SUPPORTING INFORMATION

Thermodynamic properties of biodiesel and petro-diesel blends at high pressure and high temperature and a new model to density prediction

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This Supporting Information is subdivided into five (5) Sections, as described below.

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Section 1

Section 1 presents a schematic flowchart for calculation methodologies proposed by Tammann-Tait and Daridon and Bazile.

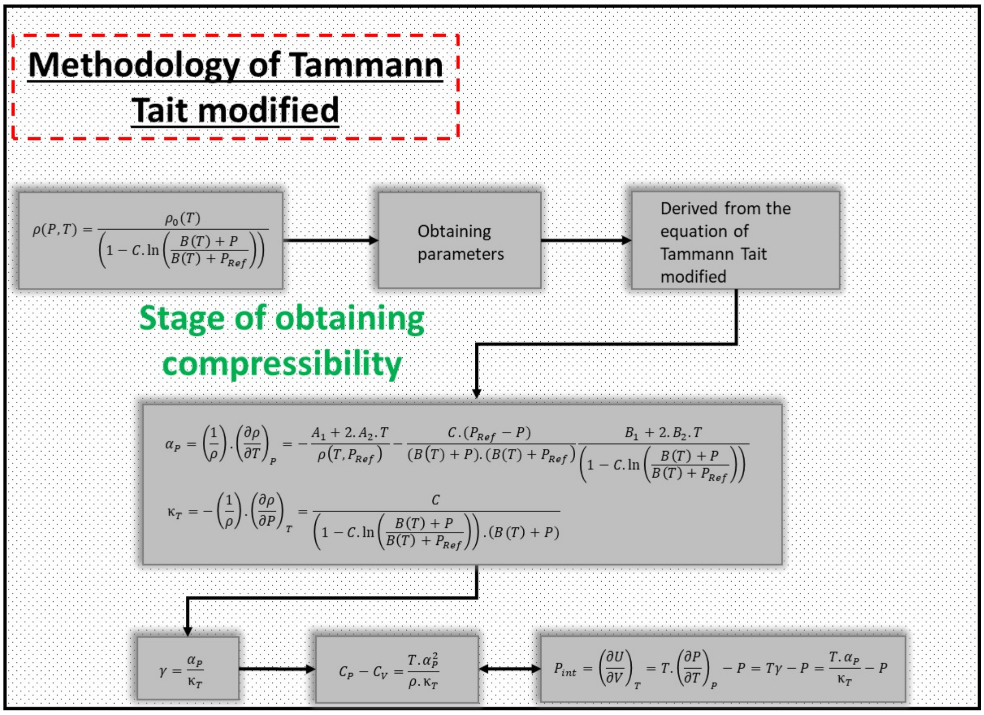

Figure S1. Flowchart of the methodology used to calculate properties derived by the correlation of the Tammann-Tait equation.

Daridon and Bazile[1] methodology was used as a complementary tool for the calculation of isothermal compressibility (κ_T) and its combined standard uncertainty was calculated by using an analytically fitting following by a derivative operation, as show in equation (S1):

$$\kappa_T = \frac{1}{\rho} \cdot \left(\frac{\partial \rho}{\partial P}\right)_T \quad \text{S1}$$

This procedure, based on a Monte Carlo statistical method, uses the experimental density values as input. Each input datum is randomly perturbed by a Gaussian distribution from 5,000 points. ρ_{exp} is set to the mean of the distribution and $U_M(\rho_{exp})$ to its standard deviation. Then, each set of generated data point is used for fitting and deriving the target derivative property. Likewise, the generated output shows a Gaussian distribution of which mean and standard deviation are the calculated derivative property and the corresponding standard uncertainty, respectively. We randomly use two different empirical equations of state (S2 and S3) to fit the perturbed density data. These equations were chosen because of their suitability for fit density data in the investigated pressure range with a limited number of parameters and for being explicit in density, described in equations (S2) and (S3).

Equation 1 (Murnaghan[2]):

$$\rho = A.(1 + B\check{p})^{C} \qquad \text{S2}$$

Equation 2 (Tammann[3]):

$$\rho = \left(A - C.\,ln\left(\frac{(\tilde{p} - B)}{B}\right)\right)^{-1} \qquad \text{S3}$$

where: parameters $A, B, and\ C$ were obtained from adjustment.

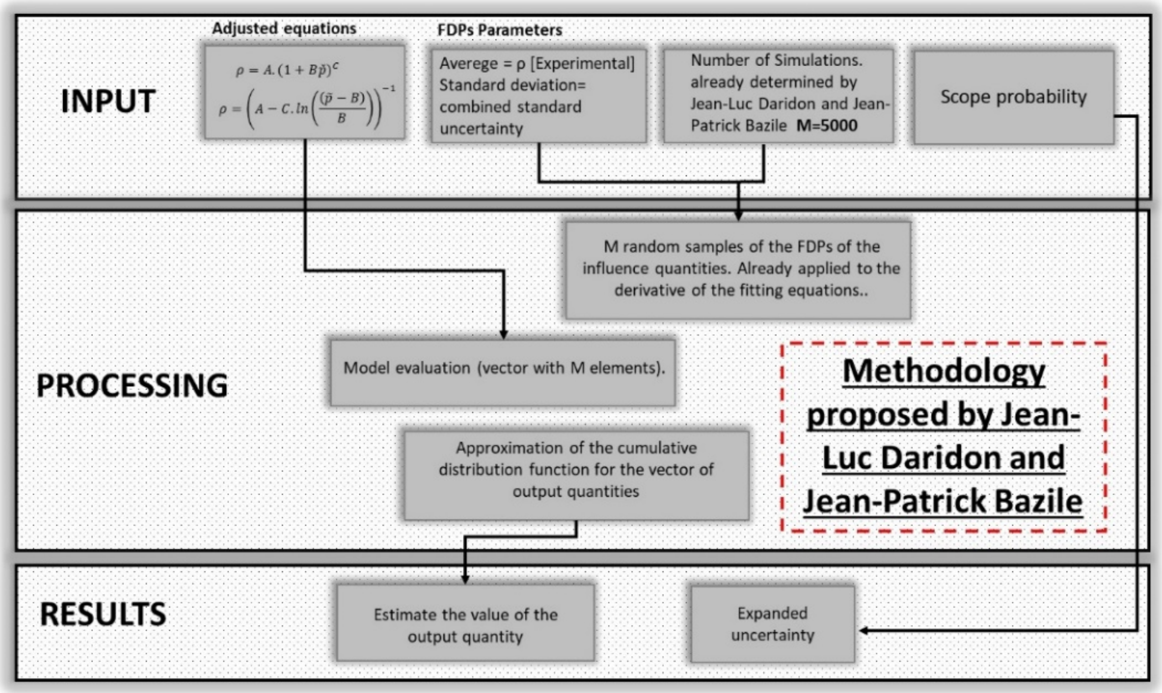

Figure S2. Flowchart of the methodology proposed by Daridon and Bazile [1] for calculating the thermal compressibility and standard uncertainty associated with the determination of property.

Section 2

Section two (2) presents the values of the Isothermal compressibility (κ_T), isobaric thermal expansibility (α_P), internal pressure (p_{int}), and the difference between pressure and volume heat capacities ($c_p - c_v$) that were calculated from Tamman-Tait [4]. The distribution of data across the compositions follows the following order.

For Biodiesel grape seed. Table S1 – S12.

For Biodiesel corn. Table S13 – S22.

For Biodiesel linseed. Table S23 – S32.

Table S1. Derived thermodynamic properties for Bio 0-PD100 (grape seed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.7671	0.8186	0.3059	312.7598	0.8577	0.8436	0.3156	307.9014
5.00	0.7360	0.7989	0.3026	313.2181	0.8191	0.8207	0.3115	308.7824
10.00	0.7069	0.7804	0.2995	313.6324	0.7832	0.7994	0.3078	309.6160
20.00	0.6553	0.7473	0.2943	314.3083	0.7205	0.7618	0.3016	311.0973
30.00	0.6111	0.7188	0.2900	314.7939	0.6675	0.7297	0.2966	312.3487
40.00	0.5727	0.6937	0.2866	315.1033	0.6220	0.7020	0.2927	313.3885
50.00	0.5390	0.6716	0.2838	315.2484	0.5826	0.6777	0.2895	314.2325
60.00	0.5093	0.6519	0.2815	315.2399	0.5481	0.6562	0.2869	314.8943
70.00	0.4828	0.6342	0.2797	315.0870	0.5177	0.6371	0.2848	315.3855
80.00	0.4590	0.6182	0.2782	314.7978	0.4906	0.6199	0.2831	315.7165
90.00	0.4376	0.6036	0.2770	314.3797	0.4663	0.6044	0.2818	315.8965
100.00	0.4182	0.5903	0.2760	313.8394	0.4444	0.5902	0.2807	315.9336
P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.9638	0.8696	0.3230	300.4968	1.0886	0.8968	0.3281	290.8315
5.00	0.9153	0.8429	0.3181	301.8099	1.0271	0.8655	0.3222	292.5939
10.00	0.8708	0.8183	0.3137	303.0697	0.9714	0.8370	0.3170	294.2942
20.00	0.7941	0.7755	0.3064	305.3633	0.8771	0.7883	0.3086	297.4198
30.00	0.7303	0.7395	0.3007	307.3794	0.8001	0.7481	0.3021	300.2109
40.00	0.6764	0.7088	0.2961	309.1422	0.7360	0.7143	0.2971	302.6995
50.00	0.6302	0.6823	0.2925	310.6722	0.6819	0.6853	0.2931	304.9120
60.00	0.5902	0.6590	0.2896	311.9866	0.6355	0.6602	0.2900	306.8706
70.00	0.5552	0.6384	0.2873	313.1005	0.5953	0.6382	0.2875	308.5941
80.00	0.5243	0.6201	0.2855	314.0267	0.5601	0.6187	0.2855	310.0987
90.00	0.4968	0.6036	0.2840	314.7768	0.5290	0.6012	0.2840	311.3987
100.00	0.4721	0.5886	0.2829	315.3609	0.5013	0.5855	0.2827	312.5065
P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.2359	0.9252	0.3310	279.2353	1.4102	0.9548	0.3317	266.0872
5.00	1.1573	0.8885	0.3240	281.4787	1.3088	0.9117	0.3237	268.8681
10.00	1.0871	0.8555	0.3180	283.6474	1.2199	0.8737	0.3169	271.5576
20.00	0.9705	0.8001	0.3085	287.6506	1.0753	0.8110	0.3062	276.5304
30.00	0.8774	0.7553	0.3013	291.2510	0.9625	0.7614	0.2985	281.0190
40.00	0.8012	0.7182	0.2958	294.4909	0.8720	0.7210	0.2928	285.0789
50.00	0.7378	0.6869	0.2915	297.4044	0.7977	0.6873	0.2884	288.7542
60.00	0.6840	0.6599	0.2882	300.0196	0.7355	0.6587	0.2851	292.0806
70.00	0.6379	0.6365	0.2856	302.3604	0.6828	0.6340	0.2825	295.0878
80.00	0.5978	0.6159	0.2836	304.4470	0.6374	0.6125	0.2806	297.8008
90.00	0.5628	0.5977	0.2820	306.2968	0.5979	0.5935	0.2791	300.2412
100.00	0.5317	0.5813	0.2808	307.9251	0.5633	0.5766	0.2780	302.4273

Table S2. Derived thermodynamic properties for Bio 0-PD100 (grape seed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v $kJ\cdot kg^{-1}\cdot K^{-1}$	p_{int} MPa
0.10	1.6168	0.9859	0.3304	251.8209
5.00	1.4850	0.9354	0.3214	255.2373
10.00	1.3717	0.8916	0.3139	258.5412
20.00	1.1919	0.8212	0.3026	264.6553
30.00	1.0553	0.7668	0.2946	270.1885
40.00	0.9480	0.7233	0.2889	275.2136
50.00	0.8613	0.6875	0.2847	279.7870
60.00	0.7897	0.6574	0.2817	283.9538
70.00	0.7296	0.6318	0.2794	287.7511
80.00	0.6784	0.6095	0.2777	291.2097
90.00	0.6342	0.5900	0.2765	294.3554
100.00	0.5957	0.5727	0.2757	297.2108

Table S3. Derived thermodynamic properties for Bio 20-PD80 (grape seed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.7335	0.8450	0.3361	337.5967	0.8304	0.8610	0.3348	324.5630
5.00	0.7050	0.8238	0.3313	337.5783	0.7941	0.8365	0.3292	324.8852
10.00	0.6782	0.8039	0.3268	337.5067	0.7602	0.8136	0.3241	325.1492
20.00	0.6305	0.7682	0.3189	337.2117	0.7009	0.7733	0.3152	325.4925
30.00	0.5893	0.7372	0.3123	336.7273	0.6505	0.7387	0.3078	325.6069
40.00	0.5534	0.7099	0.3066	336.0670	0.6071	0.7086	0.3017	325.5104
50.00	0.5218	0.6857	0.3018	335.2424	0.5694	0.6823	0.2964	325.2182
60.00	0.4938	0.6641	0.2976	334.2637	0.5363	0.6589	0.2919	324.7437
70.00	0.4687	0.6446	0.2939	333.1400	0.5070	0.6381	0.2880	324.0983
80.00	0.4462	0.6269	0.2907	331.8793	0.4809	0.6193	0.2847	323.2923
90.00	0.4258	0.6108	0.2879	330.4888	0.4574	0.6023	0.2817	322.3347
100.00	0.4073	0.5961	0.2855	328.9749	0.4363	0.5869	0.2792	321.2336
	T= 333.15 K				T= 353.15 K			
P/MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.9431	0.8776	0.3315	309.9041	1.0731	0.8948	0.3270	294.3476
5.00	0.8965	0.8494	0.3252	310.6455	1.0132	0.8626	0.3200	295.6456
10.00	0.8536	0.8233	0.3195	311.3227	0.9588	0.8332	0.3140	296.8731
20.00	0.7796	0.7779	0.3098	312.4528	0.8666	0.7829	0.3040	299.0569
30.00	0.7179	0.7397	0.3020	313.3073	0.7912	0.7413	0.2961	300.9101
40.00	0.6656	0.7070	0.2955	313.9100	0.7283	0.7063	0.2898	302.4641
50.00	0.6207	0.6787	0.2902	314.2808	0.6751	0.6763	0.2846	303.7449
60.00	0.5817	0.6538	0.2856	314.4368	0.6295	0.6502	0.2804	304.7741
70.00	0.5476	0.6318	0.2817	314.3927	0.5899	0.6274	0.2768	305.5703
80.00	0.5174	0.6121	0.2784	314.1614	0.5552	0.6071	0.2739	306.1497
90.00	0.4905	0.5944	0.2755	313.7541	0.5245	0.5890	0.2714	306.5260
100.00	0.4664	0.5784	0.2731	313.1808	0.4972	0.5726	0.2693	306.7116
	T= 373.15 K				T= 393.15 K			
P/MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.2215	0.9126	0.3215	278.6794	1.3875	0.9312	0.3162	263.7497
5.00	1.1445	0.8765	0.3144	280.7580	1.2890	0.8916	0.3099	266.9538
10.00	1.0757	0.8440	0.3086	282.7611	1.2024	0.8566	0.3048	270.0808
20.00	0.9611	0.7893	0.2990	286.4403	1.0613	0.7989	0.2970	275.9432
30.00	0.8695	0.7450	0.2919	289.7251	0.9510	0.7531	0.2917	281.3385
40.00	0.7945	0.7082	0.2863	292.6566	0.8623	0.7157	0.2880	286.3195
50.00	0.7319	0.6772	0.2820	295.2681	0.7894	0.6845	0.2854	290.9286
60.00	0.6788	0.6505	0.2786	297.5870	0.7283	0.6580	0.2837	295.2000
70.00	0.6332	0.6273	0.2759	299.6365	0.6764	0.6351	0.2825	299.1624
80.00	0.5936	0.6068	0.2737	301.4364	0.6317	0.6151	0.2819	302.8397
90.00	0.5589	0.5887	0.2720	303.0037	0.5928	0.5975	0.2817	306.2527
100.00	0.5282	0.5724	0.2706	304.3534	0.5586	0.5817	0.2817	309.4190

