BIORUŽA, s. r. o.

Laborecká 1, 010 01 Žilina, IČO: 52234070, IČ DPH: SK2120953802, tel .: 00421 905 864 140, info@bioruza.sk

CERTIFICATE of ANALYSIS (COA)

COMMON NAME	Mandarin, Red
LATIN NAME	*Citrus reticulata* Blanco
COUNTRY OF ORIGIN	Italy
CULTIVATION METHOD	Conventional
TYPE	Essential Oil
EXTRACTION METHOD	Cold Pressed
PLANT PART	Peels
USE	Aromatherapy, Natural Perfumery, Cosmetics

LOT #	29
MANUFACTURING DATE	February 2025
BEST BY DATE	February 2027

	SPECIFICATIONS (Range)	
SPECIFIC GRAVITY @20˚C	0.845 – 0.855	0.8498
REFRACTIVE INDEX @20˚C	1.474 – 1.478	1.4737
OPTICAL ROTATION @20˚C	+65° to +76°	+77.24°

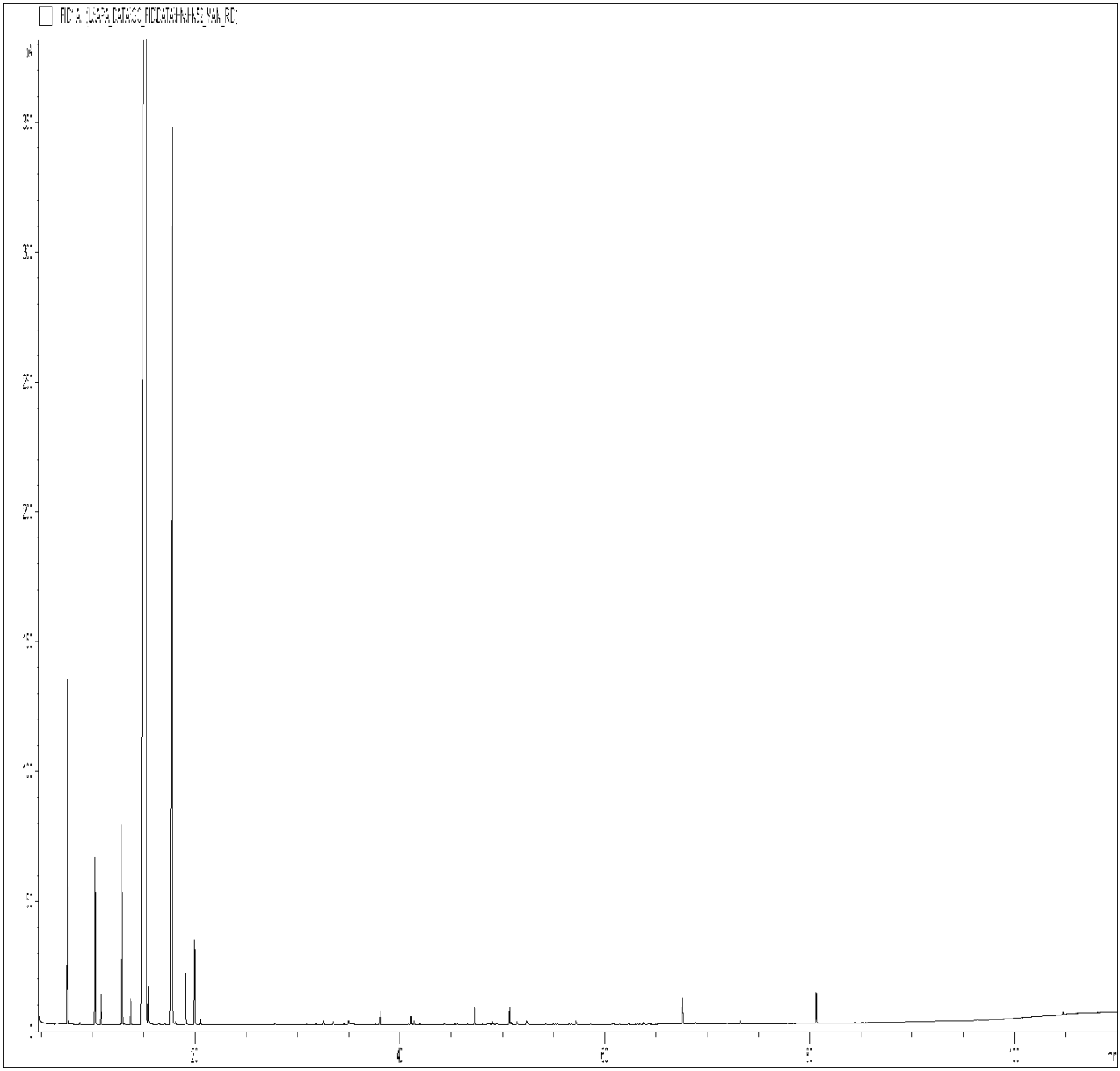
PHYSICAL APPEARANCE	Liquid. May be prone to turbidity due to naturally occurring waxes.	*Conforms*
COLOR	Dark orange to reddish	*Conforms*
ODOR	Smooth, sweet-tart citrus with floral undertone.	*Conforms*
SOLUBILITY	Soluble in alcohol and fixed oils	
SPECIAL USE INSTRUCTIONS	Dilute before use. Refrigerate to preserve freshness. This product is filtered by our manufacturer. Further filtration is only necessary if waxes present an aesthetic issue for your formulation.	

