

Supporting information

New measurements and Modeling of High Pressure Thermodynamic Properties of Glycols

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Table S1. Density as function of temperature and pressure of the Ethylene glycol (EG).

<i>T</i> /K																	
283.11		293.13		303.13		313.16		323.15		333.18		343.16		353.18		363.18	
<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³
0.1	1.1202	0.1	1.1130	0.1	1.1060	0.1	1.0991	0.1	1.0920	0.1	1.0847	0.1	1.0773	0.1	1.0699	0.1	1.0624
1.0	1.1205	1.0	1.1134	1.0	1.1064	1.0	1.0994	1.0	1.0923	1.0	1.0851	1.0	1.0778	1.0	1.0705	1.0	1.0628
2.0	1.1209	2.0	1.1139	2.0	1.1068	2.0	1.0998	2.0	1.0929	2.0	1.0856	2.0	1.0783	2.0	1.0710	2.0	1.0634
5.0	1.1221	5.0	1.1151	5.0	1.1082	5.0	1.1012	5.0	1.0942	5.0	1.0871	5.0	1.0800	5.0	1.0725	5.0	1.0650
7.0	1.1230	7.0	1.1160	7.0	1.1092	7.0	1.1021	7.0	1.0952	7.0	1.0880	7.0	1.0809	7.0	1.0735	7.0	1.0660
10.0	1.1243	10.0	1.1172	10.0	1.1104	10.0	1.1035	10.0	1.0965	10.0	1.0895	10.0	1.0823	10.0	1.0750	10.0	1.0676
12.0	1.1251	12.0	1.1180	12.0	1.1112	12.0	1.1042	12.0	1.0974	12.0	1.0904	12.0	1.0831	12.0	1.0760	12.0	1.0686
16.0	1.1267	16.0	1.1198	16.0	1.1129	16.0	1.1061	16.0	1.0993	16.0	1.0922	16.0	1.0851	16.0	1.0780	16.0	1.0706
20.0	1.1282	20.0	1.1213	20.0	1.1146	20.0	1.1078	20.0	1.1009	20.0	1.0940	20.0	1.0869	20.0	1.0799	20.0	1.0725
25.0	1.1301	25.0	1.1233	25.0	1.1166	25.0	1.1098	25.0	1.1031	25.0	1.0963	25.0	1.0893	25.0	1.0822	25.0	1.0750
30.0	1.1320	30.0	1.1253	30.0	1.1186	30.0	1.1118	30.0	1.1052	30.0	1.0984	30.0	1.0915	30.0	1.0845	30.0	1.0774
35.0	1.1339	35.0	1.1271	35.0	1.1207	35.0	1.1138	35.0	1.1073	35.0	1.1004	35.0	1.0937	35.0	1.0868	35.0	1.0796
40.0	1.1357	40.0	1.1290	40.0	1.1226	40.0	1.1159	40.0	1.1093	40.0	1.1026	40.0	1.0958	40.0	1.0890	40.0	1.0820
45.0	1.1375	45.0	1.1307	45.0	1.1245	45.0	1.1179	45.0	1.1113	45.0	1.1045	45.0	1.0978	45.0	1.0910	45.0	1.0842
50.0	1.1393	50.0	1.1327	50.0	1.1262	50.0	1.1198	50.0	1.1133	50.0	1.1064	50.0	1.1000	50.0	1.0932	50.0	1.0862
55.0	1.1410	55.0	1.1345	55.0	1.1280	55.0	1.1215	55.0	1.1151	55.0	1.1085	55.0	1.1020	55.0	1.0954	55.0	1.0884
60.0	1.1429	60.0	1.1363	60.0	1.1298	60.0	1.1234	60.0	1.1171	60.0	1.1106	60.0	1.1040	60.0	1.0974	60.0	1.0905
65.0	1.1445	65.0	1.1380	65.0	1.1317	65.0	1.1252	65.0	1.1191	65.0	1.1125	65.0	1.1061	65.0	1.0994	65.0	1.0926
70.0	1.1461	70.0	1.1397	70.0	1.1334	70.0	1.1270	70.0	1.1209	70.0	1.1143	70.0	1.1080	70.0	1.1013	70.0	1.0945
75.0	1.1478	75.0	1.1413	75.0	1.1352	75.0	1.1288	75.0	1.1227	75.0	1.1162	75.0	1.1098	75.0	1.1032	75.0	1.0966
80.0	1.1494	80.0	1.1431	80.0	1.1369	80.0	1.1306	80.0	1.1244	80.0	1.1180	80.0	1.1117	80.0	1.1052	80.0	1.0985
85.0	1.1511	85.0	1.1446	85.0	1.1384	85.0	1.1323	85.0	1.1262	85.0	1.1197	85.0	1.1135	85.0	1.1069	85.0	1.1004
90.0	1.1526	90.0	1.1463	90.0	1.1401	90.0	1.1339	90.0	1.1278	90.0	1.1215	90.0	1.1153	90.0	1.1088	90.0	1.1023
95.0	1.1542	95.0	1.1478	95.0	1.1417	95.0	1.1355	95.0	1.1295	95.0	1.1231	95.0	1.1170	95.0	1.1106	95.0	1.1041