Table S4. Derived thermodynamic properties for Bio 20-PD80 (grape seed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.5671	0.9504	0.3123	250.4787
5.00	1.4426	0.9089	0.3080	255.3112
10.00	1.3352	0.8728	0.3047	260.0712
20.00	1.1638	0.8144	0.3007	269.1265
30.00	1.0329	0.7691	0.2989	277.6336
40.00	0.9295	0.7327	0.2985	285.6597
50.00	0.8457	0.7026	0.2990	293.2575
60.00	0.7763	0.6774	0.3002	300.4691
70.00	0.7180	0.6557	0.3020	307.3292
80.00	0.6681	0.6370	0.3040	313.8667
90.00	0.6251	0.6205	0.3063	320.1061
100.00	0.5874	0.6058	0.3088	326.0685

Table S5. Derived thermodynamic properties for Bio 40-PD80 (grape seed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.7075	0.8192	0.3237	339.3703	0.7922	0.8393	0.3296	331.6644
5.00	0.6829	0.8010	0.3195	338.8418	0.7615	0.8182	0.3245	331.4584
10.00	0.6597	0.7837	0.3156	338.2658	0.7328	0.7984	0.3199	331.2018
20.00	0.6178	0.7524	0.3086	337.0052	0.6815	0.7629	0.3119	330.5532
30.00	0.5812	0.7248	0.3026	335.6052	0.6373	0.7321	0.3051	329.7316
40.00	0.5488	0.7003	0.2975	334.0716	0.5987	0.7050	0.2993	328.7460
50.00	0.5201	0.6784	0.2930	332.4103	0.5647	0.6810	0.2943	327.6048
60.00	0.4943	0.6587	0.2891	330.6269	0.5346	0.6595	0.2901	326.3158
70.00	0.4711	0.6408	0.2857	328.7265	0.5077	0.6402	0.2863	324.8862
80.00	0.4501	0.6244	0.2828	326.7140	0.4834	0.6227	0.2831	323.3225
90.00	0.4309	0.6095	0.2801	324.5939	0.4615	0.6067	0.2802	321.6308
100.00	0.4135	0.5957	0.2778	322.3705	0.4416	0.5921	0.2776	319.8168

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8894	0.8601	0.3336	322.0845	1.0003	0.8817	0.3363	311.1967
5.00	0.8509	0.8358	0.3278	322.2115	0.9520	0.8536	0.3296	311.6763
10.00	0.8152	0.8131	0.3225	322.2841	0.9075	0.8277	0.3235	312.0974
20.00	0.7523	0.7729	0.3133	322.2631	0.8304	0.7824	0.3132	312.7413
30.00	0.6989	0.7385	0.3057	322.0316	0.7659	0.7442	0.3047	313.1348
40.00	0.6529	0.7087	0.2992	321.6021	0.7112	0.7115	0.2978	313.2940
50.00	0.6128	0.6824	0.2938	320.9859	0.6641	0.6830	0.2919	313.2332
60.00	0.5776	0.6592	0.2891	320.1935	0.6231	0.6581	0.2869	312.9657
70.00	0.5465	0.6384	0.2851	319.2343	0.5871	0.6359	0.2827	312.5036
80.00	0.5186	0.6198	0.2816	318.1170	0.5553	0.6161	0.2790	311.8574
90.00	0.4936	0.6028	0.2785	316.8494	0.5269	0.5983	0.2758	311.0371
100.00	0.4710	0.5874	0.2758	315.4386	0.5014	0.5822	0.2730	310.0514

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.1258	0.9043	0.3380	299.6279	1.2658	0.9278	0.3394	288.0716
5.00	1.0650	0.8719	0.3304	300.4950	1.1894	0.8906	0.3310	289.3872
10.00	1.0096	0.8423	0.3236	301.3014	1.1209	0.8571	0.3235	290.6454
20.00	0.9153	0.7915	0.3122	302.6857	1.0060	0.8007	0.3111	292.9115
30.00	0.8378	0.7494	0.3030	303.7810	0.9134	0.7547	0.3015	294.8563
40.00	0.7729	0.7138	0.2956	304.6053	0.8371	0.7164	0.2939	296.4975
50.00	0.7178	0.6832	0.2895	305.1761	0.7731	0.6840	0.2877	297.8529
60.00	0.6704	0.6567	0.2844	305.5089	0.7186	0.6561	0.2827	298.9400
70.00	0.6291	0.6333	0.2800	305.6180	0.6717	0.6317	0.2784	299.7745
80.00	0.5929	0.6126	0.2763	305.5164	0.6308	0.6103	0.2749	300.3713
90.00	0.5608	0.5940	0.2731	305.2155	0.5948	0.5912	0.2719	300.7436
100.00	0.5322	0.5772	0.2703	304.7261	0.5629	0.5740	0.2693	300.9035

Table S6. Derived thermodynamic properties for Bio 40-PD60 (grape seed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.4184	0.9523	0.3416	277.2955
5.00	1.3232	0.9101	0.3326	279.1644
10.00	1.2390	0.8727	0.3244	280.9906
20.00	1.1004	0.8107	0.3112	284.3886
30.00	0.9908	0.7613	0.3018	287.4477
40.00	0.9020	0.7208	0.2944	290.1781
50.00	0.8285	0.6870	0.2885	292.5954
60.00	0.7665	0.6581	0.2839	294.7163
70.00	0.7136	0.6332	0.2802	296.5573
80.00	0.6679	0.6113	0.2771	298.1341
90.00	0.6280	0.5920	0.2745	299.4612
100.00	0.5928	0.5747	0.2724	300.5521

Table S7. Derived thermodynamic properties for Bio 60-PD40 (grape seed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.6969	0.8141	0.3209	342.3305	0.7839	0.8572	0.3436	342.3367
5.00	0.6727	0.7967	0.3174	342.2003	0.7533	0.8367	0.3394	342.7989
10.00	0.6496	0.7798	0.3139	341.8867	0.7246	0.8169	0.3353	343.0444
20.00	0.6083	0.7485	0.3071	340.7611	0.6736	0.7806	0.3272	342.9189
30.00	0.5720	0.7201	0.3006	339.0419	0.6295	0.7480	0.3194	342.0677
40.00	0.5401	0.6942	0.2943	336.8002	0.5911	0.7184	0.3120	340.5860
50.00	0.5117	0.6704	0.2882	334.0946	0.5574	0.6916	0.3049	338.5506
60.00	0.4862	0.6485	0.2824	330.9740	0.5274	0.6670	0.2981	336.0243
70.00	0.4633	0.6282	0.2768	327.4792	0.5007	0.6444	0.2917	333.0592
80.00	0.4426	0.6094	0.2715	323.6453	0.4767	0.6236	0.2855	329.6989
90.00	0.4237	0.5919	0.2663	319.5018	0.4549	0.6043	0.2796	325.9802
100.00	0.4065	0.5755	0.2614	315.0747	0.4352	0.5864	0.2739	321.9345

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8885	0.9024	0.3637	338.2690	1.0158	0.9498	0.3806	330.1121
5.00	0.8494	0.8780	0.3588	339.3689	0.9650	0.9207	0.3747	331.9087
10.00	0.8131	0.8547	0.3538	340.2070	0.9185	0.8931	0.3689	333.3826
20.00	0.7494	0.8124	0.3442	341.1183	0.8382	0.8435	0.3576	335.3774
30.00	0.6954	0.7747	0.3351	341.1419	0.7714	0.8001	0.3469	336.2846
40.00	0.6490	0.7411	0.3264	340.4054	0.7149	0.7617	0.3368	336.2761
50.00	0.6087	0.7108	0.3181	339.0096	0.6665	0.7275	0.3273	335.4840
60.00	0.5733	0.6832	0.3103	337.0354	0.6245	0.6967	0.3184	334.0123
70.00	0.5420	0.6581	0.3029	334.5485	0.5877	0.6689	0.3099	331.9439
80.00	0.5141	0.6351	0.2958	331.6033	0.5552	0.6435	0.3019	329.3462
90.00	0.4890	0.6139	0.2891	328.2450	0.5263	0.6203	0.2943	326.2744
100.00	0.4664	0.5943	0.2826	324.5117	0.5004	0.5990	0.2871	322.7745

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.1729	0.9996	0.3933	317.9023	1.3703	1.0521	0.4011	301.7326
5.00	1.1058	0.9646	0.3865	320.4793	1.2797	1.0097	0.3933	305.2155
10.00	1.0452	0.9318	0.3797	322.6505	1.1993	0.9706	0.3856	308.1791
20.00	0.9427	0.8736	0.3666	325.7999	1.0665	0.9023	0.3707	312.6026
30.00	0.8593	0.8235	0.3543	327.6133	0.9614	0.8446	0.3568	315.3799
40.00	0.7900	0.7798	0.3428	328.3233	0.8759	0.7950	0.3439	316.8273
50.00	0.7316	0.7413	0.3320	328.1038	0.8050	0.7518	0.3319	317.1737
60.00	0.6815	0.7070	0.3219	327.0880	0.7453	0.7139	0.3207	316.5897
70.00	0.6382	0.6762	0.3124	325.3801	0.6941	0.6801	0.3102	315.2055
80.00	0.6003	0.6485	0.3034	323.0632	0.6499	0.6499	0.3005	313.1231
90.00	0.5669	0.6232	0.2950	320.2044	0.6112	0.6225	0.2912	310.4237
100.00	0.5372	0.6001	0.2870	316.8590	0.5771	0.5977	0.2826	307.1732

Table S8. Derived thermodynamic properties for Bio 60-PD40 (grape seed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.6233	1.1075	0.4028	281.7592
5.00	1.4977	1.0561	0.3944	286.3430
10.00	1.3889	1.0094	0.3859	290.2511
20.00	1.2145	0.9293	0.3697	296.1577
30.00	1.0805	0.8631	0.3545	300.0285
40.00	0.9743	0.8072	0.3404	302.2963
50.00	0.8880	0.7593	0.3274	303.2623
60.00	0.8164	0.7176	0.3153	303.1440
70.00	0.7560	0.6809	0.3041	302.1039
80.00	0.7043	0.6482	0.2937	300.2663
90.00	0.6595	0.6189	0.2839	297.7288
100.00	0.6204	0.5925	0.2747	294.5691

Table S9. Derived thermodynamic properties for Bio 80-PD20 (grape seed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.6846	0.8168	0.3259	349.6778	0.7645	0.8360	0.3321	342.3577
5.00	0.6609	0.7993	0.3222	349.5140	0.7351	0.8158	0.3276	342.5109
10.00	0.6385	0.7826	0.3187	349.3011	0.7075	0.7966	0.3235	342.6118
20.00	0.5981	0.7523	0.3125	348.7439	0.6583	0.7624	0.3162	342.6544
30.00	0.5627	0.7257	0.3072	348.0212	0.6158	0.7325	0.3101	342.4983
40.00	0.5315	0.7019	0.3027	347.1438	0.5787	0.7062	0.3049	342.1574
50.00	0.5037	0.6807	0.2988	346.1212	0.5460	0.6828	0.3004	341.6440
60.00	0.4788	0.6615	0.2954	344.9615	0.5169	0.6619	0.2965	340.9687
70.00	0.4564	0.6440	0.2924	343.6723	0.4910	0.6430	0.2932	340.1409
80.00	0.4360	0.6281	0.2898	342.2601	0.4676	0.6259	0.2903	339.1691
90.00	0.4175	0.6135	0.2875	340.7311	0.4465	0.6103	0.2877	338.0607
100.00	0.4006	0.6000	0.2855	339.0905	0.4273	0.5960	0.2855	336.8225

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8572	0.8560	0.3359	332.5632	0.9652	0.8768	0.3376	320.7052
5.00	0.8205	0.8326	0.3307	333.0476	0.9188	0.8496	0.3315	321.5506
10.00	0.7863	0.8106	0.3258	333.4744	0.8761	0.8245	0.3259	322.3314
20.00	0.7260	0.7718	0.3174	334.1359	0.8021	0.7806	0.3164	323.6610
30.00	0.6748	0.7384	0.3104	334.5590	0.7401	0.7434	0.3086	324.7050
40.00	0.6306	0.7093	0.3046	334.7619	0.6875	0.7115	0.3022	325.4875
50.00	0.5921	0.6838	0.2996	334.7606	0.6421	0.6837	0.2968	326.0288
60.00	0.5582	0.6611	0.2953	334.5686	0.6026	0.6592	0.2922	326.3466
70.00	0.5282	0.6408	0.2917	334.1980	0.5679	0.6375	0.2883	326.4557
80.00	0.5013	0.6225	0.2885	333.6592	0.5372	0.6181	0.2849	326.3694
90.00	0.4772	0.6059	0.2857	332.9617	0.5097	0.6006	0.2820	326.0993
100.00	0.4555	0.5908	0.2833	332.1138	0.4851	0.5847	0.2794	325.6557

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.0908	0.8984	0.3373	307.2377	1.2367	0.9209	0.3355	292.6627
5.00	1.0320	0.8670	0.3304	308.4997	1.1617	0.8848	0.3277	294.4366
10.00	0.9785	0.8383	0.3241	309.6879	1.0944	0.8522	0.3209	296.1257
20.00	0.8872	0.7889	0.3136	311.7846	0.9817	0.7970	0.3096	299.1673
30.00	0.8122	0.7477	0.3052	313.5398	0.8909	0.7519	0.3009	301.8015
40.00	0.7494	0.7129	0.2983	314.9852	0.8162	0.7143	0.2939	304.0697
50.00	0.6960	0.6829	0.2926	316.1470	0.7535	0.6823	0.2882	306.0055
60.00	0.6500	0.6568	0.2879	317.0473	0.7002	0.6548	0.2835	307.6369
70.00	0.6101	0.6338	0.2839	317.7050	0.6543	0.6307	0.2796	308.9876
80.00	0.5749	0.6134	0.2805	318.1366	0.6143	0.6095	0.2764	310.0777
90.00	0.5438	0.5951	0.2775	318.3564	0.5791	0.5906	0.2736	310.9248
100.00	0.5160	0.5786	0.2750	318.3769	0.5479	0.5736	0.2712	311.5442

Table S10. Derived thermodynamic properties for Bio 80-PD20 (grape seed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v $kJ·kg^{-1}·K^{-1}$	p_{int} MPa
0.10	1.4054	0.9444	0.3324	277.5351
5.00	1.3094	0.9032	0.3241	279.9767
10.00	1.2246	0.8665	0.3169	282.3211
20.00	1.0855	0.8055	0.3055	286.6054
30.00	0.9759	0.7568	0.2969	290.4055
40.00	0.8873	0.7168	0.2902	293.7748
50.00	0.8141	0.6832	0.2849	296.7563
60.00	0.7525	0.6546	0.2807	299.3851
70.00	0.7000	0.6298	0.2773	301.6904
80.00	0.6547	0.6081	0.2745	303.6971
90.00	0.6152	0.5888	0.2722	305.4264
100.00	0.5804	0.5716	0.2703	306.8968

