

## GC/MS BATCH NUMBER: O20101

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**ESSENTIAL OIL:** ORANGE  
**BOTANICAL NAME:** CITRUS SINENSIS  
**ORIGIN:** USA

KEY CONSTITUENTS IN THIS BATCH OF ORANGE OIL	%
LIMONENE	94.8
$\beta$ -MYRCENE	1.9
$\alpha$ -PINENE	0.5
SABINENE	0.4
LINALOOL	0.2
OCTANAL	0.2
GERANIAL	0.1
NONANAL	0.1
VALENCENE	0.04
NERAL	0.03
$\beta$ -PINENE	0.03
NOOTKATONE	0.01

Comments from Robert Tisserand: This orange oil conforms to the ISO standard, and smells great - intense, fresh orange.

**CUSTOMER :**

**PLANT THERAPY  
126 Locust Street South  
Twin Falls, ID 83 301  
USA**

**Sample nature:** ESSENTIAL OIL  
**Botanical species:** CITRUS SINENSIS  
**Reference name:** ORANGE  
**Batch number:** O20101  
**Origin:** USA  
**Part:** FRESH FRUIT RIND  
**Pyrenessences reference:** C802  
**Date of reception:** 02/13/2015  
**Date analysis:** 02/19/2015  
**Packaging:** Amber flask of 5 mL – ambient temperature  
**Analysis:** Classic  
**Shelf life:** 1 year

**Validated report by :**

**Daniel DANTIN**



**GAS CHROMATOGRAPHY** norm NF ISO 11024

**Analysis conditions :**

CPG 6890 / MS 5973 AGILENT – Column : VF WAX polar 60 m × 0,25 mm × 0,5 µm

CPG 6890 FID AGILENT - Column : VF WAX polar 60 m × 0,25 mm × 0,5 µm

Temperature program : 6 mn to 60 °C –2 °C/mn→250 °C - 20mn to 250 °C

Carrier gas He : 23 psis/MS – 30 psis/FID

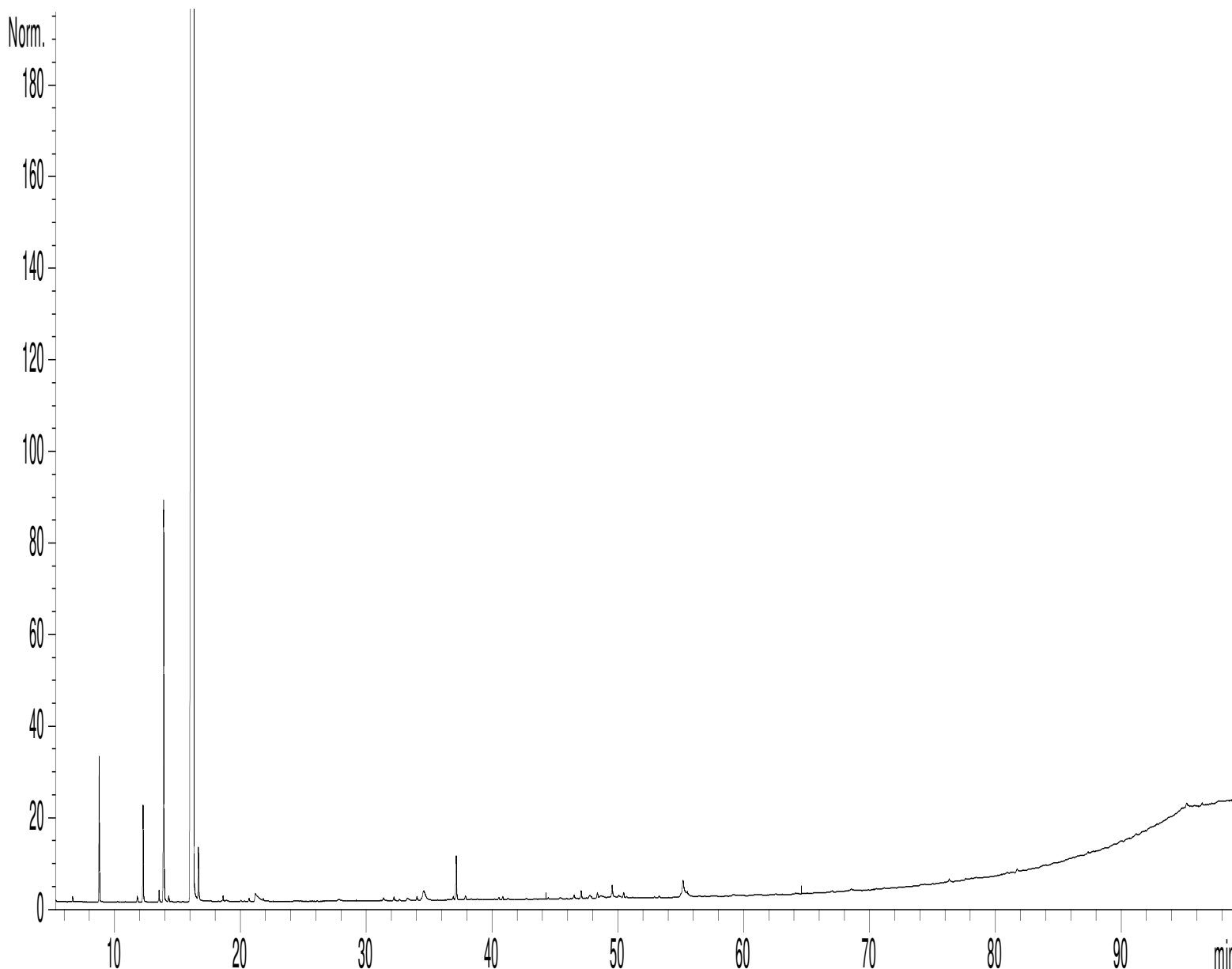
Sample injection / split : 1 µl of 10 % solution in hexane,