Standard uncertainties *u* are $u(T) = 0.1$ K, $u(p) = 0.2\%$ and $u(\rho) = 5 \cdot 10^{-4}$ g.cm⁻³.

Table S2. Density as function of temperature and pressure of the Diethylene glycol (DEG).

<i>T</i> /K																	
283.15		293.15		303.14		313.15		323.20		333.20		343.20		353.19		363.17	
<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³
0.1	1.1243	0.1	1.1171	0.1	1.1099	0.1	1.1027	0.1	1.0954	0.1	1.0881	0.1	1.0807	0.1	1.0732	0.1	1.0656
1.0	1.1247	1.0	1.1175	1.0	1.1103	1.0	1.1032	1.0	1.0958	1.0	1.0887	1.0	1.0812	1.0	1.0738	1.0	1.0662
2.0	1.1253	2.0	1.1180	2.0	1.1107	2.0	1.1036	2.0	1.0963	2.0	1.0892	2.0	1.0817	2.0	1.0743	2.0	1.0668
5.0	1.1265	5.0	1.1193	5.0	1.1122	5.0	1.1052	5.0	1.0978	5.0	1.0908	5.0	1.0834	5.0	1.0760	5.0	1.0685
7.0	1.1274	7.0	1.1202	7.0	1.1131	7.0	1.1062	7.0	1.0988	7.0	1.0918	7.0	1.0845	7.0	1.0771	7.0	1.0696
10.0	1.1288	10.0	1.1216	10.0	1.1145	10.0	1.1077	10.0	1.1003	10.0	1.0933	10.0	1.0861	10.0	1.0787	10.0	1.0714
12.0	1.1296	12.0	1.1225	12.0	1.1154	12.0	1.1086	12.0	1.1013	12.0	1.0944	12.0	1.0871	12.0	1.0798	12.0	1.0725
16.0	1.1313	16.0	1.1243	16.0	1.1173	16.0	1.1104	16.0	1.1033	16.0	1.0964	16.0	1.0891	16.0	1.0819	16.0	1.0746
20.0	1.1330	20.0	1.1260	20.0	1.1190	20.0	1.1123	20.0	1.1052	20.0	1.0983	20.0	1.0912	20.0	1.0840	20.0	1.0769
25.0	1.1351	25.0	1.1282	25.0	1.1212	25.0	1.1145	25.0	1.1075	25.0	1.1007	25.0	1.0937	25.0	1.0866	25.0	1.0794
30.0	1.1372	30.0	1.1303	30.0	1.1234	30.0	1.1167	30.0	1.1099	30.0	1.1030	30.0	1.0961	30.0	1.0891	30.0	1.0820
35.0	1.1392	35.0	1.1324	35.0	1.1255	35.0	1.1189	35.0	1.1120	35.0	1.1053	35.0	1.0985	35.0	1.0916	35.0	1.0846
40.0	1.1412	40.0	1.1343	40.0	1.1275	40.0	1.1210	40.0	1.1142	40.0	1.1076	40.0	1.1008	40.0	1.0939	40.0	1.0870
45.0	1.1430	45.0	1.1364	45.0	1.1296	45.0	1.1231	45.0	1.1163	45.0	1.1097	45.0	1.1031	45.0	1.0963	45.0	1.0894
50.0	1.1451	50.0	1.1384	50.0	1.1316	50.0	1.1251	50.0	1.1184	50.0	1.1119	50.0	1.1052	50.0	1.0985	50.0	1.0918
55.0	1.1469	55.0	1.1404	55.0	1.1336	55.0	1.1271	55.0	1.1205	55.0	1.1139	55.0	1.1074	55.0	1.1008	55.0	1.0941
60.0	1.1488	60.0	1.1422	60.0	1.1355	60.0	1.1291	60.0	1.1225	60.0	1.1160	60.0	1.1095	60.0	1.1029	60.0	1.0963
65.0	1.1507	65.0	1.1441	65.0	1.1374	65.0	1.1311	65.0	1.1245	65.0	1.1180	65.0	1.1116	65.0	1.1050	65.0	1.0985
70.0	1.1524	70.0	1.1458	70.0	1.1393	70.0	1.1329	70.0	1.1265	70.0	1.1201	70.0	1.1137	70.0	1.1072	70.0	1.1005
75.0	1.1542	75.0	1.1477	75.0	1.1411	75.0	1.1348	75.0	1.1283	75.0	1.1219	75.0	1.1157	75.0	1.1092	75.0	1.1026
80.0	1.1558	80.0	1.1494	80.0	1.1429	80.0	1.1366	80.0	1.1303	80.0	1.1238	80.0	1.1176	80.0	1.1112	80.0	1.1048
85.0	1.1575	85.0	1.1512	85.0	1.1446	85.0	1.1384	85.0	1.1322	85.0	1.1259	85.0	1.1195	85.0	1.1132	85.0	1.1068
90.0	1.1592	90.0	1.1529	90.0	1.1464	90.0	1.1402	90.0	1.1339	90.0	1.1277	90.0	1.1214	90.0	1.1151	90.0	1.1088
95.0	1.1609	95.0	1.1546	95.1	1.1482	95.0	1.1419	95.0	1.1357	95.0	1.1295	95.0	1.1233	95.0	1.1170	95.0	1.1107

