

# Certificate of Analysis

Analysed essential oil : Galbanum

Analysis date : March, 17<sup>th</sup> 2016

Batch : 076PA602

Shelf life : April 2019

## ❖ General description

Essential oil	Galbanum	Origin	Iran
Latin name	<i>Ferula galbaniflua</i>		

## ❖ Organoleptic characteristics

Appearance	Clear and mobile liquid
Colour	Very pale yellow
Odour	Characteristic

## ❖ Physico-chemical characteristics

	Results (at 20°C)	Technical specifications				
Specific gravity	0.883	0.867	<	d	<	0.890
Refractive index	1.4810	1.4780	<	IR	<	1.4850
Optical rotation	+11.40°	+7°	<	$[\alpha]^{20}_d$	<	+17°

## ❖ Volatile elucidation

GC : Perkin Elmer – Clarus 500

Column : Elite - 1, 30 m, Ø 0.25 mm, 0.25 µm df

Injection : split

Detector : FID

Carrier gas : H<sub>2</sub>

⇒ See Chromatogram : non-polar column

Date : 2016-03-17

Software Version : 6.2.0.0.0:B27  
Sample Name : Galbanum 076PA602  
Instrument Name : CLARUS 500  
Rack/Vial : 0/1  
Sample Amount : 1.000000  
Cycle : 1

Date : 17/03/2016 11:24:14  
Data Acquisition Time : 16/03/2016 15:06:28  
Channel : A  
Operator : Davenne  
Dilution Factor : 1.000000

Result File :  
Sequence File : C:\Sequences\CPG\2016\160316.seq

## Rapport d'analyse

colonne apolaire

Pic #	Component Name	TR [min]	Area [%]
1	thujene <alpha>	9.53	0.55
2	pinene <alpha>	9.79	5.69
3	camphene	10.27	0.12
4		11.00	0.05
5	sabinene	11.22	0.90
6	pinene <beta>	11.42	59.01
7	myrcene	11.98	2.90
8	phellandrene <alpha>	12.48	0.38
9	carene <delta-3>	12.84	7.91
10	terpinene <alpha>	13.02	0.22
11	cymene <rho>	13.16	1.10
12	limonene + phellandrene <beta>	13.50	2.47
13	ocimene <(Z)-beta>	13.91	0.75
14	ocimene <(E)-beta>	14.38	0.29
15	terpinene <gamma>	14.82	0.49
16		14.96	0.11
17	terpinolene	16.13	0.56
18	linalool	16.28	0.11
19		16.45	0.05
20		16.98	0.10
21		17.34	0.08
22		18.04	0.31
23		18.32	0.03
24		18.73	0.09
25		18.84	0.04
26	borneol	19.21	0.11
27		19.53	0.04
28	terpinen-4-ol	19.80	0.82
29	undecatriene <(3E,5Z)>	20.02	0.41
30	terpineol <alpha>	20.32	0.10
31		20.42	0.15
32		20.63	0.17
33	fenchyl acetate <endo>	21.87	0.50
34		22.13	0.14
35		22.33	0.22
36		22.48	0.06
37		22.59	0.13
38	carvacrol methyl ether	22.78	0.98
39		23.46	0.05
40		24.61	0.07
41		25.11	0.05
42	terpinyl acetate <alpha>	27.35	0.50
43		27.96	0.06
44		28.34	0.02
45		28.69	0.10
46	copaene <alpha>	29.02	0.14
47		29.31	0.05
48		29.56	0.15
49		29.81	0.04
50		30.28	0.13
51		30.43	0.12
52	caryophyllene <(E)>	30.65	0.22
53		31.23	0.08
54		31.46	0.15
55		31.68	0.03
56		31.85	0.21
57		32.13	0.04
58		32.31	0.46

17/03/2016 11:24:14 Result:

Pic #	Component Name	TR [min]	Area [%]
59		32.52	0.12
60		32.87	0.15
61	germacrene D	33.01	0.25
62		33.20	0.29
63		33.48	0.09
64	bicyclogermacrene	33.66	0.33
65		33.94	0.12
66	cadinene <gamma>	34.27	0.75
67	cadinene <delta>	34.64	0.89
68		35.03	0.06
69		35.19	0.06
70		35.34	0.05
71	germacrene B	35.65	0.05
72		35.89	0.24
73		36.37	0.27
74		36.53	0.05
75		36.67	0.47
76	guaiol	37.26	1.14
77		37.40	0.39
78		37.89	0.10
79		38.00	0.12
80		38.30	0.07
81		38.55	0.05
82	cadinol <epi-alpha>	38.73	0.54
83		38.88	0.05
84	muurolol <epi-alpha>	39.01	0.20
85	cadinol <alpha>	39.18	0.27
86	bulnesol	39.69	0.93
87		39.90	0.06
88		40.08	0.14
89		40.21	0.09
90		40.38	0.05
91		40.49	0.20
92		41.91	0.30
93		43.41	0.03
94		43.87	0.09
95		44.06	0.04
96		45.94	0.07
		100.00	

# Chromatogram

Sample Name : Galbanum 076PA602      Sample #: 076PA602      Page 1 of 1  
FileName : C:\Data\Colonne Apolaire\Huiles Essentielles\Galbanum\2016\galbanum 160316.raw  
Date : 17/03/2016 11:24:14  
Method : galbanum.mth      Time of Injection: 16/03/2016 15:06:28  
Start Time : 0.00 min      End Time : 82.00 min      Low Point : -47.24 mV      High Point : 993.88 mV  
Plot Offset: -47.24 mV      Plot Scale: 1041.1 mV

