

**Customer :**

**GEO ESSENTIAL, LLC  
Randy CARR  
1760 W, Business Park Drive  
OREM, UT 84058 USA  
rcarr@geoessential.com**

**Sample nature :** ESSENTIAL OIL  
**Botanical name :** CITRUS SINENSIS ORGANIC  
**Reference name :** ORANGE ORGANIC  
**Batch number :** 1409001302  
**Origin :** USA  
**Part:** FRESH FRUIT RIND  
**Pyrenessences reference :** B843

**Date of reception :** 10/30/2014      **Date analysis :** 11/03/2014  
**Packaging :** Amber flask of 25 ml - ambient temperature  
**Wanted analysis :** Complete analysis  
**Shelf life in our laboratory :** 1 an

**Comments and Conclusions :**

**⇒ BATCH IS IN COMPLIANCE WITH SWEET ORANGE  
ESSENTIAL OIL NORM ISO 3140 : 05-2011**

**Report validated by :**

Daniel Dantin



**ORGANOLEPTICS CHARACTERISTICS (method I-ANA-008-B\*)**

**Aspect :** Limpid Liquide

**Color :** Lemon yellow

**Odour :** Characteristic, like a rind of orange.

**PHYSICALS CHARACTERISTICS**

	METHOD	EO ORANGE BATCH N° 1409001302	NORM ISO 3140 : 2011	
			Minimum	Maximum
Specific gravity 20 °C	I-ANA-003-A*	<b>0,847</b>	0,842	0,850
Specific gravity 15 °C	I-ANA-003-A*	<b>0,851</b>		
Refractive index 20°C	NF ISO 280	<b>1,474 0</b>	1,470 0	1,476 0
Optical rotation 20°C	NF ISO 592	<b>+ 99 °</b>	+ 94 °	+ 99 °
Miscibility in éthanol 90 %	NF ISO 875	<b>6 volumes of alcohol 90 %</b>	-	
Flash point : SETAFLASH	FD ISO/TR 11018	<b>51 °C</b>	43 °C (Luchoire)	

- Interns Methods

**GAS CHROMATOGRAPHY (norm NF ISO 11024)**

**Conditions :**

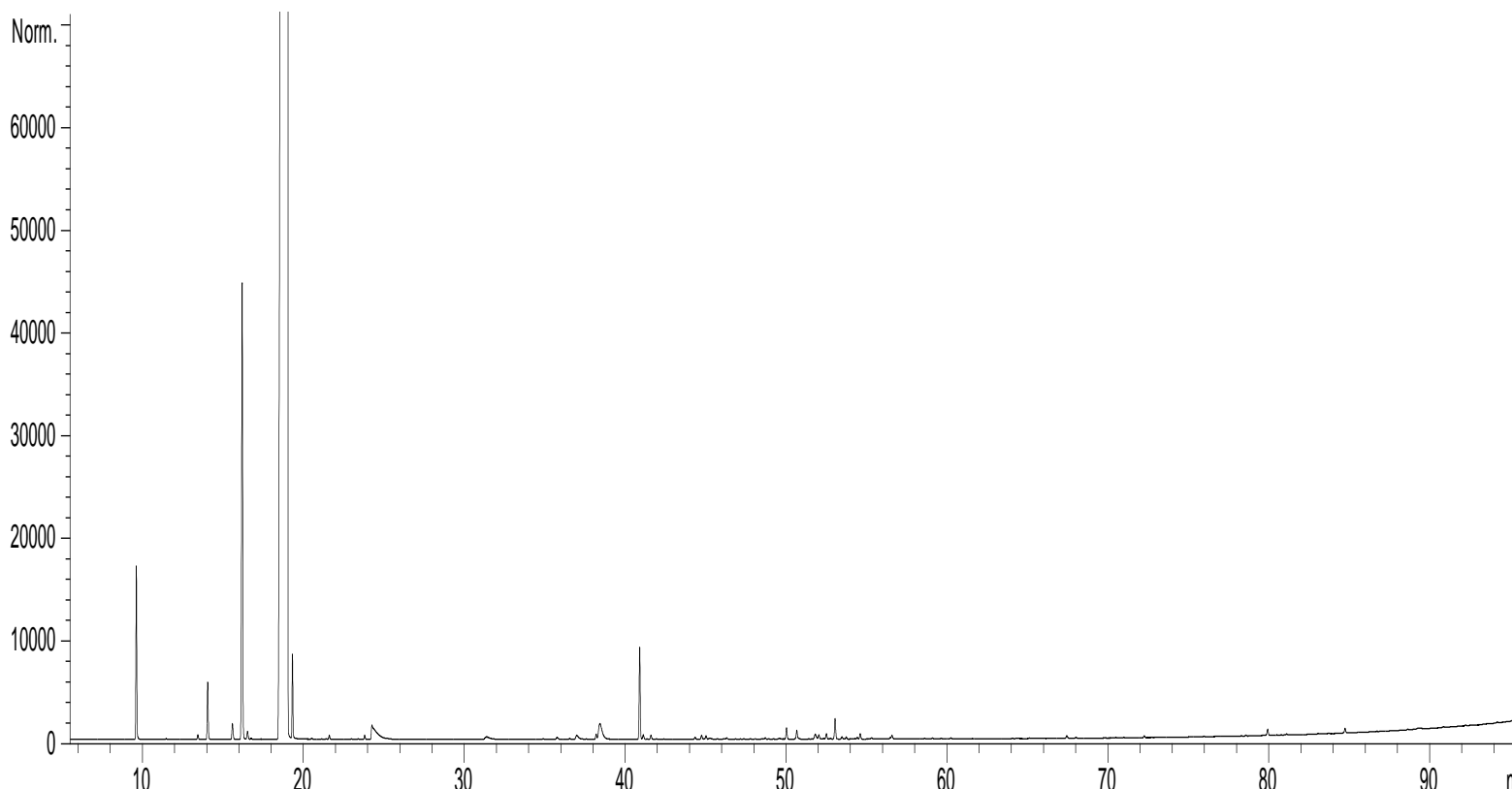
- GC: 6890 - SM : 5973 AGILENT : Column VF WAX polar : 60 m × 0,25 mm × 0,5 µm
- GC/FID 5890 AGILENT : Column INNOWAX polar : 60 m × 0,25 mm × 0,5 µm
- Programmation : 6 min to 60°C – 2°C/min → 250°C – 10 min to 250°C
- Carrier gas : He 30 psi/FID ; 23 psi/MS
  - Mass : 30 à 350
  - Sample injection : 1 µL
- Dilution: 10 % in Hexane

