

# CERTIFICATE OF ANALYSIS

## Asafetida Essential oil

**Product Name:** Asafetida Essential oil

**Botanical Name:** *Ferula assa-foetida* L.

**Extraction process:** hydro-distillation

Characteristic	Test results	Acceptance limit	Test Method
<b>Appearance</b>	Conform	Transparent Liquid	
Color	Conform	Pale yellow color	Visual
Odor	Conform	Onion, Garlic	Olfactory
Optical Rotation	2.25	-17 to +5	
Refractive Index	1.501	1.49-1.51	-
Density at 20 °C	0.930	0.91-0.930	
<b>Chemical Composition of essential oil</b>			
α-Thujene	0.07		
α-Pinene	15.24		
Camphene	0.14		
β-Pinene	15.12		
β-Myrcene	0.77		
α-Phellandrene	0.61		
Thiophene, 2,3,4-trimethyl-	0.24		
p-Cymene	0.08		
D-Limonene	1.16		
trans-α-Ocimene	5.36		
trans-β-Ocimene	1.87		
n-Propyl sec-butyl disulfide	0.47		
(Z)-sec-Butyl propenyl disulfide	20.73		
(E)-sec-Butyl propenyl disulfide	27.81		
(E)-1-(But-2-en-1-yl)-2-(sec-butyl)disulfane	0.34		
(Z)-1-(But-2-en-1-yl)-2-(sec-butyl)disulfane	0.38		
Bornyl acetate	0.11		
Myrtenyl acetate	0.22		
α-Cubebene	0.10		
β-Cedrene	0.11	(Z)-sec-Butyl propenyl disulfide:	
-(-)-Aristolene	0.34	15-30%	
Disulfide, 1-(methylthio)propyl propyl	0.42	(E)-sec-Butyl propenyl	GC-MS analysis
Gymnomitrene	0.20	disulfide:20-35%	
Selina-5,11-diene	1.01	Total sulfide: 50%	
Humulene	0.78		
cis-Muurolo-4(15),5-diene	0.28		
4,5-di-epi-aristolochene	0.10		
β-Chamigrene	0.02		
Germacrene D	0.12		
Alloaromadendrene	0.25		
Dihydro-β-agarofuran	1.83		
Dihydro-β-agarofuran	0.20		
Cuparene	0.06		
α-Amorphene	0.24		
δ-Cadinene	0.43		
α-Cuprenene	0.08		
α-Muuroloene	0.04		
Guaiol	0.27		
α-epi-7-epi-5-Eudesmol	0.14		
delta-Selinene	1.43		
Agarospirol	0.18		
Longifolene	0.16		
Germacrene D	0.28		
isodene	0.10		