

ABSORBER T-100, (S/F) = 17					CO₂ (Free-Basis)	CO₂ (Free-Basis)
Streams	PLO	CO₂	1	2	Extract	Raffinate
Gas fraction	0.0000	1.0000	1.0000	0.0000		
Temperature [C]	60.0	60.0	148.0	80.1		
Pressure [bar]	140	140	140	140		
Molar Flow [kgmole/h]	0.52	38.42	20.06	18.89		
Mass Flow [kg/h]	100.00	1691.00	910.06	880.94	36.65	63.35
Composition of OLP (Mass Fraction)						
Carbon-Dioxide	0.0000	1	0.9597	0.9281	0.0000	0.0000
n-Undecane	0.0641	0	0.0046	0.0026	0.1130	0.0358
n-Dodecane	0.0315	0	0.0020	0.0016	0.0485	0.0216
n-Tridecane	0.0526	0	0.0025	0.0034	0.0627	0.0467
n-Tetradecane	0.0925	0	0.0029	0.0075	0.0724	0.1041
n-Pentadecane	0.1259	0	0.0028	0.0114	0.0705	0.1580
n-Hexadecane	0.0274	0	0.0007	0.0024	0.0171	0.0333
n-Heptadecane	0.0132	0	0.0002	0.0013	0.0055	0.0177
n-Octadecane	0.0121	0	0.0001	0.0013	0.0017	0.0181
1-Decene	0.0469	0	0.0047	0.0005	0.1157	0.0071
cis-2-Decene	0.0047	0	0.0005	0.0001	0.0113	0.0009
1-Dodecene	0.0985	0	0.0064	0.0046	0.1583	0.0639
trans-2-Dodecene	0.0038	0	0.0002	0.0002	0.0057	0.0027
1-Tridecene	0.0019	0	0.0001	0.0001	0.0024	0.0016
1-Tetradecene	0.0052	0	0.0002	0.0004	0.0050	0.0053
(E)-9-Octadecene	0.0061	0	0.0001	0.0006	0.0018	0.0086
1-Pentadecene	0.0043	0	0.0001	0.0004	0.0031	0.0050
1-Heptadecene	0.0331	0	0.0006	0.0032	0.0142	0.0440
1-Nonadecene	0.0082	0	0.0001	0.0008	0.0021	0.0117
1,4-Undecadiene	0.0056	0	0.0005	0.0002	0.0113	0.0023
5-Icosene	0.0008	0	0.0000	0.0001	0.0002	0.0011
Isobutylcyclohexane	0.0059	0	0.0006	0.0001	0.0145	0.0009
n-Butylcyclohexane	0.0038	0	0.0003	0.0001	0.0087	0.0010
Cyclododecane	0.0048	0	0.0002	0.0003	0.0051	0.0046
n-Decylcyclopentane	0.0594	0	0.0015	0.0052	0.0364	0.0727
n-Nonylcyclopentane	0.0364	0	0.0012	0.0029	0.0293	0.0405
n-Nonylcyclohexane	0.0517	0	0.0012	0.0046	0.0307	0.0638
1-Ethyl-2 heptylcyclopropane	0.0048	0	0.0003	0.0002	0.0076	0.0032
1-Pentyl-2-propylcyclopropane	0.0197	0	0.0016	0.0006	0.0389	0.0086
1-Butyl-1-cyclohexene	0.0072	0	0.0007	0.0001	0.0165	0.0018
1-Hexylcyclopentene	0.0057	0	0.0004	0.0002	0.0101	0.0031
6-Dodecyne	0.0109	0	0.0007	0.0005	0.0176	0.0070
1-Heptyl-1-cyclohexene	0.0032	0	0.0001	0.0002	0.0037	0.0029
o-Cresol	0.0014	0	0.0001	0.0000	0.0029	0.0005
9-Octadecen-1-ol, -(Z)-	0.0337	0	0.0002	0.0036	0.0057	0.0499
2-Pentadecanone	0.0462	0	0.0007	0.0045	0.0167	0.0632
Palmitic acid	0.0175	0	0.0002	0.0018	0.0044	0.0251
Oleic acid	0.0088	0	0.0000	0.0010	0.0008	0.0134
1-Decylcyclohexene	0.0027	0	0.0001	0.0002	0.0017	0.0033
3-Hexadecene	0.0234	0	0.0006	0.0020	0.0151	0.0282
1-Nonil-CicloHexene	0.0144	0	0.0004	0.0012	0.0109	0.0164
Composition of OLP in Feed (Mass Fraction)					Composition of OLP in Extract (Mass Fraction)	Composition of OLP in Raffinate (Mass Fraction)
Hydrocarbons	0.8924	0.0000	0.0390	0.0610	0.9695	0.8478
Alkanes	0.4193	0.0000	0.0158	0.0313	0.3914	0.4354
Alkenes	0.2534	0.0000	0.0147	0.0136	0.3639	0.1895
Naphthenes	0.2197	0.0000	0.0086	0.0160	0.2142	0.2229
Oxygenates	0.1076	0.0000	0.0012	0.0109	0.0305	0.1522
Carboxylic acids	0.0263	0.0000	0.0002	0.0028	0.0052	0.0385
Alcohols	0.0351	0.0000	0.0003	0.0036	0.0086	0.0505
Ketones	0.0462	0.0000	0.0007	0.0045	0.0167	0.0632

