Southern Cross University

Southern Cross Plant Science
ANALYTICAL RESEARCH LABORATORY

t: +61 6622 3211 • w: scu.edu.au/scps • T Block Level 3, Miltary Road, Lismore NSW 2480 Australia • ABN: 41995 651 524 • TGA: MI-01122004-LI-000264-1

CERTIFICATE OF ANALYSIS

SAMPLE	Essential oil of Melaleuca alternifolia
COUNTRY OF ORIGIN	Australia
CUSTOMER	Projects Etc Pty (Japan)
CERTIFICATION DATE	05 September 2017
CUSTOMER LOT/BATCH No.	RT2017
LABORATORY REFERENCE	ARL174382
JOB No.	A171715

TEST	ISO 4730:2017(E)** SPECIFICATION	RESULTS	TEST METHOD
	Area %		
α-pinene	1.0 – 4.0	2.49	ARL-TM101-3*
sabinene	tr – 3.5	0.38	
α-terpinene	6.0 – 12.0	9.61	
limonene	0.5 – 1.5	0.90	
p-cymene	0.5 – 8.0	3.17	
1,8-cineole	tr – 10.0	1.76	
γ-terpinene	14.0 – 28.0	21.84	
terpinolene	1.5 – 5.0	3.50	
terpinen-4-ol	35.0 – 48.0	40.69	
α-terpineol	2.0 - 5.0	2.50	
aromadendrene	0.2 – 3.0	0.89	
ledene	0.1 – 3.0	0.61	
δ-cadinene	0.2 – 3.0	0.70	
globulol	tr – 1.0	0.21	
viridiflorol	tr – 1.0	0.17	

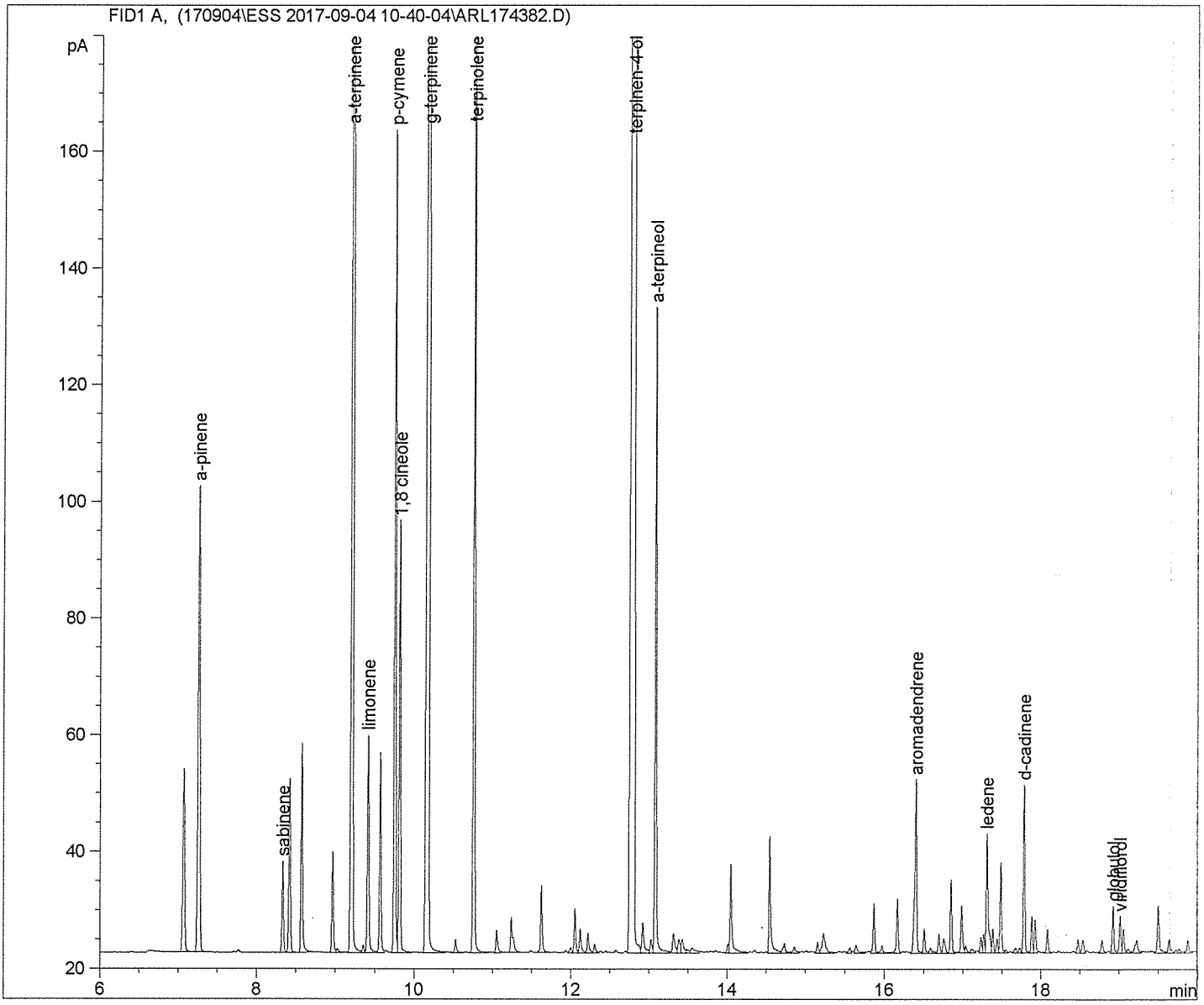
*** Assay by GC (FID detection)**
**** ISO4730:2017(E)-Essential Oil of Melaleuca, terpinen-4-ol type (Tea Tree Oil)**
tr - denotes trace