Table S11. Derived thermodynamic properties for Bio 100-PD0 (grape seed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.6740	0.8079	0.3212	351.3299	0.7514	0.8277	0.3283	344.8445
5.00	0.6511	0.7909	0.3176	351.0857	0.7231	0.8081	0.3240	344.9376
10.00	0.6294	0.7747	0.3141	350.7923	0.6965	0.7895	0.3199	344.9788
20.00	0.5903	0.7452	0.3081	350.0776	0.6489	0.7562	0.3129	344.9067
30.00	0.5559	0.7191	0.3029	349.2020	0.6077	0.7271	0.3069	344.6412
40.00	0.5256	0.6959	0.2985	348.1758	0.5717	0.7014	0.3019	344.1959
50.00	0.4985	0.6751	0.2946	347.0080	0.5399	0.6785	0.2975	343.5823
60.00	0.4742	0.6562	0.2912	345.7066	0.5116	0.6580	0.2938	342.8108
70.00	0.4522	0.6391	0.2883	344.2786	0.4862	0.6395	0.2905	341.8904
80.00	0.4323	0.6234	0.2857	342.7306	0.4634	0.6227	0.2876	340.8293
90.00	0.4142	0.6090	0.2834	341.0684	0.4427	0.6073	0.2851	339.6346
100.00	0.3976	0.5958	0.2814	339.2971	0.4238	0.5932	0.2829	338.3130
P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8410	0.8483	0.3333	335.9098	0.9449	0.8696	0.3363	324.9287
5.00	0.8058	0.8256	0.3282	336.3613	0.9006	0.8436	0.3304	325.7767
10.00	0.7729	0.8044	0.3236	336.7567	0.8597	0.8193	0.3251	326.5626
20.00	0.7148	0.7668	0.3155	337.3608	0.7886	0.7769	0.3161	327.9096
30.00	0.6652	0.7343	0.3088	337.7331	0.7288	0.7408	0.3087	328.9789
40.00	0.6224	0.7060	0.3031	337.8911	0.6778	0.7098	0.3025	329.7938
50.00	0.5850	0.6810	0.2983	337.8500	0.6338	0.6827	0.2973	330.3736
60.00	0.5520	0.6588	0.2942	337.6229	0.5955	0.6588	0.2929	330.7351
70.00	0.5227	0.6389	0.2906	337.2212	0.5617	0.6376	0.2892	330.8928
80.00	0.4965	0.6210	0.2875	336.6552	0.5317	0.6186	0.2859	330.8594
90.00	0.4729	0.6047	0.2848	335.9338	0.5049	0.6014	0.2832	330.6461
100.00	0.4516	0.5898	0.2825	335.0652	0.4808	0.5858	0.2807	330.2628
P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.0652	0.8919	0.3375	312.3484	1.2043	0.9152	0.3371	298.6659
5.00	1.0093	0.8619	0.3309	313.6577	1.1333	0.8808	0.3299	300.5419
10.00	0.9583	0.8343	0.3250	314.8975	1.0694	0.8496	0.3235	302.3394
20.00	0.8709	0.7867	0.3151	317.1059	0.9619	0.7966	0.3130	305.6084
30.00	0.7987	0.7470	0.3071	318.9827	0.8748	0.7532	0.3049	308.4821
40.00	0.7381	0.7132	0.3007	320.5580	0.8029	0.7168	0.2984	310.9998
50.00	0.6864	0.6840	0.2953	321.8568	0.7424	0.6858	0.2931	313.1936
60.00	0.6418	0.6586	0.2908	322.9004	0.6907	0.6590	0.2888	315.0903
70.00	0.6029	0.6361	0.2870	323.7070	0.6461	0.6355	0.2852	316.7125
80.00	0.5687	0.6161	0.2838	324.2923	0.6072	0.6148	0.2823	318.0797
90.00	0.5383	0.5982	0.2810	324.6702	0.5729	0.5963	0.2797	319.2088
100.00	0.5111	0.5820	0.2787	324.8528	0.5424	0.5796	0.2776	320.1146

Table S12. Derived thermodynamic properties for Bio 100-PD0 (grape seed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.3640	0.9394	0.3357	284.4325
5.00	1.2737	0.9004	0.3281	287.0408
10.00	1.1937	0.8655	0.3215	289.5608
20.00	1.0615	0.8073	0.3110	294.2095
30.00	0.9568	0.7605	0.3032	298.3887
40.00	0.8717	0.7219	0.2972	302.1492
50.00	0.8011	0.6894	0.2925	305.5319
60.00	0.7416	0.6616	0.2887	308.5702
70.00	0.6907	0.6375	0.2857	311.2923
80.00	0.6467	0.6163	0.2833	313.7220
90.00	0.6082	0.5975	0.2814	315.8798
100.00	0.5742	0.5807	0.2798	317.7836

Table S13. Derived thermodynamic properties for Bio 20-PD80 (corn).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.7333	0.8426	0.3347	336.7310	0.8225	0.8652	0.3418	329.3067
5.00	0.7056	0.8233	0.3308	337.0299	0.7878	0.8425	0.3371	329.9164
10.00	0.6795	0.8049	0.3273	337.2835	0.7553	0.8213	0.3328	330.4756
20.00	0.6329	0.7721	0.3212	337.6429	0.6982	0.7836	0.3253	331.4143
30.00	0.5925	0.7434	0.3161	337.8177	0.6495	0.7511	0.3192	332.1298
40.00	0.5572	0.7181	0.3119	337.8207	0.6074	0.7228	0.3141	332.6392
50.00	0.5260	0.6956	0.3083	337.6631	0.5707	0.6979	0.3099	332.9569
60.00	0.4983	0.6754	0.3053	337.3546	0.5383	0.6758	0.3063	333.0957
70.00	0.4735	0.6572	0.3027	336.9040	0.5096	0.6559	0.3032	333.0667
80.00	0.4512	0.6407	0.3006	336.3190	0.4839	0.6381	0.3007	332.8797
90.00	0.4309	0.6256	0.2987	335.6065	0.4608	0.6218	0.2985	332.5433
100.00	0.4125	0.6118	0.2971	334.7729	0.4399	0.6070	0.2966	332.0654

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.9277	0.8887	0.3462	319.0430	1.0527	0.9132	0.3477	306.2588
5.00	0.8838	0.8620	0.3404	319.9436	0.9965	0.8816	0.3406	307.4309
10.00	0.8432	0.8372	0.3351	320.7855	0.9453	0.8526	0.3342	308.5322
20.00	0.7728	0.7939	0.3261	322.2507	0.8578	0.8027	0.3235	310.4686
30.00	0.7136	0.7571	0.3188	323.4464	0.7857	0.7611	0.3149	312.0798
40.00	0.6633	0.7255	0.3128	324.3951	0.7253	0.7258	0.3079	313.3955
50.00	0.6199	0.6980	0.3078	325.1158	0.6739	0.6955	0.3022	314.4405
60.00	0.5820	0.6737	0.3036	325.6249	0.6296	0.6690	0.2973	315.2360
70.00	0.5488	0.6522	0.3001	325.9364	0.5910	0.6457	0.2933	315.7997
80.00	0.5192	0.6329	0.2970	326.0628	0.5571	0.6250	0.2898	316.1472
90.00	0.4929	0.6155	0.2945	326.0150	0.5271	0.6064	0.2868	316.2922
100.00	0.4692	0.5997	0.2923	325.8026	0.5002	0.5896	0.2843	316.2466

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.2021	0.9388	0.3464	291.3143	1.3817	0.9655	0.3423	274.6151
5.00	1.1294	0.9011	0.3378	292.7428	1.2866	0.9205	0.3320	276.2972
10.00	1.0641	0.8671	0.3301	294.0839	1.2026	0.8806	0.3230	277.8699
20.00	0.9547	0.8096	0.3175	296.4417	1.0650	0.8144	0.3084	280.6196
30.00	0.8665	0.7626	0.3076	298.4071	0.9568	0.7615	0.2971	282.8959
40.00	0.7939	0.7234	0.2996	300.0196	0.8694	0.7181	0.2882	284.7514
50.00	0.7330	0.6901	0.2931	301.3115	0.7973	0.6818	0.2810	286.2282
60.00	0.6812	0.6614	0.2876	302.3099	0.7367	0.6509	0.2750	287.3608
70.00	0.6365	0.6363	0.2830	303.0373	0.6850	0.6241	0.2699	288.1777
80.00	0.5976	0.6142	0.2791	303.5132	0.6404	0.6006	0.2657	288.7032
90.00	0.5633	0.5945	0.2758	303.7546	0.6016	0.5799	0.2620	288.9581
100.00	0.5330	0.5768	0.2729	303.7762	0.5674	0.5613	0.2588	288.9605

Table S14. Derived thermodynamic properties for Bio 20-PD80 (corn), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v $kJ \cdot kg^{-1} \cdot K^{-1}$	p_{int} MPa
0.10	1.5988	0.9934	0.3356	256.6179
5.00	1.4728	0.9396	0.3235	258.5765
10.00	1.3640	0.8927	0.3130	260.3974
20.00	1.1901	0.8168	0.2966	263.5559
30.00	1.0571	0.7577	0.2841	266.1440
40.00	0.9519	0.7102	0.2744	268.2315
50.00	0.8666	0.6709	0.2666	269.8729
60.00	0.7959	0.6379	0.2602	271.1119
70.00	0.7364	0.6095	0.2548	271.9846
80.00	0.6855	0.5849	0.2503	272.5211
90.00	0.6415	0.5633	0.2464	272.7467
100.00	0.6031	0.5441	0.2430	272.6834

Table S15. Derived thermodynamic properties for Bio 40-PD80 (corn).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	10^{-3} K^{-1}	$kJ·kg^{-1}·K^{-1}$	MPa	GPa^{-1}	10^{-3} K^{-1}	$kJ·kg^{-1}·K^{-1}$	MPa
0.10	0.7141	0.8287	0.3279	340.1175	0.8008	0.8469	0.3317	331.0869
5.00	0.6877	0.8098	0.3240	340.1787	0.7678	0.8250	0.3270	331.4804
10.00	0.6628	0.7918	0.3203	340.1917	0.7369	0.8044	0.3227	331.8219
20.00	0.6183	0.7595	0.3139	340.0758	0.6824	0.7677	0.3152	332.3329
30.00	0.5796	0.7312	0.3085	339.7822	0.6357	0.7361	0.3090	332.6300
40.00	0.5457	0.7061	0.3039	339.3229	0.5952	0.7084	0.3038	332.7292
50.00	0.5157	0.6838	0.3000	338.7085	0.5598	0.6840	0.2994	332.6442
60.00	0.4890	0.6638	0.2967	337.9484	0.5286	0.6623	0.2957	332.3869
70.00	0.4650	0.6457	0.2938	337.0507	0.5008	0.6428	0.2925	331.9680
80.00	0.4434	0.6293	0.2913	336.0230	0.4759	0.6252	0.2897	331.3967
90.00	0.4238	0.6142	0.2891	334.8717	0.4535	0.6092	0.2874	330.6813
100.00	0.4059	0.6004	0.2873	333.6029	0.4332	0.5946	0.2853	329.8292
	T= 333.15 K				T= 353.15 K			
P/MPa	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	10^{-3} K^{-1}	$kJ·kg^{-1}·K^{-1}$	MPa	GPa^{-1}	10^{-3} K^{-1}	$kJ·kg^{-1}·K^{-1}$	MPa
0.10	0.9016	0.8658	0.3332	319.8299	1.0188	0.8855	0.3328	306.8398
5.00	0.8600	0.8404	0.3277	320.5841	0.9660	0.8562	0.3265	308.0084
10.00	0.8215	0.8168	0.3228	321.2804	0.9177	0.8292	0.3209	309.1117
20.00	0.7543	0.7754	0.3143	322.4650	0.8348	0.7826	0.3114	311.0672
30.00	0.6978	0.7402	0.3073	323.3929	0.7663	0.7436	0.3039	312.7151
40.00	0.6495	0.7098	0.3016	324.0849	0.7086	0.7104	0.2978	314.0830
50.00	0.6077	0.6832	0.2968	324.5590	0.6593	0.6818	0.2928	315.1939
60.00	0.5712	0.6598	0.2927	324.8305	0.6167	0.6568	0.2886	316.0674
70.00	0.5390	0.6389	0.2893	324.9126	0.5796	0.6347	0.2850	316.7202
80.00	0.5104	0.6202	0.2864	324.8171	0.5468	0.6150	0.2821	317.1668
90.00	0.4849	0.6033	0.2839	324.5543	0.5177	0.5973	0.2795	317.4202
100.00	0.4618	0.5880	0.2817	324.1332	0.4917	0.5813	0.2774	317.4914
	T= 373.15 K				T= 393.15 K			
P/MPa	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	10^{-3} K^{-1}	$kJ·kg^{-1}·K^{-1}$	MPa	GPa^{-1}	10^{-3} K^{-1}	$kJ·kg^{-1}·K^{-1}$	MPa
0.10	1.1547	0.9059	0.3306	292.6568	1.3113	0.9271	0.3272	277.8732
5.00	1.0873	0.8722	0.3236	294.3338	1.2252	0.8888	0.3198	280.2131
10.00	1.0266	0.8416	0.3175	295.9367	1.1487	0.8545	0.3134	282.4691
20.00	0.9241	0.7896	0.3075	298.8397	1.0222	0.7972	0.3033	286.6170
30.00	0.8411	0.7469	0.2996	301.3752	0.9218	0.7511	0.2956	290.3275
40.00	0.7723	0.7111	0.2934	303.5794	0.8401	0.7130	0.2898	293.6477
50.00	0.7144	0.6806	0.2884	305.4819	0.7723	0.6809	0.2852	296.6153
60.00	0.6649	0.6541	0.2843	307.1074	0.7151	0.6535	0.2816	299.2614
70.00	0.6221	0.6310	0.2809	308.4769	0.6662	0.6297	0.2787	301.6122
80.00	0.5848	0.6106	0.2781	309.6085	0.6238	0.6087	0.2764	303.6898
90.00	0.5518	0.5923	0.2758	310.5178	0.5867	0.5902	0.2746	305.5132
100.00	0.5226	0.5759	0.2738	311.2185	0.5539	0.5736	0.2731	307.0991

Table S16. Derived thermodynamic properties for Bio 40-PD60 (corn), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.4899	0.9493	0.3232	263.1389
5.00	1.3797	0.9063	0.3159	266.3838
10.00	1.2836	0.8685	0.3098	269.5355
20.00	1.1280	0.8065	0.3004	275.4028
30.00	1.0074	0.7577	0.2938	280.7519
40.00	0.9110	0.7181	0.2890	285.6435
50.00	0.8322	0.6851	0.2855	290.1255
60.00	0.7665	0.6572	0.2829	294.2366
70.00	0.7109	0.6332	0.2811	298.0089
80.00	0.6631	0.6123	0.2797	301.4695
90.00	0.6216	0.5938	0.2789	304.6412
100.00	0.5853	0.5773	0.2783	307.5439

Table S17. Derived thermodynamic properties for Bio 60-PD40 (corn).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.7101	0.8257	0.3245	340.7489	0.7961	0.8457	0.3298	332.5405
5.00	0.6839	0.8069	0.3207	340.8665	0.7633	0.8239	0.3253	333.0239
10.00	0.6591	0.7891	0.3171	340.9373	0.7326	0.8035	0.3211	333.4571
20.00	0.6148	0.7570	0.3110	340.9374	0.6783	0.7672	0.3139	334.1519
30.00	0.5764	0.7289	0.3058	340.7605	0.6319	0.7358	0.3080	334.6332
40.00	0.5426	0.7042	0.3014	340.4184	0.5917	0.7084	0.3030	334.9169
50.00	0.5128	0.6821	0.2976	339.9219	0.5565	0.6842	0.2988	335.0167
60.00	0.4862	0.6622	0.2944	339.2801	0.5254	0.6626	0.2953	334.9446
70.00	0.4623	0.6443	0.2917	338.5013	0.4978	0.6433	0.2923	334.7110
80.00	0.4408	0.6280	0.2893	337.5929	0.4730	0.6259	0.2897	334.3253
90.00	0.4213	0.6131	0.2873	336.5614	0.4507	0.6100	0.2875	333.7957
100.00	0.4035	0.5994	0.2855	335.4128	0.4305	0.5955	0.2856	333.1297

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8961	0.8665	0.3329	322.0343	1.0124	0.8881	0.3340	309.7037
5.00	0.8547	0.8413	0.3276	322.9151	0.9599	0.8590	0.3280	311.0385
10.00	0.8164	0.8179	0.3228	323.7407	0.9119	0.8323	0.3225	312.3111
20.00	0.7497	0.7768	0.3147	325.1838	0.8296	0.7860	0.3135	314.6047
30.00	0.6935	0.7418	0.3080	326.3699	0.7614	0.7473	0.3063	316.5899
40.00	0.6455	0.7117	0.3025	327.3203	0.7041	0.7144	0.3005	318.2945
50.00	0.6039	0.6853	0.2980	328.0525	0.6551	0.6859	0.2957	319.7414
60.00	0.5677	0.6621	0.2942	328.5821	0.6128	0.6611	0.2918	320.9502
70.00	0.5357	0.6414	0.2910	328.9222	0.5759	0.6392	0.2885	321.9378
80.00	0.5073	0.6229	0.2882	329.0846	0.5434	0.6196	0.2858	322.7188
90.00	0.4818	0.6061	0.2859	329.0796	0.5145	0.6021	0.2835	323.3059
100.00	0.4590	0.5909	0.2839	328.9164	0.4886	0.5862	0.2816	323.7104

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.1473	0.9106	0.3333	296.0730	1.3031	0.9341	0.3314	281.7229
5.00	1.0804	0.8772	0.3266	297.9570	1.2175	0.8959	0.3243	284.3100
10.00	1.0200	0.8468	0.3207	299.7706	1.1415	0.8618	0.3182	286.8174
20.00	0.9183	0.7951	0.3111	303.0936	1.0158	0.8047	0.3084	291.4655
30.00	0.8358	0.7527	0.3036	306.0474	0.9160	0.7588	0.3012	295.6732
40.00	0.7674	0.7171	0.2977	308.6683	0.8349	0.7209	0.2957	299.4877
50.00	0.7098	0.6867	0.2930	310.9861	0.7675	0.6890	0.2914	302.9472
60.00	0.6607	0.6605	0.2892	313.0256	0.7106	0.6617	0.2882	306.0829
70.00	0.6182	0.6375	0.2862	314.8079	0.6619	0.6380	0.2856	308.9211
80.00	0.5810	0.6172	0.2836	316.3510	0.6198	0.6172	0.2837	311.4842
90.00	0.5483	0.5990	0.2816	317.6708	0.5829	0.5987	0.2821	313.7913
100.00	0.5192	0.5827	0.2799	318.7811	0.5504	0.5822	0.2809	315.8591