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

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

**Chromatographic profile (GC/FID)**

FID1 A, (Z:\PLANTHER\CS15C802.D)



**Identification results 1 : ORANGE USA BATCH O20101**

Peak	RT (min)	Compound name	%	Norm (%)	Allergens (%)
1	6,6	ETHANOL	0,01		
2	8,8	<b>α-PINENE</b>	<b>0,54</b>	<b>0,40 – 0,80</b>	
3	11,8	<b>β-PINENE</b>	<b>0,03</b>	<b>0,02 – 0,15</b>	
4	12,2	<b>SABINENE</b>	<b>0,43</b>	<b>0,20 – 0,80</b>	
5	13,5	Δ3-CARENE	0,06		
6	13,9	<b>β-MYRCENE</b>	<b>1,91</b>	<b>1,50 – 3,50</b>	
7	14,3	α-PHELLANDRENE	0,03		
8	16,3	<b>LIMONENE</b>	<b>94,81</b>	<b>93,0 – 96,0</b>	94,81
9	16,6	β-PHELLANDRENE	0,27		
10	18,5	γ-TERPINENE	0,01		
11	18,6	Trans-β-OCIMENE	0,03		
12	20,0	p-CYMENE	0,01		
13	20,7	TERPINOLENE	0,02		
14	21,2	<b>OCTANAL</b>	<b>0,18</b>	<b>0,10 – 0,40</b>	
15	27,8	<b>NONANAL</b>	<b>0,06</b>	<b>0,01 – 0,06</b>	
16	31,3	Cis-1,2-EPOXYDE DE LIMONENE	0,02		
17	32,1	Trans-THUYANOL	0,01		
18	32,2	Trans-1,2- LIMONENE EPOXIDE	0,02		
19	32,6	ACETIC ACID	0,01		
20	33,3	CITRONELLAL	0,04		
21	34,0	α-COPAENE	0,02		
22	34,5	DECANAL	0,22		
23	37,0	<b>LINALOOL</b>	<b>0,22</b>	<b>0,15 – 0,70</b>	0,22
24	37,1	β1-CUBEBENE	0,03		
25	37,9	1-OCTANOL	0,03		
26	40,2	β-ELEMENE	0,01		
27	40,5	β-CUBEBENE	0,02		
28	40,9	β-CARYOPHYLLENE	0,02		
29	42,7	Cis-p-MENTHA-2,8-DIEN-1-OL	0,01		
30	44,5	ALLO-AROMADENDRENE	0,01		
31	45,3	E-β-FARNESENE	0,01		
32	45,4	Trans-p-MENTHA-2,8-DIEN-1-OL	0,01		
33	46,3	α-HUMULENE	0,01		
34	46,5	<b>NERAL</b>	<b>0,03</b>	<b>0,03 – 0,10</b>	0,03
35	47,1	α-TERPINEOL	0,05		
36	47,7	BORNEOL	0,04		
37	48,3	DODECANAL	0,04		
38	48,6	GERMACRENE D	0,06		
39	49,2	<b>VALENCENE</b>	<b>0,04</b>	<b>0,01 – 0,40</b>	
40	49,5	<b>GERANIAL</b>	<b>0,08</b>	<b>0,05 – 0,20</b>	0,08
41	50,0	CARVONE	0,02		
42	50,3	CITRONELLOL	0,01		0,01
43	50,4	δ-CADINENE	0,02		
44	52,9	NEROL	0,01		
45	53,2	PERILLALDEHYDE	0,02		

**Identification results 2 : ORANGE USA BATCH O20101**

Peak	RT (min)	Compound name	%	Norm (%)	Allergens (%)
46	55,0	Trans-CARVEOL	0,04		
47	55,2	GERANIOL	0,23		0,23
48	55,5	p-CYMENE-8-OL	0,09		
49	76,3	β-SINENSAL	0,03		
50	77,6	CAPRIC ACID	0,02		
51	81,7	α-SINENSAL	0,03		
52	91,2	<b>NOOTKATONE</b>	<b>0,01</b>	<b>0,01 – 0,06</b>	
		<b>TOTAL</b>	<b>99,99</b>		<b>95,38</b>