Mass range : 30 to 350, Oil components are identified by a combination of retention times (our own database) and mass spectra library NIST 75 000 records,

Percentages are calculated from GC/FID peaks areas without using corrections factors,

**Chromatographic profile (GC/FID) :**

FID1 A, (Y:\GEO-ESS\CSLEB843.D)



**Identification results 1 – ORANGE ORGANIC BATCH N° 1409001302**

Peak	RT (min)	Compound	%	Norm (%)	Allergens (%)
1	9,6	<b>α-PINENE</b>	<b>0,57</b>	<b>0,40 – 0,80</b>	
2	11,5	CAMPHENE	0,01		
3	13,4	<b>β-PINENE</b>	<b>0,02</b>	<b>0,02 – 0,15</b>	
4	14,1	<b>SABINENE</b>	<b>0,23</b>	<b>0,20 – 0,80</b>	
5	15,6	Δ3-CARENE	0,08		
6	16,2	<b>β-MYRCENE</b>	<b>1,97</b>	<b>1,50 – 3,50</b>	
7	16,5	α-PHELLANDRENE	0,04		
8	16,7	ψ-LIMONENE	0,01		
9	19,0	<b>LIMONENE</b>	<b>95,01</b>	<b>93,0 – 96,0</b>	95,01
10	19,3	β-PHELLANDRENE	0,29		
11	20,5	Cis-β-OCIMENE	0,01		
12	21,4	γ-TERPINENE	0,01		
13	21,6	Trans-β-OCIMENE	0,02		
14	23,0	p-CYMENE	0,01		
15	23,8	TERPINOLENE	0,02		
16	24,3	<b>OCTANAL</b>	<b>0,29</b>	<b>0,10 – 0,40</b>	
17	31,4	<b>NONANAL</b>	<b>0,04</b>	<b>0,01 – 0,06</b>	
18	34,9	LIMONENE Cis-1,2-EPOXIDE	0,01		
19	35,7	LIMONENE Trans-1,2-EPOXIDE	0,01		
20	35,8	Trans-THUYANOL	0,01		
21	36,6	ACETIC ACID	0,01		
22	37,0	CITRONELLAL	0,04		
23	38,2	α-COPAENE	0,02		
24	38,4	DECANAL	0,23		
25	40,9	<b>LINALOOL</b>	<b>0,38</b>	<b>0,15 – 0,70</b>	0,38
26	41,1	β1-CUBEBENE	0,02		
27	41,6	1-OCTANOL	0,02		
28	44,3	β-ELEMENE	0,01		
29	44,7	β-CUBEBENE	0,02		
30	45,0	β-CARYOPHYLLENE	0,02		
31	45,3	1-NONANOL	0,01		
32	48,7	E-β-FARNESENE	0,01		
33	49,6	α-HUMULENE	0,01		
34	50,0	<b>NERAL</b>	<b>0,05</b>	<b>0,03 – 0,10</b>	0,05
35	50,7	α-TERPINEOL	0,05		
36	51,8	DODECANAL	0,04		
37	52,0	GERMACRENE D	0,02		
38	52,5	<b>VALENCENE</b>	<b>0,03</b>	<b>0,01 – 0,40</b>	
39	53,0	<b>GERANIAL</b>	<b>0,10</b>	<b>0,05 – 0,20</b>	0,10
40	53,5	CARVONE	0,01		
41	53,7	GERANYL ACETATE	0,01		
42	54,4	CITRONELLOL	0,01		0,01
43	54,6	δ-CADINENE	0,03		
44	55,3	SELINADIENE ISOMER	0,01		
45	56,4	NEROL	0,01		

**Identification results 2 – ORANGE ORGANIC BATCH N° 1409001302**

Peak	RT (min)	Compound	%	Norm (%)	Allergens (%)
46	56,6	PERILLALDEHYDE	0,02		
47	58,6	Trans-CARVEOL	0,01		
48	59,0	GERANIOL	0,01		0,01
49	59,6	ISOPIPERITENONE	0,01		
50	60,2	Cis-CARVEOL	0,01		
51	67,4	LIMONENE-10-OL	0,01		
52	70,5	CARYOPHYLLENE EPOXIDE	0,01		
53	71,0	GERMACRA-1,5-DIEN-4-OL	0,01		
54	72,3	ELEMOL	0,01		
55	79,9	β-SINENSAL	0,03		
56	84,7	α-SINENSAL	0,02		
57	94,2	<b>NOOTKATONE</b>	<b>0,01</b>	<b>0,01 – 0,06</b>	
		<b>TOTAL</b>	<b>99,99</b>		<b>95,56</b>