Table S18. Derived thermodynamic properties for Bio 60-PD40 (corn), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.4811	0.9586	0.3289	267.2966
5.00	1.3716	0.9157	0.3218	270.8261
10.00	1.2760	0.8779	0.3159	274.2666
20.00	1.1212	0.8161	0.3069	280.7075
30.00	1.0013	0.7674	0.3007	286.6252
40.00	0.9055	0.7278	0.2963	292.0810
50.00	0.8272	0.6950	0.2931	297.1232
60.00	0.7618	0.6671	0.2910	301.7909
70.00	0.7065	0.6432	0.2895	306.1166
80.00	0.6590	0.6223	0.2886	310.1275
90.00	0.6178	0.6039	0.2880	313.8468
100.00	0.5816	0.5875	0.2878	317.2945

Table S19. Derived thermodynamic properties for Bio 80-PD20 (corn).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.6685	0.8770	0.3849	384.4955	0.7502	0.8940	0.3875	373.0695
5.00	0.6463	0.8593	0.3814	384.7526	0.7224	0.8731	0.3827	373.4827
10.00	0.6251	0.8423	0.3773	384.9678	0.6961	0.8532	0.3779	373.8469
20.00	0.5870	0.8114	0.3706	385.2617	0.6491	0.8175	0.3697	374.4103
30.00	0.5534	0.7841	0.3649	385.3839	0.6083	0.7863	0.3619	374.7670
40.00	0.5236	0.7597	0.3601	385.3450	0.5726	0.7587	0.3560	374.9314
50.00	0.4970	0.7377	0.3559	385.1546	0.5411	0.7342	0.3509	374.9157
60.00	0.4731	0.7178	0.3523	384.8211	0.5129	0.7121	0.3465	374.7309
70.00	0.4515	0.6997	0.3491	384.3520	0.4877	0.6921	0.3422	374.3866
80.00	0.4319	0.6832	0.3464	383.7543	0.4650	0.6740	0.3388	373.8914
90.00	0.4140	0.6680	0.3440	383.0339	0.4444	0.6574	0.3358	373.2530
100.00	0.3976	0.6539	0.3419	382.1964	0.4257	0.6422	0.3331	372.4784

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8474	0.9117	0.3864	358.3374	0.9638	0.9300	0.3816	340.6705
5.00	0.8120	0.8868	0.3805	358.8428	0.9183	0.9002	0.3739	341.1917
10.00	0.7789	0.8634	0.3745	359.2885	0.8763	0.8725	0.3664	341.6380
20.00	0.7207	0.8220	0.3641	359.9800	0.8033	0.8241	0.3536	342.2880
30.00	0.6709	0.7862	0.3554	360.4230	0.7421	0.7830	0.3428	342.6389
40.00	0.6278	0.7550	0.3478	360.6363	0.6899	0.7477	0.3338	342.7158
50.00	0.5902	0.7274	0.3414	360.6361	0.6449	0.7168	0.3260	342.5397
60.00	0.5570	0.7029	0.3358	360.4364	0.6057	0.6897	0.3193	342.1289
70.00	0.5275	0.6810	0.3309	360.0495	0.5712	0.6655	0.3134	341.4989
80.00	0.5012	0.6612	0.3266	359.4863	0.5406	0.6439	0.3083	340.6635
90.00	0.4775	0.6431	0.3228	358.7565	0.5132	0.6244	0.3037	339.6348
100.00	0.4560	0.6267	0.3194	357.8687	0.4887	0.6066	0.2996	338.4234

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.1047	0.9490	0.3735	320.4714	1.2770	0.9689	0.3616	298.1764
5.00	1.0454	0.9130	0.3633	320.9182	1.1984	0.9250	0.3488	298.4448
10.00	0.9913	0.8801	0.3541	321.2692	1.1280	0.8854	0.3375	298.5893
20.00	0.8991	0.8233	0.3384	321.6763	1.0104	0.8186	0.3187	298.5187
30.00	0.8233	0.7760	0.3256	321.7232	0.9159	0.7642	0.3036	298.0137
40.00	0.7598	0.7360	0.3148	321.4432	0.8384	0.7189	0.2910	297.1189
50.00	0.7058	0.7015	0.3056	320.8640	0.7734	0.6804	0.2803	295.8705
60.00	0.6593	0.6715	0.2977	320.0089	0.7183	0.6473	0.2711	294.2987
70.00	0.6189	0.6450	0.2908	318.8979	0.6708	0.6184	0.2631	292.4287
80.00	0.5833	0.6215	0.2847	317.5482	0.6296	0.5929	0.2561	290.2822
90.00	0.5518	0.6004	0.2792	315.9750	0.5933	0.5702	0.2498	287.8779
100.00	0.5237	0.5813	0.2744	314.1914	0.5612	0.5499	0.2441	285.2323

Table S20. Derived thermodynamic properties for Bio 80-PD20 (corn), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P $10^{-3}\,K^{-1}$	c_p-c_v $kJ\cdot kg^{-1}\cdot K^{-1}$	p_{int} MPa
0.10	1.4900	0.9895	0.3463	274.2601
5.00	1.3841	0.9355	0.3305	274.2335
10.00	1.2912	0.8877	0.3170	274.0462
20.00	1.1398	0.8089	0.2947	273.2316
30.00	1.0214	0.7464	0.2771	271.8926
40.00	0.9264	0.6953	0.2626	270.0889
50.00	0.8482	0.6526	0.2505	267.8681
60.00	0.7828	0.6163	0.2401	265.2689
70.00	0.7272	0.5849	0.2311	262.3233
80.00	0.6793	0.5575	0.2232	259.0584
90.00	0.6376	0.5332	0.2162	255.4973
100.00	0.6010	0.5116	0.2097	251.6602

Table S21. Derived thermodynamic properties for Bio 100-PD0 (corn).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.6666	0.8247	0.3386	362.5894	0.7450	0.8380	0.3398	352.1674
5.00	0.6447	0.8074	0.3344	362.1232	0.7178	0.8182	0.3350	351.9779
10.00	0.6239	0.7909	0.3305	361.6036	0.6921	0.7994	0.3305	351.7317
20.00	0.5862	0.7608	0.3236	360.4376	0.6461	0.7656	0.3225	351.0867
30.00	0.5531	0.7341	0.3175	359.1118	0.6061	0.7359	0.3157	350.2509
40.00	0.5236	0.7102	0.3122	357.6362	0.5710	0.7097	0.3098	349.2371
50.00	0.4973	0.6887	0.3076	356.0194	0.5399	0.6863	0.3046	348.0567
60.00	0.4736	0.6692	0.3035	354.2693	0.5122	0.6652	0.3001	346.7196
70.00	0.4522	0.6515	0.2999	352.3929	0.4873	0.6461	0.2962	345.2346
80.00	0.4327	0.6353	0.2966	350.3964	0.4648	0.6288	0.2926	343.6097
90.00	0.4149	0.6203	0.2937	348.2854	0.4445	0.6129	0.2895	341.8518
100.00	0.3986	0.6065	0.2911	346.0653	0.4259	0.5983	0.2867	339.9675

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8350	0.8518	0.3389	339.7704	0.9379	0.8660	0.3363	325.9843
5.00	0.8009	0.8292	0.3334	339.8995	0.8952	0.8403	0.3302	326.5071
10.00	0.7691	0.8079	0.3283	339.9675	0.8556	0.8164	0.3247	326.9636
20.00	0.7128	0.7700	0.3195	339.9206	0.7866	0.7744	0.3151	327.6581
30.00	0.6645	0.7373	0.3120	339.6462	0.7283	0.7385	0.3072	328.0824
40.00	0.6226	0.7086	0.3056	339.1613	0.6785	0.7075	0.3006	328.2586
50.00	0.5860	0.6833	0.3001	338.4804	0.6353	0.6804	0.2949	328.2053
60.00	0.5536	0.6607	0.2953	337.6162	0.5976	0.6564	0.2901	327.9385
70.00	0.5247	0.6404	0.2911	336.5798	0.5642	0.6351	0.2859	327.4721
80.00	0.4989	0.6220	0.2874	335.3811	0.5346	0.6159	0.2822	326.8184
90.00	0.4756	0.6054	0.2842	334.0288	0.5081	0.5985	0.2790	325.9882
100.00	0.4545	0.5901	0.2812	332.5308	0.4842	0.5827	0.2761	324.9911

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.0549	0.8807	0.3325	311.4348	1.1865	0.8960	0.3281	296.7906
5.00	1.0012	0.8518	0.3261	312.4746	1.1190	0.8639	0.3217	298.5391
10.00	0.9520	0.8252	0.3202	313.4433	1.0580	0.8348	0.3159	300.2126
20.00	0.8675	0.7791	0.3104	315.1199	0.9547	0.7850	0.3064	303.2501
30.00	0.7973	0.7403	0.3024	316.4769	0.8706	0.7439	0.2990	305.9113
40.00	0.7381	0.7072	0.2959	317.5427	0.8008	0.7093	0.2931	308.2325
50.00	0.6875	0.6786	0.2904	318.3411	0.7418	0.6797	0.2884	310.2438
60.00	0.6437	0.6536	0.2858	318.8921	0.6913	0.6540	0.2845	311.9702
70.00	0.6054	0.6314	0.2819	319.2131	0.6475	0.6315	0.2812	313.4331
80.00	0.5716	0.6117	0.2785	319.3192	0.6092	0.6115	0.2786	314.6508
90.00	0.5416	0.5939	0.2756	319.2235	0.5754	0.5937	0.2763	315.6393
100.00	0.5147	0.5778	0.2730	318.9377	0.5454	0.5776	0.2744	316.4125

Table S22. Derived thermodynamic properties for Bio 100-PD0 (corn), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v $kJ\cdot kg^{-1}\cdot K^{-1}$	p_{int} MPa
0.10	1.3317	0.9118	0.3239	282.7677
5.00	1.2473	0.8771	0.3180	285.5082
10.00	1.1720	0.8459	0.3129	288.1728
20.00	1.0468	0.7934	0.3048	293.1363
30.00	0.9469	0.7509	0.2989	297.6595
40.00	0.8651	0.7157	0.2945	301.7884
50.00	0.7969	0.6859	0.2911	305.5606
60.00	0.7392	0.6602	0.2886	309.0068
70.00	0.6897	0.6379	0.2868	312.1531
80.00	0.6466	0.6183	0.2854	315.0216
90.00	0.6089	0.6008	0.2844	317.6315
100.00	0.5756	0.5851	0.2837	319.9993

Table S23. Derived thermodynamic properties for Bio 20-PD80 (linseed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.7343	0.8232	0.3187	328.5792	0.8242	0.8454	0.3252	321.0818
5.00	0.7061	0.8036	0.3147	328.6495	0.7889	0.8226	0.3204	321.5246
10.00	0.6796	0.7851	0.3110	328.6704	0.7560	0.8013	0.3161	321.9141
20.00	0.6324	0.7519	0.3046	328.5661	0.6981	0.7635	0.3085	322.5152
30.00	0.5915	0.7230	0.2992	328.2793	0.6488	0.7311	0.3024	322.8956
40.00	0.5559	0.6975	0.2946	327.8228	0.6062	0.7029	0.2972	323.0723
50.00	0.5245	0.6749	0.2908	327.2078	0.5692	0.6781	0.2929	323.0599
60.00	0.4966	0.6546	0.2875	326.4441	0.5366	0.6560	0.2892	322.8709
70.00	0.4716	0.6363	0.2846	325.5402	0.5077	0.6363	0.2861	322.5164
80.00	0.4492	0.6198	0.2822	324.5040	0.4819	0.6186	0.2834	322.0062
90.00	0.4288	0.6047	0.2801	323.3422	0.4587	0.6025	0.2811	321.3489
100.00	0.4104	0.5908	0.2783	322.0611	0.4377	0.5878	0.2792	320.5523
	T= 333.15 K				T= 353.15 K			
P/MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.9293	0.8684	0.3294	311.2127	1.0523	0.8924	0.3314	299.4020
5.00	0.8847	0.8419	0.3238	312.0544	0.9954	0.8616	0.3250	300.6906
10.00	0.8435	0.8174	0.3187	312.8368	0.9436	0.8334	0.3192	301.9118
20.00	0.7722	0.7746	0.3101	314.1854	0.8554	0.7850	0.3096	304.0914
30.00	0.7124	0.7383	0.3032	315.2676	0.7828	0.7447	0.3020	305.9501
40.00	0.6616	0.7072	0.2974	316.1059	0.7221	0.7106	0.2958	307.5176
50.00	0.6178	0.6801	0.2927	316.7192	0.6705	0.6812	0.2908	308.8185
60.00	0.5798	0.6563	0.2887	317.1239	0.6261	0.6557	0.2867	309.8736
70.00	0.5463	0.6352	0.2854	317.3338	0.5874	0.6332	0.2832	310.7007
80.00	0.5167	0.6163	0.2826	317.3615	0.5535	0.6133	0.2803	311.3153
90.00	0.4902	0.5992	0.2801	317.2175	0.5234	0.5954	0.2779	311.7307
100.00	0.4665	0.5838	0.2781	316.9116	0.4966	0.5793	0.2759	311.9589
	T= 373.15 K				T= 393.15 K			
P/MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.1960	0.9174	0.3316	286.1329	1.3636	0.9436	0.3302	271.9471
5.00	1.1231	0.8817	0.3243	287.9510	1.2697	0.9024	0.3223	274.4313
10.00	1.0577	0.8495	0.3179	289.6915	1.1868	0.8659	0.3155	276.8260
20.00	0.9482	0.7950	0.3075	292.8535	1.0510	0.8052	0.3047	281.2287
30.00	0.8601	0.7506	0.2995	295.6298	0.9441	0.7569	0.2967	285.1691
40.00	0.7876	0.7136	0.2931	298.0595	0.8578	0.7172	0.2906	288.6986
50.00	0.7269	0.6821	0.2881	300.1744	0.7866	0.6840	0.2859	291.8582
60.00	0.6752	0.6550	0.2840	302.0012	0.7268	0.6557	0.2822	294.6814
70.00	0.6307	0.6314	0.2806	303.5622	0.6758	0.6312	0.2792	297.1964
80.00	0.5920	0.6106	0.2779	304.8766	0.6318	0.6097	0.2769	299.4266
90.00	0.5579	0.5920	0.2756	305.9609	0.5934	0.5907	0.2751	301.3925
100.00	0.5278	0.5754	0.2737	306.8297	0.5596	0.5738	0.2736	303.1117

Table S24. Derived thermodynamic properties for Bio 20-PD80 (linseed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.5574	0.9709	0.3279	257.4517
5.00	1.4361	0.9240	0.3197	260.8202
10.00	1.3312	0.8831	0.3129	264.0858
20.00	1.1630	0.8167	0.3026	270.1503
30.00	1.0340	0.7650	0.2953	275.6629
40.00	0.9318	0.7233	0.2901	280.6906
50.00	0.8488	0.6888	0.2863	285.2858
60.00	0.7799	0.6598	0.2835	289.4906
70.00	0.7219	0.6348	0.2815	293.3396
80.00	0.6722	0.6132	0.2800	296.8620
90.00	0.6293	0.5941	0.2790	300.0823
100.00	0.5917	0.5772	0.2784	303.0218

Table S25. Derived thermodynamic properties for Bio 40-PD80 (linseed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	$10^{-3}\,K^{-1}$	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa	GPa^{-1}	$10^{-3}\,K^{-1}$	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa
0.10	0.7227	0.8204	0.3176	332.6454	0.7227	0.8204	0.3176	332.6454
5.00	0.6957	0.8016	0.3139	332.7908	0.6957	0.8016	0.3139	332.7908
10.00	0.6702	0.7839	0.3106	332.8896	0.6702	0.7839	0.3106	332.8896
20.00	0.6246	0.7520	0.3047	332.9448	0.6246	0.7520	0.3047	332.9448
30.00	0.5851	0.7241	0.2998	332.8219	0.5851	0.7241	0.2998	332.8219
40.00	0.5505	0.6995	0.2957	332.5332	0.5505	0.6995	0.2957	332.5332
50.00	0.5199	0.6776	0.2922	332.0893	0.5199	0.6776	0.2922	332.0893
60.00	0.4927	0.6580	0.2893	331.4997	0.4927	0.6580	0.2893	331.4997
70.00	0.4683	0.6403	0.2868	330.7727	0.4683	0.6403	0.2868	330.7727
80.00	0.4464	0.6242	0.2846	329.9158	0.4464	0.6242	0.2846	329.9158
90.00	0.4265	0.6095	0.2828	328.9355	0.4265	0.6095	0.2828	328.9355
100.00	0.4083	0.5960	0.2812	327.8380	0.4083	0.5960	0.2812	327.8380