Standard uncertainties *u* are $u(T) = 0.1$ K, $u(p) = 0.2\%$ and $u(\rho) = 5 \cdot 10^{-4}$ g.cm⁻³.

Table S3. Density as function of temperature and pressure of the Triethylene glycol (TriEG).

<i>T</i> /K																	
283.08		293.14		303.12		313.18		323.14		333.10		343.14		353.10		363.16	
<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³
0.1	1.1317	0.1	1.1241	0.1	1.1162	0.1	1.1083	0.1	1.1005	0.1	1.0927	0.1	1.0847	0.1	1.0770	0.1	1.0689
1.0	1.1324	1.0	1.1245	1.0	1.1166	1.0	1.1087	1.0	1.1010	1.0	1.0932	1.0	1.0853	0.1	1.0769	1.0	1.0694
2.0	1.1328	2.0	1.1249	2.0	1.1171	2.0	1.1092	2.0	1.1015	2.0	1.0938	2.0	1.0860	2.0	1.0780	2.0	1.0701
5.0	1.1341	5.0	1.1263	5.0	1.1185	5.0	1.1107	5.0	1.1030	5.0	1.0954	5.0	1.0876	5.0	1.0798	5.0	1.0718
7.0	1.1349	7.0	1.1273	7.0	1.1195	7.0	1.1117	7.0	1.1041	7.0	1.0964	7.0	1.0886	7.0	1.0809	7.0	1.0730
10.0	1.1362	10.0	1.1286	10.0	1.1209	10.0	1.1131	10.0	1.1055	10.0	1.0980	10.0	1.0902	10.0	1.0826	10.0	1.0746
12.0	1.1371	12.0	1.1294	12.0	1.1218	12.0	1.1141	12.0	1.1065	12.0	1.0989	12.0	1.0913	12.0	1.0836	12.0	1.0758
16.0	1.1388	16.0	1.1313	16.0	1.1236	16.0	1.1159	16.0	1.1084	16.0	1.1009	16.0	1.0934	16.0	1.0857	16.0	1.0782
20.0	1.1405	20.0	1.1329	20.0	1.1254	20.0	1.1178	20.0	1.1103	20.0	1.1029	20.0	1.0954	20.0	1.0880	20.0	1.0803
25.0	1.1425	25.0	1.1350	25.0	1.1276	25.0	1.1200	25.0	1.1126	25.0	1.1053	25.0	1.0979	25.0	1.0905	25.0	1.0829
30.0	1.1445	30.0	1.1371	30.0	1.1297	30.0	1.1223	30.0	1.1149	30.0	1.1077	30.0	1.1004	30.0	1.0932	30.0	1.0856
35.0	1.1465	35.0	1.1392	35.0	1.1318	35.0	1.1244	35.0	1.1171	35.0	1.1101	35.0	1.1028	35.0	1.0955	35.0	1.0881
40.0	1.1484	40.0	1.1411	40.0	1.1339	40.0	1.1266	40.0	1.1194	40.0	1.1123	40.0	1.1051	40.0	1.0980	40.0	1.0906
45.0	1.1502	45.0	1.1430	45.0	1.1359	45.0	1.1287	45.0	1.1215	45.0	1.1145	45.0	1.1074	45.0	1.1003	45.0	1.0930
50.0	1.1521	50.0	1.1450	50.0	1.1379	50.0	1.1306	50.0	1.1237	50.0	1.1166	50.0	1.1096	50.0	1.1026	50.0	1.0954
55.0	1.1540	55.0	1.1469	55.0	1.1399	55.0	1.1326	55.0	1.1257	55.0	1.1189	55.0	1.1119	55.0	1.1049	55.0	1.0978
60.0	1.1558	60.0	1.1487	60.0	1.1418	60.0	1.1346	60.0	1.1277	60.0	1.1208	60.0	1.1140	60.0	1.1073	60.0	1.1001
65.0	1.1576	65.0	1.1505	64.9	1.1437	65.0	1.1366	65.0	1.1297	65.0	1.1229	65.0	1.1161	65.0	1.1091	65.0	1.1023
70.0	1.1594	70.0	1.1524	70.0	1.1455	70.0	1.1385	70.0	1.1317	70.0	1.1249	70.0	1.1181	70.0	1.1115	70.0	1.1045
75.0	1.1610	75.0	1.1542	75.0	1.1473	75.0	1.1403	75.0	1.1335	75.0	1.1269	75.0	1.1201	75.0	1.1133	75.0	1.1066
80.0	1.1628	80.0	1.1559	80.0	1.1491	80.0	1.1421	80.0	1.1354	80.0	1.1288	80.0	1.1221	80.0	1.1156	80.0	1.1087
85.0	1.1645	85.0	1.1576	85.0	1.1508	85.0	1.1439	85.0	1.1373	85.0	1.1307	85.0	1.1241	85.0	1.1174	85.0	1.1107
90.0	1.1661	90.0	1.1592	90.0	1.1526	90.0	1.1456	90.0	1.1390	90.0	1.1325	90.0	1.1260	90.0	1.1195	90.0	1.1128
95.0	1.1677	95.0	1.1609	95.1	1.1542	95.0	1.1474	95.0	1.1408	95.0	1.1344	95.0	1.1280	95.0	1.1213	95.0	1.1148