.....
MS SAMANTHA MORROW
ANALYTICAL OFFICER

.....
MR ASHLEY DOWELL
MANAGER - ARL

Data File D:\GC-3_DATA\DATA\170904\ESS 2017-09-04 10-40-04\ARL174382.D
Sample Name: TTO RT2017

Acq. Operator	: SM BB	Seq. Line	: 7
Acq. Instrument	: GC-3	Location	: Vial 7
Injection Date	: 9/4/2017 2:59:15 PM	Inj	: 1
		Inj Volume	: 1 µl
Acq. Method	: D:\GC-3_DATA\DATA\170904\ESS 2017-09-04 10-40-04\TTO.M		
Last changed	: 8/22/2017 9:02:17 AM by SM BB		
Analysis Method	: D:\GC-3_DATA\METHODS\TTO.M		
Last changed	: 8/22/2017 9:02:17 AM by SM BB		
Method Info	: Method to analyse essential oils		



Data File D:\GC-3_DATA\DATA\170904\ESS 2017-09-04 10-40-04\ARL174382.D
Sample Name: TTO RT2017

==========

Area Percent Report

==========

Sorted By : Signal
Calib. Data Modified : 8/22/2017 8:56:09 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	7.078	BB	0.0277	54.23980	0.95932	?
2	7.271	BB	0.0281	140.94543	2.49286	a-pinene
3	8.340	VV	0.0216	21.52490	0.38070	sabinene
4	8.428	VB	0.0219	41.88252	0.74076	?
5	8.581	BB	0.0214	48.90201	0.86492	?
6	8.975	BV	0.0213	23.35561	0.41308	?
7	9.034	VB	0.0283	1.25697	0.02223	?
8	9.219	BV	0.0212	543.26306	9.60853	a-terpinene
9	9.364	VV	0.0221	1.76484	0.03121	?
10	9.420	VV	0.0214	50.74362	0.89749	limonene
11	9.577	VV	0.0203	45.00329	0.79596	?
12	9.763	VV	0.0204	179.41566	3.17327	p-cymene
13	9.824	VB	0.0212	99.40802	1.75820	1,8 cineole
14	10.183	BV	0.0235	1235.05591	21.84406	g-terpinene
15	10.535	VV	0.0243	3.59031	0.06350	?
16	10.767	VV	0.0194	197.99229	3.50183	terpinolene
17	11.060	VB	0.0252	6.42739	0.11368	?
18	11.247	BB	0.0289	12.60388	0.22292	?
19	11.631	VV	0.0231	17.14320	0.30321	?
20	12.005	VV	0.0273	1.55515	0.02751	?
21	12.061	VV	0.0215	10.78684	0.19078	?
22	12.130	VV	0.0245	6.64025	0.11744	?
23	12.229	VV	0.0236	5.25488	0.09294	?
24	12.313	VV	0.0254	2.47071	0.04370	?
25	12.812	VV	0.0338	2300.78882	40.69336	terpinen-4-ol
26	12.930	VV	0.0294	10.47221	0.18522	?
27	13.035	VV	0.0252	3.91724	0.06928	?
28	13.092	VV	0.0199	141.56779	2.50387	a-terpineol
29	13.323	VV	0.0307	7.01920	0.12415	?
30	13.391	VV	0.0289	4.41640	0.07811	?
31	13.434	VV	0.0324	5.28956	0.09355	?
32	13.499	VV	0.0321	1.34708	0.02383	?
33	13.559	VV	0.0547	3.38316	0.05984	?
34	14.021	VV	0.0212	2.05312	0.03631	?
35	14.056	VV	0.0249	25.84224	0.45706	?
36	14.553	VV	0.0225	30.71617	0.54327	?
37	14.741	VV	0.0319	3.79725	0.06716	?
38	14.866	VV	0.0329	2.33425	0.04129	?
39	15.162	VV	0.0236	2.74742	0.04859	?