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	$10^{-3}\,K^{-1}$	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa	GPa^{-1}	$10^{-3}\,K^{-1}$	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa
0.10	0.9084	0.8645	0.3298	316.9554	1.0249	0.8880	0.3327	305.8646
5.00	0.8661	0.8393	0.3247	317.8710	0.9714	0.8588	0.3268	307.2130
10.00	0.8269	0.8160	0.3200	318.7315	0.9225	0.8320	0.3214	308.4989
20.00	0.7588	0.7750	0.3121	320.2431	0.8386	0.7856	0.3125	310.8168
30.00	0.7015	0.7401	0.3057	321.4962	0.7693	0.7468	0.3054	312.8243
40.00	0.6526	0.7101	0.3004	322.5122	0.7111	0.7139	0.2996	314.5492
50.00	0.6103	0.6839	0.2961	323.3090	0.6614	0.6854	0.2950	316.0150
60.00	0.5734	0.6608	0.2925	323.9022	0.6184	0.6606	0.2912	317.2414
70.00	0.5409	0.6402	0.2895	324.3053	0.5810	0.6387	0.2880	318.2455
80.00	0.5121	0.6218	0.2869	324.5301	0.5480	0.6192	0.2854	319.0420
90.00	0.4863	0.6052	0.2848	324.5868	0.5188	0.6018	0.2831	319.6437
100.00	0.4631	0.5901	0.2829	324.4849	0.4926	0.5860	0.2813	320.0621

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	$10^{-3}\,K^{-1}$	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa	GPa^{-1}	$10^{-3}\,K^{-1}$	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa
0.10	1.1610	0.9125	0.3337	293.1749	1.3197	0.9381	0.3330	279.3737
5.00	1.0928	0.8786	0.3269	295.0207	1.2323	0.8990	0.3255	281.8242
10.00	1.0313	0.8479	0.3209	296.7942	1.1547	0.8641	0.3190	284.1905
20.00	0.9278	0.7957	0.3111	300.0341	1.0267	0.8058	0.3086	288.5521
30.00	0.8439	0.7529	0.3035	302.9018	0.9253	0.7590	0.3008	292.4682
40.00	0.7746	0.7170	0.2975	305.4338	0.8429	0.7203	0.2949	295.9870
50.00	0.7162	0.6865	0.2927	307.6604	0.7745	0.6878	0.2902	299.1472
60.00	0.6664	0.6600	0.2888	309.6067	0.7169	0.6600	0.2866	301.9806
70.00	0.6233	0.6369	0.2857	311.2941	0.6676	0.6359	0.2837	304.5138
80.00	0.5857	0.6165	0.2831	312.7409	0.6249	0.6148	0.2814	306.7694
90.00	0.5526	0.5983	0.2810	313.9629	0.5876	0.5960	0.2796	308.7670
100.00	0.5232	0.5819	0.2792	314.9742	0.5547	0.5793	0.2782	310.5233

Table S26. Derived thermodynamic properties for Bio 40-PD60 (linseed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.5037	0.9649	0.3311	265.0070
5.00	1.3913	0.9201	0.3232	268.2345
10.00	1.2934	0.8808	0.3164	271.3641
20.00	1.1352	0.8166	0.3061	277.1758
30.00	1.0129	0.7660	0.2987	282.4565
40.00	0.9154	0.7251	0.2933	287.2686
50.00	0.8357	0.6911	0.2893	291.6616
60.00	0.7694	0.6623	0.2863	295.6754
70.00	0.7132	0.6376	0.2841	299.3429
80.00	0.6651	0.6160	0.2825	302.6920
90.00	0.6233	0.5970	0.2813	305.7461
100.00	0.5867	0.5801	0.2805	308.5256

Table S27. Derived thermodynamic properties for Bio 60-PD40 (linseed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.7110	0.8187	0.3180	337.4893	0.7916	0.8388	0.3256	331.7245
5.00	0.6847	0.8011	0.3151	338.0132	0.7591	0.8184	0.3220	332.5918
10.00	0.6598	0.7844	0.3124	338.4991	0.7288	0.7992	0.3187	333.4176
20.00	0.6154	0.7544	0.3078	339.3303	0.6750	0.7650	0.3130	334.8997
30.00	0.5769	0.7281	0.3041	339.9857	0.6290	0.7355	0.3085	336.1710
40.00	0.5431	0.7049	0.3010	340.4773	0.5891	0.7097	0.3048	337.2472
50.00	0.5132	0.6842	0.2986	340.8155	0.5542	0.6869	0.3018	338.1418
60.00	0.4866	0.6656	0.2965	341.0096	0.5234	0.6666	0.2994	338.8664
70.00	0.4627	0.6488	0.2949	341.0678	0.4959	0.6484	0.2974	339.4315
80.00	0.4411	0.6335	0.2936	340.9972	0.4714	0.6320	0.2958	339.8462
90.00	0.4216	0.6196	0.2926	340.8045	0.4492	0.6170	0.2945	340.1186
100.00	0.4038	0.6068	0.2917	340.4957	0.4292	0.6034	0.2935	340.2561
	T= 333.15 K				T= 353.15 K			
P/MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8857	0.8597	0.3308	323.2604	0.9961	0.8814	0.3335	312.3786
5.00	0.8453	0.8359	0.3263	324.4582	0.9453	0.8536	0.3280	313.8953
10.00	0.8078	0.8138	0.3222	325.6087	0.8987	0.8279	0.3231	315.3557
20.00	0.7424	0.7748	0.3154	327.7052	0.8186	0.7835	0.3150	318.0300
30.00	0.6872	0.7417	0.3100	329.5493	0.7522	0.7463	0.3086	320.4023
40.00	0.6400	0.7130	0.3056	331.1615	0.6961	0.7146	0.3034	322.4993
50.00	0.5991	0.6880	0.3021	332.5590	0.6482	0.6871	0.2993	324.3434
60.00	0.5634	0.6659	0.2992	333.7569	0.6067	0.6631	0.2959	325.9536
70.00	0.5319	0.6462	0.2968	334.7682	0.5705	0.6419	0.2932	327.3462
80.00	0.5038	0.6285	0.2949	335.6043	0.5385	0.6230	0.2909	328.5356
90.00	0.4787	0.6125	0.2933	336.2754	0.5101	0.6060	0.2891	329.5341
100.00	0.4561	0.5980	0.2921	336.7904	0.4846	0.5906	0.2876	330.3528
	T= 373.15 K				T= 393.15 K			
P/MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.1263	0.9040	0.3337	299.3936	1.2806	0.9276	0.3316	284.6559
5.00	1.0618	0.8713	0.3271	301.2219	1.1978	0.8891	0.3237	286.7989
10.00	1.0034	0.8416	0.3213	302.9814	1.1242	0.8545	0.3168	288.8562
20.00	0.9047	0.7909	0.3117	306.2030	1.0020	0.7967	0.3057	292.6119
30.00	0.8245	0.7492	0.3042	309.0635	0.9048	0.7501	0.2972	295.9360
40.00	0.7579	0.7141	0.2983	311.5978	0.8255	0.7115	0.2906	298.8743
50.00	0.7016	0.6841	0.2936	313.8347	0.7595	0.6789	0.2854	301.4638
60.00	0.6535	0.6581	0.2898	315.7983	0.7037	0.6510	0.2811	303.7350
70.00	0.6118	0.6354	0.2867	317.5092	0.6559	0.6268	0.2777	305.7134
80.00	0.5754	0.6152	0.2841	318.9849	0.6144	0.6055	0.2748	307.4208
90.00	0.5433	0.5973	0.2820	320.2408	0.5782	0.5866	0.2725	308.8759
100.00	0.5147	0.5811	0.2803	321.2904	0.5461	0.5697	0.2706	310.0952

Table S28. Derived thermodynamic properties for Bio 60-PD40 (linseed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.4642	0.9521	0.3272	268.5563
5.00	1.3571	0.9067	0.3179	271.0368
10.00	1.2634	0.8666	0.3100	273.4098
20.00	1.1115	0.8009	0.2974	277.7224
30.00	0.9935	0.7491	0.2880	281.5198
40.00	0.8990	0.7069	0.2808	284.8618
50.00	0.8217	0.6718	0.2751	287.7958
60.00	0.7572	0.6421	0.2705	290.3600
70.00	0.7024	0.6165	0.2669	292.5865
80.00	0.6554	0.5941	0.2638	294.5018
90.00	0.6146	0.5744	0.2613	296.1288
100.00	0.5788	0.5569	0.2593	297.4872

Table S29. Derived thermodynamic properties for Bio 80-PD20 (linseed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.6966	0.8250	0.3263	347.0847	0.7782	0.8469	0.3344	340.6922
5.00	0.6713	0.8071	0.3230	347.4560	0.7468	0.8262	0.3304	341.4521
10.00	0.6474	0.7902	0.3200	347.7866	0.7174	0.8068	0.3267	342.1685
20.00	0.6046	0.7596	0.3147	348.3090	0.6653	0.7721	0.3205	343.4331
30.00	0.5674	0.7328	0.3103	348.6573	0.6205	0.7420	0.3153	344.4877
40.00	0.5346	0.7091	0.3066	348.8432	0.5816	0.7157	0.3111	345.3479
50.00	0.5056	0.6879	0.3035	348.8768	0.5476	0.6925	0.3076	346.0270
60.00	0.4797	0.6689	0.3010	348.7673	0.5174	0.6717	0.3047	346.5365
70.00	0.4565	0.6517	0.2988	348.5226	0.4906	0.6531	0.3022	346.8866
80.00	0.4355	0.6360	0.2970	348.1499	0.4665	0.6362	0.3002	347.0864
90.00	0.4164	0.6217	0.2955	347.6556	0.4448	0.6209	0.2985	347.1439
100.00	0.3990	0.6085	0.2942	347.0456	0.4251	0.6069	0.2971	347.0664

P/MPa	T= 333.15 K				T= 353.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	0.8733	0.8698	0.3401	331.6862	0.9845	0.8936	0.3436	320.4346
5.00	0.8340	0.8458	0.3353	332.8480	0.9348	0.8656	0.3380	322.0242
10.00	0.7975	0.8234	0.3310	333.9617	0.8892	0.8399	0.3329	323.5587
20.00	0.7337	0.7840	0.3237	335.9850	0.8107	0.7952	0.3246	326.3805
30.00	0.6797	0.7503	0.3178	337.7557	0.7455	0.7576	0.3179	328.8989
40.00	0.6335	0.7212	0.3130	339.2943	0.6904	0.7255	0.3126	331.1405
50.00	0.5934	0.6957	0.3091	340.6178	0.6432	0.6978	0.3083	333.1278
60.00	0.5583	0.6732	0.3058	341.7412	0.6023	0.6735	0.3048	334.8796
70.00	0.5273	0.6531	0.3031	342.6774	0.5665	0.6520	0.3019	336.4124
80.00	0.4997	0.6351	0.3009	343.4378	0.5350	0.6328	0.2995	337.7404
90.00	0.4750	0.6188	0.2990	344.0324	0.5069	0.6156	0.2976	338.8761
100.00	0.4527	0.6040	0.2975	344.4703	0.4817	0.6000	0.2960	339.8305

P/MPa	T= 373.15 K				T= 393.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v kJ·kg^{-1}·K^{-1}	p_{int} MPa
0.10	1.1146	0.9184	0.3449	307.3513	1.2670	0.9443	0.3443	292.9010
5.00	1.0513	0.8859	0.3384	309.4156	1.1859	0.9065	0.3370	295.5207
10.00	0.9941	0.8563	0.3327	311.4151	1.1137	0.8726	0.3306	298.0632
20.00	0.8971	0.8057	0.3233	315.1150	0.9936	0.8158	0.3205	302.7862
30.00	0.8181	0.7640	0.3160	318.4509	0.8979	0.7698	0.3128	307.0735
40.00	0.7525	0.7289	0.3103	321.4578	0.8197	0.7317	0.3070	310.9708
50.00	0.6970	0.6989	0.3058	324.1646	0.7545	0.6996	0.3024	314.5154
60.00	0.6494	0.6728	0.3022	326.5956	0.6994	0.6720	0.2989	317.7377
70.00	0.6083	0.6500	0.2992	328.7711	0.6522	0.6480	0.2961	320.6637
80.00	0.5722	0.6298	0.2968	330.7091	0.6111	0.6269	0.2938	323.3152
90.00	0.5404	0.6117	0.2949	332.4249	0.5752	0.6082	0.2921	325.7111
100.00	0.5121	0.5955	0.2933	333.9320	0.5435	0.5915	0.2907	327.8680

Table S30. Derived thermodynamic properties for Bio 80-PD20 (linseed), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P $10^{-3}\ K^{-1}$	c_p-c_v $kJ\cdot kg^{-1}\cdot K^{-1}$	p_{int} MPa
0.10	1.4451	0.9713	0.3422	277.6053
5.00	1.3406	0.9277	0.3342	280.9136
10.00	1.2491	0.8892	0.3274	284.1300
20.00	1.1003	0.8259	0.3169	290.1256
30.00	0.9845	0.7759	0.3093	295.6006
40.00	0.8916	0.7351	0.3037	300.6150
50.00	0.8155	0.7011	0.2995	305.2163
60.00	0.7518	0.6723	0.2964	309.4431
70.00	0.6978	0.6474	0.2940	313.3274
80.00	0.6514	0.6257	0.2922	316.8962
90.00	0.6110	0.6066	0.2909	320.1724
100.00	0.5755	0.5895	0.2900	323.1761

Table S31. Derived thermodynamic properties for Bio 100-PD0 (linseed).