Composition of OLP in Feed (%.area)					Recovery in Extract (Mass Fraction)	Recovery in Raffinate (Mass Fraction)
Hydrocarbons	89.24				39.81	60.19
Alkanes	41.93				34.21	65.79
Alkenes	25.34				52.63	47.37
Naphthenes	21.97				35.73	64.27
Oxygenates	10.76				10.40	89.60
Carboxylic acids	2.63				7.30	92.70
Alcohols	3.51				8.94	91.06
Ketones	4.62				13.28	86.72

Table S1: Process conditions, mass flow rates, gaseous fractions, recoveries of hydrocarbons and oxygenates in extract and raffinate, as well as chemical composition, expressed in solvent-free basis, of hydrocarbons and oxygenates of OLP in feed, top and bottom streams of absorber columns T-100 by simulation of OLP deoxygenation process in multistage countercurrent absorber columns using CO₂ as solvent, using Aspen-HYSYS 8.6 (Aspen One, 2015) at 333 K, 140 bar, and (S/F) = 17.

ABSORBER T-102, (S/F) = 25					CO₂ (Free-Basis)	CO₂ (Free-Basis)
Streams	2	7	5	6	Extract	Raffinate
Gas fraction	0.9252	1.0000	1.0000	0.0000		
Temperature [C]	77.8	77.8	93.5	100.8		
Pressure [bar]	140	140	140	140		
Molar Flow [kgmole/h]	18.89	36.12	49.90	5.11		
Mass Flow [kg/h]	880.94	1589.72	2227.47	243.19	40.77	22.58
Composition of OLP (Mass Fraction)						
Carbon-Dioxide	0.9281	1	0.9817	0.9072	0.0000	0.0000
n-Undecane	0.0026	0	0.0010	0.0000	0.0555	0.0001
n-Dodecane	0.0016	0	0.0006	0.0000	0.0335	0.0002
n-Tridecane	0.0034	0	0.0013	0.0004	0.0705	0.0039
n-Tetradecane	0.0075	0	0.0022	0.0071	0.1195	0.0765
n-Pentadecane	0.0114	0	0.0025	0.0186	0.1346	0.2001
n-Hexadecane	0.0024	0	0.0006	0.0028	0.0353	0.0299
n-Heptadecane	0.0013	0	0.0002	0.0025	0.0126	0.0269
n-Octadecane	0.0013	0	0.0001	0.0041	0.0038	0.0440
1-Decene	0.0005	0	0.0002	0.0000	0.0111	0.0000
cis-2-Decene	0.0001	0	0.0000	0.0000	0.0013	0.0000
1-Dodecene	0.0046	0	0.0018	0.0000	0.0991	0.0004
trans-2-Dodecene	0.0002	0	0.0001	0.0000	0.0041	0.0000
1-Tridecene	0.0001	0	0.0000	0.0000	0.0025	0.0001
1-Tetradecene	0.0004	0	0.0001	0.0002	0.0074	0.0017
(E)-9-Octadecene	0.0006	0	0.0001	0.0014	0.0047	0.0156
1-Pentadecene	0.0004	0	0.0001	0.0003	0.0056	0.0037
1-Heptadecene	0.0032	0	0.0006	0.0061	0.0322	0.0654
1-Nonadecene	0.0008	0	0.0001	0.0021	0.0055	0.0230
1,4-Undecadiene	0.0002	0	0.0001	0.0000	0.0036	0.0000
5-Icosene	0.0001	0	0.0000	0.0002	0.0006	0.0021
Isobutylcyclohexane	0.0001	0	0.0000	0.0000	0.0014	0.0000
n-Butylcyclohexane	0.0001	0	0.0000	0.0000	0.0015	0.0000
Cyclododecane	0.0003	0	0.0001	0.0001	0.0067	0.0009
n-Decylcyclopentane	0.0052	0	0.0013	0.0069	0.0715	0.0748
n-Nonylcyclopentane	0.0029	0	0.0009	0.0022	0.0497	0.0238
n-Nonylcyclohexane	0.0046	0	0.0011	0.0064	0.0612	0.0685
1-Ethyl-2 heptylcyclopropane	0.0002	0	0.0001	0.0000	0.0049	0.0000
1-Pentyl-2-propylcyclopropane	0.0006	0	0.0002	0.0000	0.0134	0.0000
1-Butyl-1-cyclohexene	0.0001	0	0.0001	0.0000	0.0028	0.0000
1-Hexylcyclopentene	0.0002	0	0.0001	0.0000	0.0049	0.0000
6-Dodecyne	0.0005	0	0.0002	0.0000	0.0109	0.0000
1-Heptyl-1-cyclohexene	0.0002	0	0.0001	0.0000	0.0043	0.0003
o-Cresol	0.0000	0	0.0000	0.0000	0.0008	0.0000
9-Octadecen-1-ol, -(Z)-	0.0036	0	0.0003	0.0102	0.0165	0.1102
2-Pentadecanone	0.0045	0	0.0007	0.0097	0.0402	0.1049
Palmitic acid	0.0018	0	0.0002	0.0044	0.0126	0.0476
Oleic acid	0.0010	0	0.0000	0.0031	0.0021	0.0338
1-Decylcyclohexene	0.0002	0	0.0001	0.0003	0.0033	0.0033
3-Hexadecene	0.0020	0	0.0005	0.0025	0.0290	0.0267
1-Nonil-CicloHexene	0.0012	0	0.0004	0.0011	0.0192	0.0114
Composition of OLP in Feed (Mass Fraction)					Composition of OLP in Extract (Mass Fraction)	Composition of OLP in Raffinate (Mass Fraction)
Hydrocarbons	0.0610	0.0000	0.0170	0.0653	0.9278	0.7034
Alkanes	0.0313	0.0000	0.0085	0.0354	0.4653	0.3815
Alkenes	0.0136	0.0000	0.0040	0.0129	0.2175	0.1388
Naphthenes	0.0160	0.0000	0.0045	0.0170	0.2449	0.1831
Oxygenates	0.0109	0.0000	0.0013	0.0275	0.0722	0.2966
Carboxylic acids	0.0028	0.0000	0.0003	0.0076	0.0147	0.0814
Alcohols	0.0036	0.0000	0.0003	0.0102	0.0174	0.1102
Ketones	0.0045	0.0000	0.0007	0.0097	0.0402	0.1049