Standard uncertainties *u* are $u(T) = 0.1$ K, $u(p) = 0.2\%$ and $u(\rho) = 5 \cdot 10^{-4}$ g.cm⁻³.

Table S4. Density as function of temperature and pressure of the Tetraethylene glycol (TeEG).

<i>T</i> /K																	
283.13		293.11		303.13		313.22		323.20		333.20		343.17		353.13		363.20	
<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³
0.1	1.1320	0.1	1.1238	0.1	1.1158	0.1	1.1078	0.1	1.0998	0.1	1.0918	0.1	1.0840	0.1	1.0759	0.1	1.0678
1.0	1.1324	1.0	1.1242	1.0	1.1161	1.0	1.1081	1.0	1.1001	1.0	1.0923	1.0	1.0844	1.0	1.0764	1.0	1.0684
2.0	1.1328	2.0	1.1247	2.0	1.1167	2.0	1.1086	2.0	1.1006	2.0	1.0929	2.0	1.0850	2.0	1.0769	2.0	1.0690
5.0	1.1341	5.0	1.1261	5.0	1.1181	5.0	1.1101	5.0	1.1022	5.0	1.0945	5.0	1.0867	5.0	1.0787	5.0	1.0708
7.0	1.1350	7.0	1.1270	7.0	1.1191	7.0	1.1111	7.0	1.1032	7.0	1.0956	7.0	1.0877	7.0	1.0799	7.0	1.0720
10.0	1.1364	10.0	1.1284	10.0	1.1205	10.0	1.1126	10.0	1.1047	10.0	1.0971	10.0	1.0894	10.0	1.0816	10.0	1.0737
12.0	1.1372	12.0	1.1292	12.0	1.1214	12.0	1.1136	12.0	1.1056	12.0	1.0981	12.0	1.0904	12.0	1.0828	12.0	1.0749
16.0	1.1389	16.0	1.1311	16.0	1.1233	16.0	1.1155	16.0	1.1077	16.0	1.1002	16.0	1.0925	16.0	1.0849	16.0	1.0771
20.0	1.1406	20.0	1.1328	20.0	1.1250	20.0	1.1173	20.0	1.1096	20.0	1.1022	20.0	1.0946	20.0	1.0871	20.0	1.0795
25.0	1.1428	25.0	1.1349	25.0	1.1273	25.0	1.1197	25.0	1.1119	25.0	1.1046	25.0	1.0971	25.0	1.0898	25.0	1.0823
30.0	1.1448	30.0	1.1371	30.0	1.1295	30.0	1.1219	30.0	1.1143	30.0	1.1071	30.0	1.0997	30.0	1.0923	30.0	1.0848
35.0	1.1469	35.0	1.1390	35.0	1.1316	35.0	1.1241	35.0	1.1166	35.0	1.1094	35.0	1.1021	35.0	1.0949	35.0	1.0875
40.0	1.1488	40.0	1.1411	40.0	1.1337	40.0	1.1263	40.0	1.1188	40.0	1.1117	40.0	1.1045	40.0	1.0973	40.0	1.0899
45.0	1.1507	45.0	1.1431	45.0	1.1357	45.0	1.1284	45.0	1.1210	45.0	1.1139	45.0	1.1068	45.0	1.0998	45.0	1.0924
50.0	1.1526	50.0	1.1451	50.0	1.1377	50.1	1.1304	50.0	1.1232	50.0	1.1162	50.0	1.1091	50.0	1.1021	50.0	1.0948
55.0	1.1545	55.0	1.1470	55.0	1.1397	55.0	1.1325	55.0	1.1255	55.0	1.1184	55.0	1.1113	55.0	1.1043	55.0	1.0972
60.0	1.1563	60.0	1.1489	60.0	1.1417	60.0	1.1345	60.0	1.1274	60.0	1.1205	60.0	1.1135	60.0	1.1066	60.0	1.0995
65.0	1.1582	65.0	1.1508	65.0	1.1436	65.0	1.1365	65.0	1.1294	65.0	1.1225	65.0	1.1157	65.0	1.1089	65.0	1.1018
70.0	1.1599	70.0	1.1526	70.0	1.1455	70.0	1.1384	70.0	1.1313	70.0	1.1246	70.0	1.1177	70.0	1.1110	70.0	1.1040
75.0	1.1617	75.0	1.1544	75.0	1.1474	75.0	1.1403	75.0	1.1333	75.0	1.1266	75.0	1.1198	75.0	1.1132	75.0	1.1062
80.0	1.1633	80.0	1.1562	80.0	1.1491	80.0	1.1422	80.0	1.1352	80.0	1.1285	80.0	1.1219	80.0	1.1152	80.0	1.1084
85.0	1.1651	85.0	1.1579	85.0	1.1508	85.0	1.1440	85.0	1.1371	85.0	1.1304	85.0	1.1238	85.0	1.1172	85.0	1.1104
90.0	1.1667	90.0	1.1596	90.0	1.1526	90.0	1.1458	90.0	1.1390	90.0	1.1322	90.0	1.1258	90.0	1.1192	90.0	1.1125
95.0	1.1684	95.0	1.1613	95.0	1.1544	95.0	1.1477	95.0	1.1407	95.0	1.1341	95.0	1.1276	95.0	1.1211	95.0	1.1144