P/MPa	T= 293.15 K				T= 313.15 K			
	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	10^{-3} K^{-1}	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa	GPa^{-1}	10^{-3} K^{-1}	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa
0.10	0.6732	0.8186	0.3295	356.3838	0.7503	0.8328	0.3323	347.4452
5.00	0.6505	0.8016	0.3259	356.2096	0.7224	0.8133	0.3280	347.5642
10.00	0.6290	0.7854	0.3225	355.9930	0.6960	0.7948	0.3240	347.6387
20.00	0.5902	0.7559	0.3165	355.4462	0.6488	0.7618	0.3171	347.6507
30.00	0.5562	0.7300	0.3114	354.7545	0.6080	0.7329	0.3113	347.4889
40.00	0.5260	0.7068	0.3070	353.9253	0.5721	0.7074	0.3063	347.1630
50.00	0.4990	0.6860	0.3033	352.9653	0.5405	0.6847	0.3021	346.6818
60.00	0.4749	0.6672	0.3000	351.8806	0.5123	0.6643	0.2985	346.0534
70.00	0.4530	0.6501	0.2972	350.6770	0.4871	0.6460	0.2954	345.2853
80.00	0.4332	0.6345	0.2948	349.3597	0.4644	0.6293	0.2926	344.3841
90.00	0.4151	0.6202	0.2926	347.9337	0.4437	0.6141	0.2903	343.3560
100.00	0.3986	0.6069	0.2907	346.4034	0.4250	0.6001	0.2882	342.2066
	T= 333.15 K				T= 353.15 K			
P/MPa	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	10^{-3} K^{-1}	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa	GPa^{-1}	10^{-3} K^{-1}	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa
0.10	0.8390	0.8474	0.3329	336.3827	0.9408	0.8626	0.3317	323.7015
5.00	0.8042	0.8251	0.3280	336.8192	0.8972	0.8371	0.3261	324.5021
10.00	0.7716	0.8042	0.3234	337.2078	0.8569	0.8135	0.3210	325.2503
20.00	0.7142	0.7671	0.3156	337.8202	0.7867	0.7720	0.3124	326.5492
30.00	0.6651	0.7351	0.3091	338.2246	0.7277	0.7368	0.3053	327.6002
40.00	0.6226	0.7072	0.3036	338.4340	0.6772	0.7065	0.2995	328.4203
50.00	0.5854	0.6826	0.2990	338.4599	0.6336	0.6800	0.2946	329.0246
60.00	0.5526	0.6607	0.2951	338.3129	0.5955	0.6567	0.2905	329.4266
70.00	0.5235	0.6411	0.2917	338.0023	0.5620	0.6360	0.2871	329.6382
80.00	0.4974	0.6234	0.2888	337.5367	0.5322	0.6174	0.2841	329.6702
90.00	0.4739	0.6073	0.2863	336.9238	0.5055	0.6006	0.2816	329.5322
100.00	0.4527	0.5927	0.2841	336.1708	0.4816	0.5853	0.2794	329.2330
	T= 373.15 K				T= 393.15 K			
P/MPa	κ_T	α_P	c_p-c_v	p_{int}	κ_T	α_P	c_p-c_v	p_{int}
	GPa^{-1}	10^{-3} K^{-1}	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa	GPa^{-1}	10^{-3} K^{-1}	$kJ\cdot kg^{-1}\cdot K^{-1}$	MPa
0.10	1.0571	0.8783	0.3291	309.9436	1.1891	0.8946	0.3255	295.6914
5.00	1.0024	0.8494	0.3229	311.1884	1.1204	0.8621	0.3190	297.5099
10.00	0.9524	0.8228	0.3174	312.3761	1.0583	0.8325	0.3132	299.2668
20.00	0.8667	0.7769	0.3082	314.5153	0.9536	0.7823	0.3038	302.4995
30.00	0.7957	0.7385	0.3008	316.3602	0.8686	0.7410	0.2966	305.3846
40.00	0.7359	0.7059	0.2949	317.9330	0.7981	0.7064	0.2909	307.9510
50.00	0.6849	0.6777	0.2900	319.2533	0.7387	0.6768	0.2864	310.2235
60.00	0.6408	0.6531	0.2860	320.3381	0.6879	0.6513	0.2827	312.2236
70.00	0.6023	0.6314	0.2826	321.2026	0.6439	0.6289	0.2798	313.9702
80.00	0.5684	0.6121	0.2798	321.8602	0.6055	0.6091	0.2773	315.4798
90.00	0.5383	0.5948	0.2774	322.3227	0.5717	0.5915	0.2754	316.7669
100.00	0.5113	0.5791	0.2753	322.6008	0.5415	0.5756	0.2737	317.8445

Table S32. Derived thermodynamic properties for Bio 100-PD0 (corn), continuation.

P/MPa	T= 413.15 K			
	κ_T GPa^{-1}	α_P 10^{-3} K^{-1}	c_p-c_v $kJ \cdot kg^{-1} \cdot K^{-1}$	p_{int} MPa
0.10	1.3370	0.9115	0.3216	281.5713
5.00	1.2508	0.8754	0.3151	284.1624
10.00	1.1740	0.8431	0.3094	286.6890
20.00	1.0468	0.7890	0.3006	291.4099
30.00	0.9455	0.7454	0.2941	295.7229
40.00	0.8629	0.7094	0.2893	299.6648
50.00	0.7941	0.6790	0.2856	303.2669
60.00	0.7360	0.6530	0.2828	306.5561
70.00	0.6862	0.6304	0.2807	309.5555
80.00	0.6430	0.6105	0.2791	312.2853
90.00	0.6052	0.5929	0.2779	314.7629
100.00	0.5717	0.5771	0.2771	317.0040

Section 3

Section three (3) presents the thermal compressibility and measurement uncertainty values obtained by the methodology proposed by Daridon and Bazile [1]. The distribution of data across the compositions follows the following order.

For Biodiesel grape seed. Table S33 – S37.

For Biodiesel corn. Table S38 – S44.

For Biodiesel linseed. Table S45 – S50.

Table S33. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile [1].

P/MPa	$\varkappa_T$ / GPa^{-1} - U_c ($\varkappa_T$) /GPa^{-1} for Bio 0-PD 100 (grape seed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7698	0.0104	0.8664	0.0109	0.9656	0.0114	1.1034	0.0122	1.1875	0.0124	1.3856	0.0138	1.5803	0.0151
5.00	0.7363	0.0094	0.8244	0.0097	0.9159	0.0100	1.0391	0.0105	1.1206	0.0106	1.2919	0.0113	1.4609	0.0120
10.00	0.7052	0.0086	0.7860	0.0087	0.8708	0.0089	0.9816	0.0091	1.0591	0.0091	1.2089	0.0094	1.3571	0.0097
20.00	0.6506	0.0075	0.7193	0.0076	0.7929	0.0076	0.8839	0.0077	0.9545	0.0078	1.0723	0.0080	1.1893	0.0082
30.00	0.6041	0.0081	0.6632	0.0082	0.7281	0.0084	0.8045	0.0086	0.8693	0.0087	0.9641	0.0090	1.0592	0.0094
40.00	0.5638	0.0083	0.6153	0.0085	0.6734	0.0086	0.7384	0.0088	0.7985	0.0089	0.8758	0.0092	0.9554	0.0095
50.00	0.5286	0.0082	0.5741	0.0083	0.6264	0.0084	0.6825	0.0086	0.7386	0.0086	0.8028	0.0088	0.8705	0.0090
60.00	0.4978	0.0079	0.5381	0.0079	0.5856	0.0080	0.6340	0.0080	0.6872	0.0080	0.7414	0.0080	0.7998	0.0080
70.00	0.4703	0.0076	0.5064	0.0077	0.5500	0.0077	0.5931	0.0078	0.6427	0.0079	0.6888	0.0081	0.7397	0.0083
80.00	0.4458	0.0082	0.4783	0.0084	0.5186	0.0086	0.5567	0.0089	0.6036	0.0090	0.6434	0.0094	0.6884	0.0098
90.00	0.4237	0.0090	0.4533	0.0093	0.4905	0.0095	0.5247	0.0100	0.5693	0.0103	0.6036	0.0109	0.6437	0.0115
100.00	0.4038	0.0098	0.4308	0.0102	0.4654	0.0106	0.4962	0.0112	0.5386	0.0117	0.5685	0.0125	0.6047	0.0133

Table S34. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio20-PD80 (grape seed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7319	0.0100	0.8258	0.0105	0.9303	0.0111	1.0875	0.0123	1.2204	0.0130	1.3556	0.0137	1.5172	0.0146
5.00	0.7038	0.0091	0.7901	0.0095	0.8857	0.0098	1.0233	0.0105	1.1426	0.0109	1.2647	0.0113	1.4085	0.0118
10.00	0.6775	0.0084	0.7573	0.0086	0.8445	0.0088	0.9664	0.0091	1.0747	0.0093	1.1847	0.0094	1.3128	0.0096
20.00	0.6306	0.0075	0.6989	0.0075	0.7733	0.0076	0.8702	0.0077	0.9598	0.0078	1.0522	0.0079	1.1567	0.0081
30.00	0.5897	0.0080	0.6492	0.0082	0.7133	0.0083	0.7916	0.0086	0.8679	0.0088	0.9470	0.0090	1.0343	0.0093
40.00	0.5539	0.0082	0.6063	0.0084	0.6619	0.0085	0.7264	0.0088	0.7923	0.0090	0.8613	0.0092	0.9361	0.0094
50.00	0.5224	0.0081	0.5687	0.0083	0.6178	0.0084	0.6712	0.0086	0.7290	0.0087	0.7900	0.0088	0.8552	0.0090
60.00	0.4942	0.0079	0.5357	0.0079	0.5792	0.0079	0.6239	0.0080	0.6754	0.0080	0.7300	0.0080	0.7875	0.0080
70.00	0.4691	0.0076	0.5063	0.0076	0.5454	0.0077	0.5830	0.0078	0.6292	0.0079	0.6785	0.0080	0.7300	0.0082
80.00	0.4464	0.0082	0.4800	0.0083	0.5153	0.0085	0.5472	0.0088	0.5889	0.0091	0.6340	0.0093	0.6804	0.0097
90.00	0.4258	0.0089	0.4564	0.0091	0.4884	0.0094	0.5156	0.0099	0.5537	0.0103	0.5950	0.0107	0.6373	0.0113
100.00	0.4072	0.0097	0.4351	0.0100	0.4643	0.0105	0.4876	0.0111	0.5225	0.0117	0.5608	0.0123	0.5994	0.0130

Table S35. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio40-PD60 (grape seed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7145	0.0098	0.8087	0.0104	0.9033	0.0109	1.0087	0.0115	1.1280	0.0121	1.2656	0.0129	1.4219	0.0138
5.00	0.6885	0.0090	0.7744	0.0094	0.8620	0.0097	0.9586	0.0100	1.0675	0.0104	1.1913	0.0108	1.3312	0.0113
10.00	0.6638	0.0084	0.7424	0.0086	0.8236	0.0087	0.9124	0.0089	1.0118	0.0091	1.1237	0.0092	1.2486	0.0094
20.00	0.6196	0.0075	0.6859	0.0075	0.7567	0.0076	0.8329	0.0076	0.9167	0.0077	1.0096	0.0078	1.1108	0.0080
30.00	0.5809	0.0080	0.6378	0.0081	0.7001	0.0083	0.7662	0.0084	0.8384	0.0086	0.9173	0.0088	1.0020	0.0091
40.00	0.5469	0.0082	0.5960	0.0083	0.6514	0.0085	0.7095	0.0086	0.7727	0.0088	0.8409	0.0090	0.9129	0.0093
50.00	0.5168	0.0081	0.5595	0.0082	0.6094	0.0083	0.6609	0.0085	0.7167	0.0086	0.7764	0.0087	0.8386	0.0089
60.00	0.4899	0.0078	0.5273	0.0079	0.5723	0.0079	0.6186	0.0080	0.6686	0.0080	0.7214	0.0080	0.7756	0.0080
70.00	0.4657	0.0076	0.4986	0.0076	0.5397	0.0077	0.5817	0.0077	0.6267	0.0078	0.6738	0.0080	0.7220	0.0081
80.00	0.4438	0.0082	0.4730	0.0083	0.5107	0.0085	0.5489	0.0086	0.5895	0.0089	0.6322	0.0092	0.6753	0.0095
90.00	0.4239	0.0088	0.4499	0.0091	0.4848	0.0094	0.5197	0.0097	0.5569	0.0100	0.5956	0.0105	0.6344	0.0110
100.00	0.4060	0.0096	0.4291	0.0100	0.4614	0.0103	0.4935	0.0108	0.5278	0.0113	0.5630	0.0120	0.5983	0.0127

Table S36. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio60-PD40 (grape seed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7028	0.0099	0.8018	0.0104	0.9087	0.0111	1.0122	0.0116	1.2418	0.0130	1.3918	0.0139	1.5564	0.0146
5.00	0.6778	0.0091	0.7680	0.0094	0.8646	0.0098	0.9584	0.0101	1.1654	0.0109	1.2994	0.0114	1.4497	0.0117
10.00	0.6546	0.0085	0.7370	0.0086	0.8240	0.0088	0.9099	0.0089	1.0968	0.0093	1.2170	0.0095	1.3537	0.0096
20.00	0.6125	0.0075	0.6819	0.0075	0.7528	0.0075	0.8261	0.0077	0.9820	0.0078	1.0814	0.0079	1.1965	0.0081
30.00	0.5757	0.0080	0.6347	0.0081	0.6945	0.0083	0.7563	0.0085	0.8894	0.0088	0.9734	0.0090	1.0727	0.0093
40.00	0.5430	0.0082	0.5936	0.0083	0.6443	0.0085	0.6978	0.0087	0.8130	0.0090	0.8854	0.0093	0.9730	0.0095
50.00	0.5140	0.0081	0.5578	0.0082	0.6007	0.0084	0.6478	0.0085	0.7491	0.0087	0.8124	0.0089	0.8906	0.0090
60.00	0.4879	0.0079	0.5261	0.0079	0.5629	0.0080	0.6047	0.0079	0.6947	0.0080	0.7507	0.0080	0.8212	0.0080
70.00	0.4644	0.0075	0.4978	0.0076	0.5298	0.0076	0.5677	0.0078	0.6477	0.0079	0.6980	0.0081	0.7622	0.0083
80.00	0.4432	0.0081	0.4725	0.0083	0.5002	0.0084	0.5344	0.0087	0.6069	0.0091	0.6523	0.0094	0.7115	0.0098
90.00	0.4239	0.0087	0.4497	0.0090	0.4738	0.0093	0.5049	0.0098	0.5710	0.0104	0.6123	0.0109	0.6670	0.0115
100.00	0.4062	0.0095	0.4290	0.0099	0.4502	0.0103	0.4785	0.0109	0.5392	0.0118	0.5771	0.0125	0.6280	0.0133

Table S37. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio80-PD100 (grape seed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.6886	0.0097	0.7673	0.0101	0.8625	0.0107	0.9591	0.0112	1.0814	0.0119	1.2270	0.0128	1.3917	0.0138
5.00	0.6641	0.0090	0.7376	0.0092	0.8251	0.0096	0.9146	0.0099	1.0253	0.0103	1.1554	0.0108	1.3007	0.0113
10.00	0.6408	0.0084	0.7092	0.0085	0.7901	0.0087	0.8731	0.0088	0.9736	0.0090	1.0904	0.0092	1.2189	0.0094
20.00	0.5991	0.0075	0.6592	0.0075	0.7286	0.0076	0.8009	0.0076	0.8851	0.0077	0.9806	0.0078	1.0841	0.0079
30.00	0.5625	0.0080	0.6157	0.0081	0.6760	0.0082	0.7400	0.0083	0.8117	0.0085	0.8915	0.0088	0.9769	0.0090
40.00	0.5301	0.0082	0.5777	0.0083	0.6309	0.0084	0.6878	0.0086	0.7497	0.0088	0.8177	0.0090	0.8894	0.0092
50.00	0.5016	0.0081	0.5444	0.0082	0.5915	0.0083	0.6428	0.0084	0.6968	0.0085	0.7552	0.0087	0.8165	0.0089
60.00	0.4758	0.0078	0.5147	0.0079	0.5569	0.0079	0.6034	0.0080	0.6509	0.0080	0.7019	0.0080	0.7547	0.0080
70.00	0.4527	0.0076	0.4882	0.0076	0.5261	0.0077	0.5686	0.0077	0.6109	0.0078	0.6557	0.0079	0.7021	0.0081
80.00	0.4319	0.0081	0.4642	0.0082	0.4987	0.0084	0.5377	0.0085	0.5757	0.0088	0.6154	0.0091	0.6563	0.0094
90.00	0.4127	0.0087	0.4426	0.0090	0.4739	0.0092	0.5100	0.0095	0.5444	0.0099	0.5800	0.0103	0.6164	0.0109
100.00	0.3953	0.0095	0.4230	0.0098	0.4516	0.0102	0.4851	0.0106	0.5163	0.0111	0.5483	0.0117	0.5811	0.0125

Table S38. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for BIO100-PD0 (grape seed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.6762	0.0109	0.7554	0.0101	0.8421	0.0105	0.9405	0.0111	1.0539	0.0117	1.1892	0.0125	1.3451	0.0135
5.00	0.6527	0.0101	0.7263	0.0092	0.8068	0.0095	0.8977	0.0098	1.0011	0.0102	1.1225	0.0107	1.2603	0.0112
10.00	0.6305	0.0093	0.6987	0.0085	0.7737	0.0086	0.8577	0.0088	0.9523	0.0090	1.0616	0.0092	1.1846	0.0094
20.00	0.5905	0.0082	0.6498	0.0075	0.7150	0.0075	0.7881	0.0076	0.8683	0.0076	0.9583	0.0077	1.0579	0.0079
30.00	0.5553	0.0075	0.6074	0.0081	0.6650	0.0082	0.7292	0.0083	0.7982	0.0085	0.8738	0.0087	0.9568	0.0089
40.00	0.5242	0.0079	0.5704	0.0083	0.6216	0.0084	0.6785	0.0085	0.7388	0.0087	0.8033	0.0089	0.8734	0.0092
50.00	0.4964	0.0080	0.5378	0.0082	0.5837	0.0083	0.6347	0.0084	0.6880	0.0085	0.7435	0.0087	0.8038	0.0088
60.00	0.4715	0.0080	0.5086	0.0079	0.5502	0.0079	0.5962	0.0080	0.6437	0.0080	0.6923	0.0080	0.7447	0.0081
70.00	0.4489	0.0077	0.4826	0.0076	0.5204	0.0076	0.5623	0.0077	0.6050	0.0078	0.6477	0.0079	0.6937	0.0080
80.00	0.4286	0.0076	0.4591	0.0082	0.4938	0.0083	0.5321	0.0085	0.5706	0.0087	0.6088	0.0090	0.6496	0.0093
90.00	0.4101	0.0081	0.4379	0.0089	0.4698	0.0092	0.5051	0.0094	0.5401	0.0098	0.5742	0.0102	0.6108	0.0107
100.00	0.3930	0.0087	0.4185	0.0097	0.4480	0.0101	0.4807	0.0105	0.5129	0.0110	0.5436	0.0116	0.5764	0.0122

Table S39. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile [1].