Composition of OLP in Feed (%.area)					Recovery in Extract (Mass Fraction)	Recovery in Raffinate (Mass Fraction)
Hydrocarbons	53.71				70.43	29.57
Alkanes	27.58				68.77	31.23
Alkenes	12.00				73.89	26.11
Naphthenes	14.12				70.73	29.27
Oxygenates	9.64				30.55	69.45
Carboxylic acids	2.44				24.60	75.40
Alcohols	3.19				22.15	77.85
Ketones	4.00				40.87	59.13

Table S2: Process conditions, mass flow rates, gaseous fractions, recoveries of hydrocarbons and oxygenates in extract and raffinate, as well as chemical composition, expressed in solvent-free basis, of hydrocarbons and oxygenates of OLP in feed, top and bottom streams of absorber columns T-102 by simulation of OLP deoxygenation process in multistage countercurrent absorber columns using CO₂ as solvent, using Aspen-HYSYS 8.6 (Aspen One, 2015) at 350 K, 140 bar, and (S/F) = 25.

ABSORBER T-101, (S/F) = 38					CO₂ (Free-Basis)	CO₂ (Free-Basis)
Streams	19	20	21	22	Extract	Raffinate
Gas fraction	0.0000	1.0000	1.0000	0.0000		
Temperature [C]	60.0	60.0	101.1	67.2		
Pressure [bar]	140	140	140	140		
Molar Flow [kgmole/h]	0.10	12.81	7.01	5.90		
Mass Flow [kg/h]	22.71	563.86	311.94	274.62	4.07	18.49
Composition of OLP (Mass Fraction)						
Carbon-Dioxide	0.0065	1	0.9869	0.9327	0.0000	0.0000
n-Undecane	0.0001	0	0.0000	0.0000	0.0005	0.0001
n-Dodecane	0.0002	0	0.0000	0.0000	0.0007	0.0001
n-Tridecane	0.0038	0	0.0001	0.0002	0.0108	0.0023
n-Tetradecane	0.0758	0	0.0016	0.0044	0.1232	0.0660
n-Pentadecane	0.1987	0	0.0029	0.0132	0.2187	0.1959
n-Hexadecane	0.0296	0	0.0006	0.0018	0.0451	0.0265
n-Heptadecane	0.0267	0	0.0003	0.0018	0.0250	0.0273
n-Octadecane	0.0438	0	0.0001	0.0035	0.0082	0.0520
1-Decene	0.0000	0	0.0000	0.0000	0.0000	0.0000
cis-2-Decene	0.0000	0	0.0000	0.0000	0.0000	0.0000
1-Dodecene	0.0004	0	0.0000	0.0000	0.0015	0.0002
trans-2-Dodecene	0.0000	0	0.0000	0.0000	0.0001	0.0000
1-Tridecene	0.0001	0	0.0000	0.0000	0.0003	0.0001
1-Tetradecene	0.0017	0	0.0000	0.0001	0.0037	0.0012
(E)-9-Octadecene	0.0155	0	0.0001	0.0011	0.0105	0.0167
1-Pentadecene	0.0037	0	0.0001	0.0002	0.0062	0.0032
1-Heptadecene	0.0650	0	0.0008	0.0044	0.0629	0.0660
1-Nonadecene	0.0229	0	0.0002	0.0017	0.0129	0.0252
1,4-Undecadiene	0.0000	0	0.0000	0.0000	0.0000	0.0000
5-Icosene	0.0021	0	0.0000	0.0002	0.0013	0.0023
Isobutylcyclohexane	0.0000	0	0.0000	0.0000	0.0000	0.0000
n-Butylcyclohexane	0.0000	0	0.0000	0.0000	0.0000	0.0000