Standard uncertainties *u* are $u(T) = 0.1$ K, $u(p) = 0.2\%$ and $u(\rho) = 5 \cdot 10^{-4}$ g.cm⁻³.

Table S5. Density as function of temperature and pressure of the Pentaethylene glycol (PeEG).

<i>T</i> /K																	
283.16		293.16		303.15		313.16		323.15		333.15		343.16		353.16		363.16	
<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³
0.1	1.1335	0.1	1.1255	0.1	1.1170	0.1	1.1093	0.1	1.1011	0.1	1.0929	0.1	1.0849	0.1	1.0767	0.1	1.0686
1.0	1.1340	1.0	1.1260	1.0	1.1175	1.0	1.1098	1.0	1.1015	1.0	1.0935	1.0	1.0854	1.0	1.0773	1.0	1.0692
2.0	1.1345	2.0	1.1264	2.0	1.1180	2.0	1.1103	2.0	1.1021	2.0	1.0940	2.0	1.0863	2.0	1.0779	2.0	1.0699
5.0	1.1358	5.0	1.1279	5.0	1.1198	5.0	1.1119	5.0	1.1037	5.0	1.0957	5.0	1.0878	5.0	1.0797	5.0	1.0716
7.0	1.1367	7.0	1.1289	7.0	1.1208	7.0	1.1129	7.0	1.1047	7.0	1.0968	7.0	1.0888	7.0	1.0808	7.0	1.0729
10.0	1.1379	10.0	1.1302	10.0	1.1221	10.0	1.1144	10.0	1.1062	10.0	1.0983	10.0	1.0906	10.0	1.0826	10.0	1.0745
12.0	1.1389	12.0	1.1311	12.0	1.1231	12.0	1.1153	12.0	1.1072	12.0	1.0993	12.0	1.0916	12.0	1.0836	12.0	1.0757
16.0	1.1407	16.0	1.1329	16.0	1.1250	16.0	1.1172	16.0	1.1091	16.0	1.1014	16.0	1.0937	16.0	1.0858	16.0	1.0779
20.0	1.1425	20.0	1.1346	20.0	1.1268	20.0	1.1191	20.0	1.1111	20.0	1.1033	20.0	1.0958	20.0	1.0880	20.0	1.0802
25.0	1.1446	25.0	1.1365	25.0	1.1283	25.0	1.1212	25.0	1.1136	25.0	1.1058	25.0	1.0979	25.0	1.0906	25.0	1.0829
30.0	1.1466	30.0	1.1387	30.0	1.1310	30.0	1.1235	30.0	1.1157	30.0	1.1081	30.0	1.1004	30.0	1.0932	30.0	1.0856