P/MPa	$\varkappa_T$ / GPa^{-1} - U_c ($\varkappa_T$) /GPa^{-1} for Bio 0-PD 100 (corn)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7698	0.0104	0.8664	0.0109	0.9656	0.0114	1.1034	0.0122	1.1875	0.0124	1.3856	0.0138	1.5803	0.0151
5.00	0.7363	0.0094	0.8244	0.0097	0.9159	0.0100	1.0391	0.0105	1.1206	0.0106	1.2919	0.0113	1.4609	0.0120
10.00	0.7052	0.0086	0.7860	0.0087	0.8708	0.0089	0.9816	0.0091	1.0591	0.0091	1.2089	0.0094	1.3571	0.0097
20.00	0.6506	0.0075	0.7193	0.0076	0.7929	0.0076	0.8839	0.0077	0.9545	0.0078	1.0723	0.0080	1.1893	0.0082
30.00	0.6041	0.0081	0.6632	0.0082	0.7281	0.0084	0.8045	0.0086	0.8693	0.0087	0.9641	0.0090	1.0592	0.0094
40.00	0.5638	0.0083	0.6153	0.0085	0.6734	0.0086	0.7384	0.0088	0.7985	0.0089	0.8758	0.0092	0.9554	0.0095
50.00	0.5286	0.0082	0.5741	0.0083	0.6264	0.0084	0.6825	0.0086	0.7386	0.0086	0.8028	0.0088	0.8705	0.0090
60.00	0.4978	0.0079	0.5381	0.0079	0.5856	0.0080	0.6340	0.0080	0.6872	0.0080	0.7414	0.0080	0.7998	0.0080
70.00	0.4703	0.0076	0.5064	0.0077	0.5500	0.0077	0.5931	0.0078	0.6427	0.0079	0.6888	0.0081	0.7397	0.0083
80.00	0.4458	0.0082	0.4783	0.0084	0.5186	0.0086	0.5567	0.0089	0.6036	0.0090	0.6434	0.0094	0.6884	0.0098
90.00	0.4237	0.0090	0.4533	0.0093	0.4905	0.0095	0.5247	0.0100	0.5693	0.0103	0.6036	0.0109	0.6437	0.0115
100.00	0.4038	0.0098	0.4308	0.0102	0.4654	0.0106	0.4962	0.0112	0.5386	0.0117	0.5685	0.0125	0.6047	0.0133

Table S40. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio20-PD80 (corn)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7353	0.0100	0.7719	0.0099	0.9378	0.0111	1.0607	0.0118	1.2304	0.0130	1.3608	0.0136	1.5569	0.0149
5.00	0.7069	0.0092	0.7458	0.0091	0.8928	0.0098	1.0043	0.0102	1.1528	0.0109	1.2717	0.0112	1.4419	0.0119
10.00	0.6802	0.0085	0.7209	0.0084	0.8515	0.0088	0.9525	0.0090	1.0843	0.0093	1.1922	0.0094	1.3416	0.0096
20.00	0.6324	0.0075	0.6750	0.0075	0.7794	0.0076	0.8643	0.0077	0.9696	0.0078	1.0611	0.0079	1.1786	0.0081
30.00	0.5911	0.0080	0.6348	0.0081	0.7189	0.0083	0.7913	0.0085	0.8774	0.0088	0.9561	0.0090	1.0515	0.0093
40.00	0.5549	0.0082	0.5993	0.0082	0.6671	0.0085	0.7298	0.0087	0.8013	0.0090	0.8706	0.0092	0.9498	0.0095
50.00	0.5230	0.0082	0.5676	0.0082	0.6226	0.0084	0.6774	0.0085	0.7379	0.0087	0.7996	0.0088	0.8665	0.0090
60.00	0.4946	0.0079	0.5394	0.0078	0.5837	0.0079	0.6322	0.0080	0.6838	0.0080	0.7394	0.0080	0.7969	0.0080
70.00	0.4693	0.0076	0.5139	0.0076	0.5495	0.0077	0.5929	0.0078	0.6371	0.0079	0.6879	0.0081	0.7378	0.0082
80.00	0.4464	0.0082	0.4906	0.0082	0.5192	0.0085	0.5581	0.0088	0.5966	0.0090	0.6431	0.0093	0.6872	0.0098
90.00	0.4257	0.0089	0.4696	0.0090	0.4922	0.0095	0.5273	0.0099	0.5611	0.0103	0.6039	0.0108	0.6432	0.0114
100.00	0.4069	0.0097	0.4502	0.0098	0.4678	0.0105	0.4998	0.0111	0.5297	0.0117	0.5694	0.0124	0.6044	0.0132

Table S41. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio40-PD60 (corn)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7125	0.0098	0.8034	0.0103	0.8980	0.0109	1.0106	0.0115	1.1372	0.0123	1.2844	0.0132	1.4538	0.0142
5.00	0.6863	0.0091	0.7699	0.0094	0.8571	0.0097	0.9595	0.0101	1.0739	0.0105	1.2050	0.0110	1.3548	0.0116
10.00	0.6614	0.0084	0.7384	0.0086	0.8190	0.0087	0.9127	0.0089	1.0168	0.0091	1.1343	0.0093	1.2669	0.0095
20.00	0.6169	0.0075	0.6830	0.0075	0.7526	0.0076	0.8319	0.0076	0.9191	0.0077	1.0150	0.0078	1.1223	0.0080
30.00	0.5781	0.0080	0.6353	0.0081	0.6963	0.0083	0.7644	0.0084	0.8388	0.0086	0.9189	0.0089	1.0081	0.0091
40.00	0.5437	0.0082	0.5940	0.0083	0.6481	0.0085	0.7074	0.0086	0.7720	0.0088	0.8401	0.0091	0.9155	0.0093
50.00	0.5136	0.0081	0.5578	0.0082	0.6062	0.0083	0.6586	0.0085	0.7151	0.0086	0.7739	0.0088	0.8388	0.0089
60.00	0.4866	0.0078	0.5260	0.0079	0.5696	0.0079	0.6161	0.0080	0.6662	0.0080	0.7176	0.0080	0.7742	0.0081
70.00	0.4624	0.0076	0.4976	0.0076	0.5371	0.0077	0.5787	0.0077	0.6237	0.0078	0.6690	0.0080	0.7191	0.0081
80.00	0.4406	0.0082	0.4722	0.0083	0.5083	0.0085	0.5459	0.0086	0.5864	0.0089	0.6268	0.0092	0.6714	0.0095
90.00	0.4207	0.0088	0.4493	0.0091	0.4825	0.0094	0.5166	0.0097	0.5535	0.0101	0.5898	0.0105	0.6297	0.0111
100.00	0.4025	0.0096	0.4286	0.0100	0.4592	0.0104	0.4904	0.0108	0.5240	0.0114	0.5568	0.0120	0.5932	0.0127

Table S42. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio60-PD40 (corn)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.6957	0.0097	0.8112	0.0106	0.9667	0.0119	1.0232	0.0117	1.1263	0.0122	1.2715	0.0131	1.4406	0.0141
5.00	0.6713	0.0090	0.7749	0.0095	0.9099	0.0103	0.9688	0.0102	1.0641	0.0105	1.1939	0.0109	1.3425	0.0115
10.00	0.6479	0.0084	0.7419	0.0087	0.8609	0.0091	0.9206	0.0090	1.0073	0.0091	1.1247	0.0093	1.2564	0.0095
20.00	0.6061	0.0075	0.6836	0.0075	0.7771	0.0075	0.8360	0.0077	0.9107	0.0077	1.0080	0.0078	1.1138	0.0080
30.00	0.5693	0.0080	0.6340	0.0081	0.7085	0.0084	0.7663	0.0085	0.8314	0.0086	0.9137	0.0088	1.0012	0.0091
40.00	0.5368	0.0082	0.5913	0.0084	0.6511	0.0086	0.7075	0.0087	0.7652	0.0088	0.8359	0.0091	0.9095	0.0093
50.00	0.5081	0.0081	0.5541	0.0083	0.6024	0.0085	0.6572	0.0085	0.7088	0.0086	0.7706	0.0087	0.8335	0.0089
60.00	0.4822	0.0078	0.5214	0.0079	0.5607	0.0080	0.6139	0.0080	0.6605	0.0080	0.7150	0.0080	0.7696	0.0081
70.00	0.4589	0.0076	0.4924	0.0076	0.5243	0.0076	0.5759	0.0078	0.6185	0.0078	0.6672	0.0080	0.7150	0.0081
80.00	0.4378	0.0081	0.4664	0.0083	0.4925	0.0085	0.5425	0.0087	0.5814	0.0089	0.6253	0.0091	0.6677	0.0095
90.00	0.4186	0.0088	0.4432	0.0091	0.4643	0.0094	0.5128	0.0097	0.5486	0.0100	0.5885	0.0105	0.6265	0.0110
100.00	0.4011	0.0095	0.4220	0.0099	0.4392	0.0105	0.4863	0.0109	0.5196	0.0113	0.5560	0.0119	0.5902	0.0127

Table S43. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio80-PD100 (corn)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7077	0.0099	0.7247	0.0101	0.8139	0.0099	0.9859	0.0113	1.1123	0.0121	1.2896	0.0134	1.4283	0.0140
5.00	0.6811	0.0091	0.6976	0.0092	0.7872	0.0091	0.9382	0.0100	1.0528	0.0104	1.2073	0.0112	1.3332	0.0115
10.00	0.6548	0.0084	0.6721	0.0085	0.7605	0.0084	0.8945	0.0089	0.9986	0.0091	1.1352	0.0095	1.2487	0.0095
20.00	0.6088	0.0075	0.6267	0.0076	0.7123	0.0076	0.8182	0.0076	0.9057	0.0077	1.0144	0.0078	1.1087	0.0080
30.00	0.5692	0.0080	0.5872	0.0080	0.6705	0.0081	0.7545	0.0084	0.8290	0.0086	0.9175	0.0088	0.9977	0.0091
40.00	0.5344	0.0082	0.5526	0.0082	0.6330	0.0083	0.7001	0.0086	0.7645	0.0088	0.8378	0.0091	0.9075	0.0093
50.00	0.5037	0.0081	0.5219	0.0082	0.5998	0.0082	0.6531	0.0084	0.7095	0.0086	0.7711	0.0088	0.8325	0.0089
60.00	0.4764	0.0078	0.4945	0.0079	0.5700	0.0079	0.6122	0.0080	0.6620	0.0080	0.7143	0.0081	0.7692	0.0081
70.00	0.4519	0.0076	0.4698	0.0075	0.5432	0.0076	0.5763	0.0077	0.6209	0.0078	0.6656	0.0079	0.7150	0.0081
80.00	0.4300	0.0082	0.4475	0.0081	0.5188	0.0083	0.5443	0.0086	0.5844	0.0088	0.6232	0.0091	0.6682	0.0095
90.00	0.4100	0.0088	0.4273	0.0087	0.4966	0.0091	0.5158	0.0096	0.5521	0.0100	0.5858	0.0104	0.6274	0.0110
100.00	0.3919	0.0096	0.4088	0.0095	0.4764	0.0100	0.4903	0.0107	0.5234	0.0112	0.5529	0.0119	0.5911	0.0126

Table S44. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for BIO100-PD0 (corn)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.6774	0.0097	0.7601	0.0102	0.8457	0.0106	0.9528	0.0112	1.0580	0.0117	1.1886	0.0125	1.3333	0.0133
5.00	0.6535	0.0090	0.7300	0.0093	0.8096	0.0095	0.9073	0.0099	1.0042	0.0102	1.1216	0.0107	1.2513	0.0111
10.00	0.6310	0.0084	0.7019	0.0085	0.7760	0.0087	0.8652	0.0089	0.9549	0.0090	1.0612	0.0092	1.1775	0.0093
20.00	0.5904	0.0075	0.6518	0.0075	0.7168	0.0075	0.7923	0.0076	0.8697	0.0077	0.9582	0.0077	1.0536	0.0079
30.00	0.5548	0.0080	0.6086	0.0081	0.6662	0.0082	0.7308	0.0083	0.7989	0.0085	0.8741	0.0087	0.9538	0.0089
40.00	0.5232	0.0081	0.5708	0.0083	0.6224	0.0084	0.6786	0.0086	0.7390	0.0087	0.8038	0.0089	0.8719	0.0091
50.00	0.4953	0.0081	0.5376	0.0082	0.5842	0.0083	0.6334	0.0084	0.6875	0.0085	0.7440	0.0087	0.8031	0.0088
60.00	0.4701	0.0078	0.5080	0.0079	0.5505	0.0079	0.5939	0.0080	0.6431	0.0080	0.6929	0.0080	0.7447	0.0080
70.00	0.4476	0.0076	0.4817	0.0076	0.5205	0.0076	0.5592	0.0077	0.6040	0.0078	0.6483	0.0079	0.6942	0.0080
80.00	0.4270	0.0081	0.4580	0.0082	0.4936	0.0083	0.5284	0.0085	0.5696	0.0087	0.6093	0.0090	0.6505	0.0093
90.00	0.4084	0.0087	0.4366	0.0089	0.4696	0.0092	0.5009	0.0095	0.5389	0.0098	0.5750	0.0102	0.6121	0.0107
100.00	0.3912	0.0094	0.4170	0.0097	0.4477	0.0101	0.4762	0.0105	0.5115	0.0110	0.5443	0.0116	0.5780	0.0122

Table S45. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile [1].

P/MPa	$\varkappa_T$ / GPa^{-1} - U_c ($\varkappa_T$) /GPa^{-1} for Bio 0-PD 100 (linseed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7698	0.0104	0.8664	0.0109	0.9656	0.0114	1.1034	0.0122	1.1875	0.0124	1.3856	0.0138	1.5803	0.0151
5.00	0.7363	0.0094	0.8244	0.0097	0.9159	0.0100	1.0391	0.0105	1.1206	0.0106	1.2919	0.0113	1.4609	0.0120
10.00	0.7052	0.0086	0.7860	0.0087	0.8708	0.0089	0.9816	0.0091	1.0591	0.0091	1.2089	0.0094	1.3571	0.0097
20.00	0.6506	0.0075	0.7193	0.0076	0.7929	0.0076	0.8839	0.0077	0.9545	0.0078	1.0723	0.0080	1.1893	0.0082
30.00	0.6041	0.0081	0.6632	0.0082	0.7281	0.0084	0.8045	0.0086	0.8693	0.0087	0.9641	0.0090	1.0592	0.0094
40.00	0.5638	0.0083	0.6153	0.0085	0.6734	0.0086	0.7384	0.0088	0.7985	0.0089	0.8758	0.0092	0.9554	0.0095
50.00	0.5286	0.0082	0.5741	0.0083	0.6264	0.0084	0.6825	0.0086	0.7386	0.0086	0.8028	0.0088	0.8705	0.0090
60.00	0.4978	0.0079	0.5381	0.0079	0.5856	0.0080	0.6340	0.0080	0.6872	0.0080	0.7414	0.0080	0.7998	0.0080
70.00	0.4703	0.0076	0.5064	0.0077	0.5500	0.0077	0.5931	0.0078	0.6427	0.0079	0.6888	0.0081	0.7397	0.0083
80.00	0.4458	0.0082	0.4783	0.0084	0.5186	0.0086	0.5567	0.0089	0.6036	0.0090	0.6434	0.0094	0.6884	0.0098
90.00	0.4237	0.0090	0.4533	0.0093	0.4905	0.0095	0.5247	0.0100	0.5693	0.0103	0.6036	0.0109	0.6437	0.0115
100.00	0.4038	0.0098	0.4308	0.0102	0.4654	0.0106	0.4962	0.0112	0.5386	0.0117	0.5685	0.0125	0.6047	0.0133