Data File D:\GC-3_DATA\DATA\170904\ESS 2017-09-04 10-40-04\ARL174382.D
Sample Name: TTO RT2017

Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Area %	Name
40	15.235	VB	0.0394	9.78339	0.17304	?
41	15.569	VV	0.0290	1.77465	0.03139	?
42	15.650	VV	0.0350	3.31665	0.05866	?
43	15.877	VV	0.0212	11.77695	0.20830	?
44	15.977	VV	0.0321	2.83239	0.05010	?
45	16.173	VV	0.0218	13.23091	0.23401	?
46	16.407	VV	0.0247	50.16653	0.88728	aromadendrene
47	16.513	VV	0.0232	6.14225	0.10864	?
48	16.595	VV	0.0330	1.99277	0.03525	?
49	16.703	VV	0.0235	4.93135	0.08722	?
50	16.764	VV	0.0279	4.81533	0.08517	?
51	16.856	VB	0.0224	17.55571	0.31050	?
52	16.990	BV	0.0239	12.73711	0.22528	?
53	17.042	VV	0.0245	2.09310	0.03702	?
54	17.120	VV	0.0380	1.87779	0.03321	?
55	17.237	VV	0.0223	3.83262	0.06779	?
56	17.272	VV	0.0212	4.44881	0.07868	?
57	17.315	VV	0.0252	34.40036	0.60843	ledene
58	17.389	VV	0.0216	5.67061	0.10029	?
59	17.443	VV	0.0234	3.46644	0.06131	?
60	17.492	VV	0.0210	21.22315	0.37537	?
61	17.555	VV	0.0288	1.04500	0.01848	?
62	17.683	VV	0.0299	1.86103	0.03292	?
63	17.736	VV	0.0260	1.56493	0.02768	?
64	17.790	VV	0.0215	39.31202	0.69530	d-cadinene
65	17.892	VV	0.0202	8.18893	0.14484	?
66	17.936	VV	0.0221	7.98634	0.14125	?
67	18.091	VV	0.0232	6.14866	0.10875	?
68	18.483	VV	0.0235	3.46931	0.06136	?
69	18.547	VV	0.0302	4.20037	0.07429	?
70	18.792	VV	0.0287	4.35059	0.07695	?
71	18.932	VV	0.0225	11.77404	0.20824	globulol
72	19.024	VV	0.0237	9.83750	0.17399	viridiflorol
73	19.065	VV	0.0233	6.29328	0.11131	?
74	19.128	VV	0.0320	1.47592	0.02610	?
75	19.237	VV	0.0374	6.00034	0.10613	?
76	19.506	VV	0.0273	14.32499	0.25336	?
77	19.646	VV	0.0270	4.33475	0.07667	?
78	19.729	VV	0.0323	1.10728	0.01958	?
79	19.771	VV	0.0357	1.67928	0.02970	?
80	19.883	VV	0.0278	4.02407	0.07117	?

Totals : 5653.96596

==========

*** End of Report ***