Cyclododecane	0.0008	0	0.0000	0.0000	0.0021	0.0006
n-Decylcyclopentane	0.0744	0	0.0014	0.0046	0.1039	0.0684
n-Nonylcyclopentane	0.0236	0	0.0006	0.0013	0.0439	0.0193
n-Nonylcyclohexane	0.0681	0	0.0012	0.0043	0.0922	0.0633
1-Ethyl-2 heptylcyclopropane	0.0000	0	0.0000	0.0000	0.0001	0.0000
1-Pentyl-2-propylcyclopropane	0.0000	0	0.0000	0.0000	0.0000	0.0000
1-Butyl-1-cyclohexene	0.0000	0	0.0000	0.0000	0.0000	0.0000
1-Hexylcyclopentene	0.0000	0	0.0000	0.0000	0.0000	0.0000
6-Dodecyne	0.0000	0	0.0000	0.0000	0.0002	0.0000
1-Heptyl-1-cyclohexene	0.0003	0	0.0000	0.0000	0.0008	0.0002
o-Cresol	0.0000	0	0.0000	0.0000	0.0000	0.0000
9-Octadecen-1-ol,(Z)-	0.1096	0	0.0005	0.0085	0.0412	0.1255
2-Pentadecanone	0.1043	0	0.0011	0.0074	0.0849	0.1094
Palmitic acid	0.0473	0	0.0004	0.0035	0.0304	0.0514
Oleic acid	0.0336	0	0.0001	0.0027	0.0050	0.0402
1-Decylcyclohexene	0.0033	0	0.0001	0.0002	0.0047	0.0030
3-Hexadecene	0.0265	0	0.0005	0.0016	0.0392	0.0239
1-Nonil-CicloHexene	0.0113	0	0.0003	0.0006	0.0197	0.0096
Composition of OLP in Feed (Mass Fraction)					Composition of OLP in Extract (Mass Fraction)	Composition of OLP in Raffinate (Mass Fraction)
Hydrocarbons	0.6987	0.0000	0.0109	0.0453	0.8385	0.6734
Alkanes	0.3789	0.0000	0.0056	0.0249	0.4321	0.3701
Alkenes	0.1380	0.0000	0.0018	0.0093	0.1389	0.1389
Naphthenes	0.1818	0.0000	0.0035	0.0111	0.2674	0.1644
Oxygenates	0.2948	0.0000	0.0021	0.0220	0.1615	0.3266
Carboxylic acids	0.0810	0.0000	0.0005	0.0062	0.0354	0.0916
Alcohols	0.1096	0.0000	0.0005	0.0085	0.0412	0.1255
Ketones	0.1043	0.0000	0.0011	0.0074	0.0849	0.1094

Composition of OLP in Feed (%.area)					Recovery in Extract (Mass Fraction)	Recovery in Raffinate (Mass Fraction)
Hydrocarbons	15.86				21.53	78.47
Alkanes	8.60				20.46	79.54
Alkenes	3.13				18.06	81.94
Naphthenes	4.13				26.38	73.62
Oxygenates	6.69				9.83	90.17
Carboxylic acids	1.84				7.85	92.15
Alcohols	2.49				6.74	93.26
Ketones	2.37				14.61	85.39

Table S3: Process conditions, mass flow rates, gaseous fractions, recoveries of hydrocarbons and oxygenates in extract and raffinate, as well as chemical composition, expressed in solvent-free basis, of hydrocarbons and oxygenates of OLP in feed, top and bottom streams of absorber columns T-101 by simulation of OLP deoxygenation process in multistage countercurrent absorber columns using CO₂ as solvent, using Aspen-HYSYS 8.6 (Aspen One, 2015) at 333 K, 140 bar, and (S/F) = 38.