Table S46. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio20-PD80 (linseed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7241	0.0099	0.8233	0.0105	0.9232	0.0110	1.0386	0.0116	1.1790	0.0125	1.3361	0.0135	1.5214	0.0147
5.00	0.6975	0.0091	0.7882	0.0094	0.8803	0.0098	0.9852	0.0101	1.1107	0.0106	1.2498	0.0112	1.4117	0.0118
10.00	0.6722	0.0085	0.7558	0.0086	0.8403	0.0088	0.9364	0.0089	1.0493	0.0092	1.1729	0.0094	1.3153	0.0096
20.00	0.6272	0.0075	0.6981	0.0076	0.7706	0.0076	0.8523	0.0077	0.9448	0.0078	1.0451	0.0079	1.1582	0.0081
30.00	0.5879	0.0080	0.6487	0.0082	0.7119	0.0083	0.7821	0.0085	0.8598	0.0087	0.9428	0.0089	1.0355	0.0093
40.00	0.5533	0.0082	0.6062	0.0084	0.6616	0.0085	0.7231	0.0087	0.7891	0.0089	0.8594	0.0092	0.9367	0.0095
50.00	0.5226	0.0081	0.5688	0.0083	0.6182	0.0084	0.6725	0.0085	0.7295	0.0086	0.7897	0.0088	0.8555	0.0090
60.00	0.4955	0.0079	0.5359	0.0079	0.5801	0.0079	0.6286	0.0080	0.6784	0.0080	0.7308	0.0080	0.7875	0.0080
70.00	0.4707	0.0076	0.5067	0.0076	0.5467	0.0077	0.5901	0.0078	0.6340	0.0079	0.6801	0.0080	0.7298	0.0082
80.00	0.4485	0.0081	0.4806	0.0083	0.5170	0.0085	0.5563	0.0087	0.5952	0.0090	0.6362	0.0093	0.6802	0.0097
90.00	0.4285	0.0088	0.4572	0.0091	0.4903	0.0094	0.5262	0.0098	0.5611	0.0102	0.5977	0.0107	0.6369	0.0113
100.00	0.4101	0.0096	0.4358	0.0100	0.4664	0.0105	0.4993	0.0110	0.5308	0.0116	0.5637	0.0122	0.5990	0.0131

Table S47. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio40-PD60 (linseed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7177	0.0099	0.8104	0.0104	0.8999	0.0109	1.0101	0.0115	1.1443	0.0123	1.2874	0.0132	1.4680	0.0143
5.00	0.6905	0.0091	0.7757	0.0094	0.8590	0.0097	0.9596	0.0101	1.0804	0.0105	1.2086	0.0110	1.3660	0.0116
10.00	0.6650	0.0084	0.7437	0.0086	0.8210	0.0087	0.9134	0.0089	1.0229	0.0091	1.1372	0.0093	1.2760	0.0096
20.00	0.6194	0.0075	0.6869	0.0075	0.7546	0.0076	0.8331	0.0076	0.9240	0.0077	1.0182	0.0078	1.1281	0.0080
30.00	0.5798	0.0080	0.6383	0.0081	0.6984	0.0083	0.7663	0.0084	0.8432	0.0086	0.9222	0.0089	1.0116	0.0092
40.00	0.5449	0.0082	0.5964	0.0083	0.6500	0.0085	0.7095	0.0086	0.7757	0.0089	0.8430	0.0091	0.9178	0.0094
50.00	0.5140	0.0081	0.5595	0.0082	0.6081	0.0083	0.6606	0.0085	0.7183	0.0086	0.7769	0.0088	0.8400	0.0089
60.00	0.4866	0.0079	0.5273	0.0079	0.5715	0.0079	0.6184	0.0080	0.6691	0.0080	0.7204	0.0080	0.7746	0.0081
70.00	0.4621	0.0076	0.4986	0.0076	0.5389	0.0077	0.5812	0.0078	0.6264	0.0079	0.6718	0.0080	0.7189	0.0081
80.00	0.4399	0.0082	0.4728	0.0083	0.5101	0.0084	0.5485	0.0086	0.5888	0.0089	0.6295	0.0092	0.6708	0.0095
90.00	0.4198	0.0088	0.4497	0.0091	0.4842	0.0093	0.5192	0.0097	0.5557	0.0101	0.5923	0.0105	0.6289	0.0111
100.00	0.4016	0.0096	0.4287	0.0100	0.4609	0.0103	0.4929	0.0108	0.5261	0.0114	0.5593	0.0120	0.5920	0.0128

Table S48. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio60-PD40 (linseed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.7185	0.0100	0.7899	0.0103	0.8750	0.0107	1.0074	0.0117	1.1057	0.0120	1.2541	0.0130	1.4295	0.0141
5.00	0.6899	0.0092	0.7573	0.0094	0.8367	0.0096	0.9548	0.0102	1.0464	0.0104	1.1788	0.0109	1.3322	0.0115
10.00	0.6634	0.0085	0.7270	0.0086	0.8012	0.0087	0.9071	0.0090	0.9928	0.0091	1.1109	0.0093	1.2463	0.0095
20.00	0.6162	0.0075	0.6733	0.0075	0.7386	0.0076	0.8253	0.0076	0.9007	0.0077	0.9969	0.0078	1.1047	0.0080
30.00	0.5755	0.0080	0.6272	0.0081	0.6853	0.0082	0.7572	0.0084	0.8245	0.0086	0.9046	0.0088	0.9926	0.0091
40.00	0.5398	0.0082	0.5870	0.0083	0.6394	0.0084	0.6998	0.0086	0.7606	0.0088	0.8281	0.0090	0.9019	0.0093
50.00	0.5084	0.0081	0.5519	0.0082	0.5995	0.0083	0.6506	0.0085	0.7058	0.0086	0.7639	0.0087	0.8265	0.0089
60.00	0.4805	0.0079	0.5207	0.0079	0.5643	0.0079	0.6079	0.0080	0.6587	0.0080	0.7091	0.0080	0.7630	0.0081
70.00	0.4556	0.0076	0.4931	0.0076	0.5330	0.0077	0.5711	0.0077	0.6177	0.0078	0.6618	0.0079	0.7087	0.0081
80.00	0.4332	0.0081	0.4681	0.0083	0.5051	0.0084	0.5378	0.0086	0.5816	0.0088	0.6208	0.0091	0.6618	0.0095
90.00	0.4129	0.0088	0.4456	0.0090	0.4801	0.0093	0.5085	0.0096	0.5495	0.0100	0.5843	0.0104	0.6210	0.0110
100.00	0.3944	0.0096	0.4253	0.0099	0.4575	0.0102	0.4824	0.0107	0.5209	0.0112	0.5521	0.0119	0.5848	0.0126

Table S49. Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for Bio80-PD100 (linseed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.6858	0.0097	0.7643	0.0101	0.8526	0.0105	0.9784	0.0114	1.0795	0.0119	1.2293	0.0128	1.3970	0.0139
5.00	0.6620	0.0090	0.7347	0.0092	0.8171	0.0095	0.9300	0.0100	1.0240	0.0103	1.1572	0.0108	1.3056	0.0114
10.00	0.6395	0.0084	0.7068	0.0085	0.7839	0.0086	0.8857	0.0089	0.9732	0.0090	1.0924	0.0093	1.2246	0.0095
20.00	0.5989	0.0075	0.6570	0.0075	0.7253	0.0075	0.8089	0.0076	0.8856	0.0077	0.9827	0.0078	1.0900	0.0079
30.00	0.5631	0.0080	0.6141	0.0081	0.6748	0.0082	0.7446	0.0084	0.8129	0.0085	0.8937	0.0087	0.9825	0.0090
40.00	0.5316	0.0081	0.5765	0.0083	0.6311	0.0084	0.6900	0.0086	0.7515	0.0087	0.8197	0.0090	0.8950	0.0093
50.00	0.5035	0.0081	0.5433	0.0082	0.5929	0.0083	0.6431	0.0084	0.6988	0.0085	0.7573	0.0087	0.8219	0.0089
60.00	0.4782	0.0079	0.5138	0.0079	0.5591	0.0079	0.6022	0.0080	0.6533	0.0080	0.7039	0.0080	0.7602	0.0081
70.00	0.4555	0.0075	0.4874	0.0076	0.5290	0.0076	0.5663	0.0077	0.6134	0.0078	0.6578	0.0079	0.7073	0.0080
80.00	0.4348	0.0081	0.4638	0.0082	0.5021	0.0084	0.5344	0.0086	0.5782	0.0087	0.6172	0.0090	0.6614	0.0094
90.00	0.4160	0.0087	0.4423	0.0089	0.4778	0.0092	0.5062	0.0096	0.5469	0.0098	0.5818	0.0103	0.6212	0.0108
100.00	0.3986	0.0094	0.4227	0.0098	0.4559	0.0101	0.4808	0.0107	0.5190	0.0111	0.5501	0.0117	0.5857	0.0124

Table S50 Compressibility values and combined standard uncertainty, calculated by the methodology proposed by Daridon and Bazile[1].

P/MPa	$\varkappa_{T/}$ (GPa^{-1}) - U_c $\varkappa_T$ /(GPa^{-1}) for BIO100-PD0 (linseed)													
	T/K = 293.15		T/K =313.15		T/K = 333.15		T/K = 353.15		T/K = 373.15		T/K = 393.15		T/K =413.15	
0.10	0.6810	0.0098	0.7648	0.0102	0.8550	0.0106	0.9541	0.0113	1.0533	0.0117	1.1813	0.0125	1.3350	0.0134
5.00	0.6565	0.0090	0.7344	0.0093	0.8180	0.0095	0.9080	0.0099	1.0000	0.0102	1.1156	0.0106	1.2522	0.0112
10.00	0.6333	0.0084	0.7059	0.0085	0.7833	0.0087	0.8657	0.0089	0.9509	0.0090	1.0557	0.0092	1.1775	0.0094
20.00	0.5917	0.0075	0.6552	0.0075	0.7223	0.0076	0.7922	0.0076	0.8663	0.0077	0.9539	0.0077	1.0530	0.0079
30.00	0.5554	0.0080	0.6114	0.0081	0.6705	0.0082	0.7305	0.0083	0.7959	0.0085	0.8704	0.0087	0.9527	0.0089
40.00	0.5232	0.0081	0.5733	0.0083	0.6257	0.0084	0.6778	0.0086	0.7364	0.0087	0.8009	0.0089	0.8703	0.0092
50.00	0.4947	0.0081	0.5397	0.0082	0.5867	0.0083	0.6325	0.0084	0.6852	0.0085	0.7418	0.0086	0.8015	0.0088
60.00	0.4692	0.0078	0.5100	0.0079	0.5522	0.0079	0.5930	0.0080	0.6409	0.0080	0.6909	0.0080	0.7429	0.0081
70.00	0.4463	0.0076	0.4834	0.0076	0.5217	0.0077	0.5580	0.0077	0.6021	0.0078	0.6468	0.0079	0.6925	0.0080
80.00	0.4255	0.0081	0.4595	0.0082	0.4945	0.0084	0.5272	0.0085	0.5679	0.0087	0.6081	0.0089	0.6485	0.0092
90.00	0.4067	0.0087	0.4380	0.0090	0.4701	0.0092	0.4996	0.0095	0.5374	0.0098	0.5738	0.0102	0.6100	0.0107
100.00	0.3894	0.0094	0.4183	0.0098	0.4480	0.0102	0.4749	0.0105	0.5100	0.0110	0.5434	0.0115	0.5758	0.0122

Section 4

Section four (4) presents the values of parameters of Murnaghan's equation [2] for the mixture components (petro-diesel and biodiesel) that were used in Eq. (13) (shown in manuscript) where the units are K for temperature T, MPa for pressure and P and $kg.m^{-3}$ for a density.

Table S51. Parameters obtained using the objective function show in equation (12) (shown in manuscript).

Compounds	Parameters				
	$b_0 \times 10^2$	$b_1 \times 10^4$	$b_2 \times 10^7$	$c_0 \times 10^2$	$c_1 \times 10^4$
Petro-diesel	4.3200	-2.2500	4.0400	-5.1000	-0.0106
Biodiesel	4.1300	-2.6900	5.2400	-11.6000	0.0090

Section 5

Section five (5) present the uncertainties (u) reported in the article for molar fractions (x), density measurements (ρ), isobaric thermal expansibility (α_P), internal pressure (p_{int}) and the difference between pressure and volume heat capacities ($c_p - c_v$) for binary systems of petro-diesel + biodiesel (+grape seed, +corn, or +linseed) were calculated using the ISO approach of the GUM (Guide to the Expression of Uncertainty in Measurement, International Organization for Standardization, Geneva, Switzerland, 1993). The mathematical procedure used to calculate the uncertainty is shown below.

UNCERTAINTIES CALCULATION

UNCERTAINTIES OF MOLAR FRACTIONS

The combined uncertainty of the molar fractions $u_c(x)$ was determined according to equation S4.

$$u_c(x) = \sqrt{\sum_{i=1}^{n} \left[\frac{\partial x_1}{\partial m_i} \cdot u(m_i)\right]^2} \qquad \text{(S4)}$$

where: m_i is the mass of the "i" component, $u(m_i)$ is the mass-weighting uncertainty and n is the total number of components in the mixture.

The mass-weighting uncertainty $u(m_i)$ was calculated using the standard uncertainty of 0.0001 g from the digital balance as follows:

$$u(m_i) = \sqrt{2 \cdot 0.005g} \qquad \text{(S5)}$$

UNCERTAINTIES OF DENSITY MEASUREMENTS

Combined standard uncertainty of density measurements $u_c(\varrho)$ was determined including three uncertainty sources: the temperature uncertainty $u_c(T)$ of 0.02 K, the pressure uncertainty $u_c(P)$ of 0.70 MPa and the repeatability error of the densimeter $u_c(\varrho_r)$ of 0.01 $kg.m^{-3}$.

$$U(\rho) = \sqrt{\left[\left(\frac{\partial \rho}{\partial T}\right) \cdot u_c(T)\right]^2 + \left[\left(\frac{\partial \rho}{\partial P}\right) \cdot u_c(P)\right]^2 + (u_c(\rho_r)^2} \quad \text{(S6)}$$

As can be seen from equation S6 the expanded density uncertainty of high pressure and high temperature was calculated from the uncertainties of temperature, pressure, and repeatability. In addition, the equipment calibration (which considers periods of oscillation and reference fluid densities) was also considered for the final uncertainty calculation[5,6].

UNCERTAINTIES OF ISOBARIC THERMAL EXPANSIVITY

The combined standard uncertainty of isobaric thermal expansivity (α_P) was calculated following equation S7 for the binary systems, biodiesel and petro-diesel:

$$u_c(\alpha_P) = \sqrt{\left[\frac{\partial \alpha_p}{\partial T} \cdot u_c(T)\right]^2 + \left[\frac{\partial \alpha_P}{\partial P} \cdot u_c(P)\right]^2} \quad \text{(S7)}$$

The uncertainty value that was adopted is the maximum value obtained considering all the studied systems. The uncertainty value obtained for the isobaric thermal expansivity was $U(\alpha_P) = 7.25\text{E-}2\ K^{-1}$.

UNCERTAINTIES OF INTERNAL PRESSURE

The combined standard uncertainty of internal pressure (p_{int}) was calculated following equation S8 for the binary systems, biodiesel, and petro-diesel:

$$u_c(p_{int}) = \sqrt{\left[\frac{\partial p_{int}}{\partial T} \cdot u_c(T)\right]^2 + \left[\frac{\partial p_{int}}{\partial P} \cdot u_c(P)\right]^2} \quad \text{(S8)}$$

The uncertainty value that was adopted is the maximum value obtained considering all the studied systems. The uncertainty value obtained for the internal pressure was $U(p_{int}) = 0.33\ MPa$.

UNCERTAINTIES OF THE DIFFERENCE BETWEEN THE HEAT CAPACITIES AT CONSTANT PRESSURE AND CONSTANT VOLUME

The combined standard uncertainty of the difference between the heat capacities at constant pressure and constant volume $\left(c_p - c_v\right)$ was calculated following equation S9 for the binary, biodiesel, and petro-diesel systems:

$$u_c\left(c_p - c_v\right) = \sqrt{\left[\frac{\partial(c_p - c_v)}{\partial T} \cdot u_c(T)\right]^2 + \left[\frac{\partial(c_p - c_v)}{\partial P} \cdot u_c(P)\right]^2} \qquad \text{(S9)}$$

The uncertainty value that was adopted is the maximum value obtained considering all the studied systems. The uncertainty value obtained for the difference between the heat capacities at constant pressure and constant volume was $U\left(c_p - c_v\right) = 1.12\text{E-}3\ kJ \cdot kg^{-1} \cdot K^{-1}$.

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