35.0	1.1486	35.0	1.1408	35.0	1.1332	35.0	1.1255	35.0	1.1181	35.0	1.1104	35.0	1.1025	35.0	1.0958	35.0	1.0880
40.0	1.1505	40.0	1.1430	40.0	1.1354	40.0	1.1278	40.0	1.1204	40.0	1.1128	40.0	1.1048	40.0	1.0981	40.0	1.0905
45.0	1.1524	45.0	1.1450	45.0	1.1374	45.0	1.1299	45.0	1.1227	45.0	1.1151	45.0	1.1070	45.0	1.1005	45.0	1.0929
50.0	1.1544	50.0	1.1468	50.0	1.1395	50.0	1.1319	50.0	1.1249	50.0	1.1171	50.0	1.1098	50.0	1.1025	50.0	1.0954
55.0	1.1562	55.0	1.1488	55.0	1.1414	55.0	1.1340	55.0	1.1266	55.0	1.1194	55.0	1.1122	55.0	1.1048	55.0	1.0977
60.0	1.1582	60.0	1.1507	60.0	1.1432	60.0	1.1361	60.0	1.1286	60.0	1.1213	60.0	1.1144	60.0	1.1072	60.0	1.1003
65.0	1.1601	65.0	1.1526	65.0	1.1451	65.0	1.1381	65.0	1.1308	65.0	1.1234	65.0	1.1167	65.0	1.1096	65.0	1.1025
70.0	1.1618	70.0	1.1545	70.0	1.1471	70.0	1.1401	70.0	1.1327	70.0	1.1256	70.0	1.1183	70.0	1.1116	70.0	1.1047
75.0	1.1636	75.0	1.1562	75.0	1.1489	75.0	1.1419	75.0	1.1345	75.0	1.1277	75.0	1.1209	75.0	1.1138	75.0	1.1068
80.0	1.1653	80.0	1.1580	80.0	1.1508	80.0	1.1438	80.0	1.1365	80.0	1.1298	80.0	1.1229	80.0	1.1159	80.0	1.1090
85.0	1.1670	85.0	1.1597	85.0	1.1528	85.0	1.1457	85.0	1.1386	85.0	1.1318	85.0	1.1249	85.0	1.1182	85.0	1.1112
90.0	1.1686	90.0	1.1614	90.0	1.1546	90.0	1.1475	90.0	1.1404	90.0	1.1336	90.0	1.1269	90.0	1.1199	90.0	1.1132
95.0	1.1703	95.0	1.1633	95.0	1.1564	95.0	1.1494	95.0	1.1424	95.0	1.1356	95.0	1.1290	95.0	1.1221	95.0	1.1153

Standard uncertainties *u* are $u(T) = 0.1$ K, $u(p) = 0.2\%$ and $u(\rho) = 5 \cdot 10^{-4}$ g.cm⁻³.

Table S6. Density as function of temperature and pressure of the Hexaethylene glycol (HeEG).