PRIMARY CONSTITUENTS	Limonene, Gamma-Terpinene, Alpha-Pinene.

COMMENTS	Limonene and Optical Rotation are out of range due to the summer drought conditions.

THIRD PARTY LAB ANALYSIS (GCMS)

Chromatographic profile:



MANDARIN RED - BATCH N° LOT 29. BUDJAK					
Peaks	**RT (min)**	**Compound name**	**%**	**Norm (%)**	**Allergens (%)**
1	4.87	ACETONE	0.02		
2	7.55	**alpha-PINENE**	**1.80**	**1.8 - 3.0**	
3	7.62	alpha-THUYENE	0.64		
4	8.74	CAMPHENE	0.01		
5	10.25	**beta-PINENE**	**1.21**	**1.2 - 2.0**	
6	10.80	SABINENE	0.22		
7	12.86	**beta-MYRCENE**	**1.77**	**1.5 - 2.0**	
8	12.92	alpha-PHELLANDRENE	0.07		
9	13.13	psi-LIMONENE	0.01		
10	13.72	alpha-TERPINENE	0.32		
11	15.23	**LIMONENE**	**76.20**	**65 - 75**	76.20
12	15.44	beta-PHELLANDRENE	0.24		
13	17.80	**gamma-TERPINENE**	**14.65**	**16 - 22**	
14	18.08	trans-beta-OCIMENE	0.03		
15	19.06	**p-CYMENE**	**0.39**	**< 0.8**	
16	19.94	TERPINOLENE	0.66		
17	20.52	**OCTANAL**	**0.04**	**0.03 - 0.08**	
18	27.75	NONANAL	0.02		
19	32.53	trans-THUYANOL	0.03		
20	33.46	CITRONELLAL	0.03		
21	34.54	alpha-COPAENE	0.02		
22	34.97	**DECANAL**	**0.08**	**0.04 - 0.12**	
23	35.10	CAMPHOR	0.02		
24	37.57	beta1-CUBEBENE	0.02		
25	37.97	cis-THUYANOL	0.04		
26	38.06	**LINALOOL**	**0.11**	**0.03 - 0.20**	0.11
27	41.07	beta-CARYOPHYLLENE	0.08		
28	41.39	TERPINENE-4-OL	0.03		
29	44.30	2-DECENAL	0.01		
30	45.56	alpha-HUMULENE	0.01		
31	47.29	alpha-TERPINEOL	0.15		
32	48.08	GERMACRENE D	0.02		
33	48.59	DODECANAL	0.03		
34	48.98	alpha-SELINENE	0.04		
35	49.48	BICYCLOGERMACRENE	0.02		
36	50.72	alpha-FARNESENE	0.15		
37	50.88	delta-CADINENE	0.03		
38	51.44	CITRONELLOL	0.03		0.03
39	52.37	PERILLALDEHYDE	0.04		
40	57.18	2-DODECENAL	0.04		
41	63.78	LIMONENE-10-OL	0.02		
42	67.57	**METHYL, N-METHYL-ANTHRANILATE**	**0.28**	**0.3 - 0.6**	
43	68.84	SESQUITERPENOL	0.02		
44	73.23	THYMOL	0.03		

45	80.64	**alpha-SINENSAL**	**0.30**	**0.1 - 0.5**	
46	96.39	MYRISTIC ACID	0.01		
47	104.73	PALMITIC ACID	0.02		
		TOTAL	**99.99**		**76.34**