	p-cymene
12	9.836	VB	0.0203	167.71651	2.89226	1,8 cineole
13	10.196	BB	0.0230	1238.92688	21.36518	g-terpinene
14	10.779	BB	0.0197	194.38766	3.35220	terpinolene
15	11.078	BB	0.0258	3.60591	0.06218	?
16	11.288	BB	0.0306	4.26983	0.07363	?
17	11.647	VB	0.0222	13.42887	0.23158	?
18	12.018	VV	0.0287	1.53539	0.02648	?
19	12.077	VB	0.0236	8.86242	0.15283	?
20	12.828	BV	0.0315	2308.90308	39.81682	terpinen-4-ol
21	12.944	VV	0.0295	10.25932	0.17692	?
22	13.051	VV	0.0267	3.45653	0.05961	?
23	13.111	VV	0.0204	184.35080	3.17911	a-terpineol
24	13.339	VV	0.0347	5.88607	0.10150	?
25	13.454	VV	0.0342	4.50338	0.07766	?
26	13.588	VV	0.0377	1.32141	0.02279	?
27	14.588	VV	0.0303	1.19130	0.02054	?
28	14.753	VB	0.0286	3.55707	0.06134	?
29	15.175	VV	0.0222	4.17116	0.07193	?
30	15.247	VV	0.0346	11.55174	0.19921	?
31	15.584	VV	0.0239	1.80450	0.03112	?
32	15.666	VV	0.0264	2.22679	0.03840	?
33	15.891	VB	0.0206	18.25061	0.31473	?
34	15.991	BB	0.0227	2.83972	0.04897	?
35	16.188	VV	0.0223	19.92526	0.34361	?
36	16.421	VV	0.0243	85.66180	1.47723	aromadendrene
37	16.527	VB	0.0203	8.59231	0.14817	?
38	16.607	BV	0.0268	2.08971	0.03604	?
39	16.718	VV	0.0236	5.65858	0.09758	?
40	16.779	VV	0.0281	6.80984	0.11743	?
41	16.870	VB	0.0210	29.80684	0.51402	?
42	17.006	BV	0.0247	16.89044	0.29127	?
43	17.057	VV	0.0232	2.18802	0.03773	?
44	17.136	VV	0.0369	2.10741	0.03634	?
45	17.252	VV	0.0214	5.81385	0.10026	?
46	17.288	VV	0.0202	7.11870	0.12276	?
47	17.331	VV	0.0250	60.36562	1.04100	ledene
48	17.405	VV	0.0230	7.82014	0.13486	?
49	17.458	VV	0.0211	3.28045	0.05657	?
50	17.507	VV	0.0206	29.88511	0.51537	?
51	17.570	VV	0.0244	1.20039	0.02070	?
52	17.700	VV	0.0270	2.28148	0.03934	?
53	17.752	VV	0.0223	2.00310	0.03454	?

Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Area %	Name
54	17.806	VV	0.0200	55.87190	0.96351	d-cadinene
55	17.908	VV	0.0209	12.11786	0.20897	?
56	17.952	VB	0.0230	11.96385	0.20632	?
57	18.106	BV	0.0223	7.45287	0.12852	?
58	18.501	VV	0.0216	5.40968	0.09329	?
59	18.564	VV	0.0275	6.14757	0.10601	?
60	18.614	VV	0.0235	9.16585e-1	0.01581	?
61	18.810	VV	0.0261	5.10788	0.08808	?
62	18.950	VV	0.0218	20.04589	0.34569	globulol
63	19.042	VV	0.0240	15.57728	0.26863	viridiflorol
64	19.084	VV	0.0224	10.90549	0.18806	?
65	19.144	VV	0.0304	1.25870	0.02171	?
66	19.254	VV	0.0333	8.11734	0.13998	?
67	19.526	VV	0.0255	18.73074	0.32301	?
68	19.663	VV	0.0240	4.96072	0.08555	?
69	19.791	VV	0.0243	1.12758	0.01945	?
70	19.902	VV	0.0235	4.50620	0.07771	?

Totals : 5798.81377

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*** End of Report ***