<i>T</i> /K																	
283.13		293.16		303.15		313.16		323.14		333.15		343.16		353.14		363.13	
<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³
0.1	1.1345	0.1	1.1256	0.1	1.1175	0.1	1.1092	0.1	1.1009	0.1	1.0927	0.1	1.0847	0.1	1.0767	0.1	1.0684
1.0	1.1348	1.0	1.1260	1.0	1.1180	1.0	1.1097	1.0	1.1013	1.0	1.0933	1.0	1.0853	1.0	1.0772	1.0	1.0686
2.0	1.1351	2.0	1.1265	2.0	1.1185	2.0	1.1102	2.0	1.1018	2.0	1.0938	2.0	1.0859	2.0	1.0779	2.0	1.0690
5.0	1.1364	5.0	1.1279	5.0	1.1200	5.0	1.1119	5.0	1.1035	5.0	1.0954	5.0	1.0876	5.0	1.0797	5.0	1.0716
7.0	1.1373	7.0	1.1289	7.0	1.1208	7.0	1.1128	7.0	1.1045	7.0	1.0965	7.0	1.0887	7.0	1.0807	7.0	1.0727
10.0	1.1385	10.0	1.1303	10.0	1.1223	10.0	1.1143	10.0	1.1060	10.0	1.0982	10.0	1.0904	10.0	1.0824	10.0	1.0746
12.0	1.1393	12.0	1.1311	12.0	1.1232	12.0	1.1152	12.0	1.1069	12.0	1.0991	12.0	1.0912	12.0	1.0836	12.0	1.0756
16.0	1.1411	16.0	1.1329	16.0	1.1249	16.0	1.1171	16.0	1.1090	16.0	1.1013	16.0	1.0935	16.0	1.0857	16.0	1.0780
20.0	1.1428	20.0	1.1346	20.0	1.1268	20.0	1.1190	20.0	1.1105	20.0	1.1034	20.0	1.0957	20.0	1.0878	20.0	1.0802
25.0	1.1446	25.0	1.1368	25.0	1.1291	25.0	1.1213	25.0	1.1132	25.0	1.1058	25.0	1.0979	25.0	1.0904	25.0	1.0830
30.0	1.1465	30.0	1.1383	30.0	1.1312	30.0	1.1234	30.0	1.1156	30.0	1.1082	30.0	1.1005	30.0	1.0930	30.0	1.0854
35.0	1.1485	35.0	1.1408	35.0	1.1334	35.0	1.1257	35.0	1.1180	35.0	1.1105	35.0	1.1028	35.0	1.0956	35.0	1.0881
40.0	1.1506	40.0	1.1431	40.0	1.1354	40.0	1.1278	40.0	1.1202	40.0	1.1128	40.0	1.1054	40.0	1.0982	40.0	1.0906
45.0	1.1526	45.0	1.1449	45.0	1.1375	45.0	1.1299	45.0	1.1224	45.0	1.1151	45.0	1.1076	45.0	1.1003	45.0	1.0927
50.0	1.1544	50.0	1.1469	50.0	1.1394	50.0	1.1320	50.0	1.1245	50.0	1.1173	50.0	1.1099	50.0	1.1027	50.0	1.0952
55.0	1.1564	55.0	1.1489	55.0	1.1416	55.0	1.1342	55.0	1.1264	55.0	1.1194	55.0	1.1121	55.0	1.1050	55.0	1.0976
60.0	1.1584	60.0	1.1508	60.0	1.1434	60.0	1.1357	60.0	1.1285	60.0	1.1217	60.0	1.1145	60.0	1.1074	60.0	1.1001
65.0	1.1600	65.0	1.1528	65.0	1.1452	65.0	1.1381	65.0	1.1306	65.0	1.1237	65.0	1.1166	65.0	1.1096	65.0	1.1025
70.0	1.1618	70.0	1.1546	70.0	1.1472	70.0	1.1400	70.0	1.1326	70.0	1.1255	70.0	1.1188	70.0	1.1118	70.0	1.1048
75.0	1.1636	75.0	1.1564	75.0	1.1491	75.0	1.1421	75.0	1.1346	75.0	1.1278	75.0	1.1209	75.0	1.1142	75.0	1.1070
80.0	1.1653	80.0	1.1583	80.0	1.1508	80.0	1.1440	80.0	1.1368	80.0	1.1300	80.0	1.1231	80.0	1.1161	80.0	1.1092
85.0	1.1671	85.0	1.1600	85.0	1.1529	85.0	1.1459	85.0	1.1386	85.0	1.1319	85.0	1.1252	85.0	1.1183	85.0	1.1112
90.0	1.1687	90.0	1.1617	90.0	1.1548	90.0	1.1478	90.0	1.1407	90.0	1.1338	90.0	1.1272	90.0	1.1203	90.0	1.1135
95.0	1.1705	95.0	1.1635	95.0	1.1564	95.0	1.1497	95.0	1.1424	95.0	1.1357	95.0	1.1292	95.0	1.1224	95.0	1.1156

Standard uncertainties *u* are $u(T) = 0.1$ K, $u(p) = 0.2\%$ and $u(\rho) = 5 \cdot 10^{-4}$ g.cm⁻³.

Table S7. Density as function of temperature and pressure of the Polyethylene glycol 400 (PEG400).

<i>T</i> /K																	
283.17		293.14		303.15		313.14		323.19		333.19		343.15		353.14		363.15	
<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³	<i>p</i> /MPa	ρ /g.cm ⁻³
0.1	1.1375	0.1	1.1293	0.1	1.1210	0.1	1.1128	0.1	1.1046	0.1	1.0964	0.1	1.0883	0.1	1.0802	0.1	1.0717
1.0	1.1379	1.0	1.1297	1.0	1.1214	1.0	1.1132	1.0	1.1050	1.0	1.0969	1.0	1.0889	1.0	1.0807	1.0	1.0724
2.0	1.1385	2.0	1.1301	2.0	1.1219	2.0	1.1137	2.0	1.1056	2.0	1.0975	2.0	1.0894	2.0	1.0813	2.0	1.0729
5.0	1.1399	5.0	1.1314	5.0	1.1234	5.0	1.1152	5.0	1.1071	5.0	1.0990	5.0	1.0912	5.0	1.0831	5.0	1.0747
7.0	1.1408	7.0	1.1324	7.0	1.1243	10.0	1.1177	7.0	1.1082	7.0	1.1001	7.0	1.0922	7.0	1.0842	7.0	1.0759
10.0	1.1421	10.0	1.1338	10.0	1.1258	12.0	1.1187	10.0	1.1097	10.0	1.1017	10.0	1.0939	10.0	1.0859	10.0	1.0777
12.0	1.1430	12.0	1.1347	12.0	1.1266	16.0	1.1205	12.0	1.1107	12.0	1.1027	12.0	1.0948	12.0	1.0871	12.0	1.0789
16.0	1.1447	16.0	1.1365	16.0	1.1285	7.0	1.1162	16.0	1.1128	16.0	1.1047	16.0	1.0970	16.0	1.0893	16.0	1.0811
20.0	1.1464	20.0	1.1383	20.0	1.1303	20.0	1.1224	20.0	1.1147	20.0	1.1068	20.0	1.0991	20.0	1.0914	20.0	1.0833
25.0	1.1485	25.0	1.1404	25.0	1.1326	25.0	1.1247	25.0	1.1170	25.0	1.1093	25.0	1.1017	25.0	1.0940	25.0	1.0861
30.0	1.1504	30.0	1.1426	30.0	1.1347	30.0	1.1270	30.0	1.1194	30.0	1.1117	30.0	1.1041	30.0	1.0965	30.0	1.0888
35.0	1.1525	35.0	1.1447	35.0	1.1369	35.0	1.1293	35.0	1.1216	35.0	1.1141	35.0	1.1066	35.0	1.0990	35.0	1.0914
40.0	1.1544	40.0	1.1467	40.0	1.1391	40.0	1.1314	40.0	1.1238	40.0	1.1165	40.0	1.1090	40.0	1.1015	40.0	1.0941
45.0	1.1564	45.0	1.1487	45.0	1.1411	45.0	1.1337	45.0	1.1260	45.0	1.1187	45.0	1.1114	45.0	1.1040	45.0	1.0965
50.0	1.1584	50.0	1.1507	50.0	1.1433	50.0	1.1357	50.0	1.1283	50.0	1.1210	50.0	1.1137	50.0	1.1064	50.0	1.0990
55.0	1.1603	55.0	1.1527	55.0	1.1452	55.0	1.1378	55.0	1.1305	55.0	1.1232	55.0	1.1160	55.0	1.1088	55.0	1.1015
60.0	1.1623	60.0	1.1547	60.0	1.1472	60.0	1.1399	60.0	1.1326	60.0	1.1254	60.0	1.1183	60.0	1.1111	60.0	1.1040
65.0	1.1641	65.0	1.1565	65.0	1.1491	65.0	1.1420	65.0	1.1347	65.0	1.1276	65.0	1.1205	65.0	1.1133	65.0	1.1063
70.0	1.1660	70.0	1.1585	70.0	1.1510	70.0	1.1439	70.0	1.1367	70.0	1.1296	70.0	1.1226	70.0	1.1156	70.0	1.1085
75.0	1.1678	75.0	1.1603	75.0	1.1530	75.0	1.1459	75.0	1.1387	75.0	1.1318	75.0	1.1249	75.0	1.1178	75.0	1.1108
80.0	1.1695	80.0	1.1622	80.0	1.1549	80.0	1.1477	80.0	1.1407	80.0	1.1338	80.0	1.1270	80.0	1.1200	80.0	1.1130
85.0	1.1712	85.0	1.1640	85.0	1.1567	85.0	1.1497	85.0	1.1427	85.0	1.1357	85.0	1.1291	85.0	1.1221	85.0	1.1152
90.0	1.1729	90.0	1.1657	90.0	1.1586	90.0	1.1516	90.0	1.1446	90.0	1.1378	90.0	1.1311	90.0	1.1242	90.0	1.1174
95.0	1.1748	95.0	1.1675	95.0	1.1604	95.0	1.1535	95.0	1.1466	95.0	1.1397	95.0	1.1331	95.0	1.1263	95.0	1.1196

Standard uncertainties *u* are $u(T) = 0.1$ K, $u(p) = 0.2\%$ and $u(\rho) = 5 \cdot 10^{-4}$ g.cm⁻³.