Polyhydric alcohols under high pressure: comparative ultrasonic study of elastic properties

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THE SUPPLEMENTARY MATERIALS

Data for this article are available at https://disk.yandex.ru/d/vSsSGlHkQAlKQg

In the supplementary materials we have presented experimental data for erythritol as an example. These results are presented in Fig. 3 of the main article. The main array of experimental data can be obtained by request: grom@hppi.troitsk.ru

P – pressure

v_l – velocity of longitudinal ultrasonic wave

v_t – velocity of transverse ultrasonic wave

ρ – density

V/V_0 – relative volume change

G – shear modulus

B – bulk modulus

σ – Poisson's ratio

P, GPa	v_l, km/s	v_t, km/s	ρ, g/cm^3	V/V_0	G, GPa	B, GPa	σ
0	3.75606	1.78157	1.455	1	4.61816	14.38495	0.355
0.04	3.88865	1.79649	1.4589	0.99733	4.70842	15.79866	0.36445
0.08	3.98871	1.81141	1.46251	0.99487	4.79879	16.88575	0.3702
0.12	4.07476	1.82393	1.46591	0.99256	4.87666	17.85353	0.37482
0.16	4.15465	1.83594	1.46914	0.99038	4.95197	18.77282	0.37877
0.2	4.21716	1.84606	1.47224	0.98829	5.01728	19.50987	0.38157
0.24	4.26339	1.85634	1.47524	0.98628	5.08368	20.05339	0.38312
0.28	4.31688	1.86539	1.47816	0.98433	5.14355	20.70532	0.38529
0.32	4.36686	1.87378	1.481	0.98244	5.19985	21.32604	0.38725
0.36	4.40459	1.88048	1.48377	0.98061	5.24693	21.80733	0.38863
0.4	4.44053	1.88589	1.48649	0.97882	5.28683	22.27959	0.39005
0.44	4.48282	1.89032	1.48915	0.97707	5.32116	22.84828	0.39194
0.48	4.51894	1.89451	1.49175	0.97537	5.35412	23.34172	0.39346
0.52	4.54717	1.89876	1.4943	0.9737	5.38737	23.73216	0.39448
0.56	4.57605	1.90216	1.49682	0.97206	5.41585	24.14068	0.39563
0.6	4.60543	1.90616	1.4993	0.97045	5.44762	24.55483	0.39671
0.64	4.63024	1.90999	1.50175	0.96887	5.47849	24.9097	0.39754
0.68	4.66162	1.91226	1.50416	0.96732	5.50034	25.37096	0.39891
0.72	4.68829	1.91539	1.50653	0.96579	5.52704	25.76275	0.39989
0.76	4.70842	1.91815	1.50888	0.96429	5.55159	26.06694	0.40057
0.8	4.73688	1.92083	1.51119	0.96282	5.57566	26.4926	0.40167
0.84	4.76447	1.92273	1.51348	0.96136	5.59515	26.91462	0.40279
0.88	4.79213	1.92525	1.51573	0.95994	5.61819	27.33578	0.40383
0.92	4.81224	1.92793	1.51795	0.95853	5.64207	27.64815	0.40447
0.96	4.83847	1.9296	1.52015	0.95714	5.66007	28.06	0.4055
1	4.85176	1.93218	1.52233	0.95577	5.68331	28.27617	0.40581

Table S1 Properties of erythritol crystal (T=77 K)

P, GPa	v_l, km/s	v_t, km/s	ρ, g/cm^3	V/V_0	G, GPa	B, GPa	σ
0	3.64998	1.77301	1.45	1	4.55815	13.25504	0.34574
0.04	3.76868	1.7833	1.45423	0.99709	4.62469	14.50355	0.35588
0.08	3.84509	1.79119	1.45817	0.9944	4.67835	15.33645	0.36155
0.12	3.91588	1.7986	1.46192	0.99185	4.72927	16.12736	0.36643
0.16	3.98493	1.80584	1.4655	0.98942	4.77907	16.91546	0.3709
0.2	4.04536	1.81233	1.46893	0.98711	4.82478	17.62198	0.37455
0.24	4.08826	1.81797	1.47225	0.98489	4.86581	18.13545	0.37686
0.28	4.14221	1.8233	1.47547	0.98274	4.90512	18.79215	0.37994
0.32	4.18785	1.8271	1.4786	0.98066	4.93598	19.36688	0.38254
0.36	4.22564	1.83259	1.48165	0.97864	4.97593	19.83834	0.38426
0.4	4.26471	1.83723	1.48463	0.97668	5.01122	20.33711	0.38615
0.44	4.30396	1.84127	1.48754	0.97476	5.04318	20.84783	0.38807
0.48	4.32805	1.84603	1.4904	0.97289	5.07902	21.16305	0.38889
0.52	4.36983	1.84956	1.49321	0.97106	5.10807	21.71974	0.39096
0.56	4.39802	1.85287	1.49596	0.96928	5.13585	22.10506	0.39218
0.6	4.43682	1.85641	1.49866	0.96753	5.16477	22.63264	0.39397
0.64	4.46427	1.86061	1.50132	0.96582	5.19736	23.00836	0.39496
0.68	4.47989	1.86394	1.50394	0.96413	5.2251	23.23385	0.3954
0.72	4.50962	1.86738	1.50653	0.96248	5.25342	23.65075	0.39659
0.76	4.53504	1.87121	1.50908	0.96085	5.28396	24.00904	0.39748
0.8	4.55612	1.87473	1.51161	0.95924	5.3127	24.31238	0.39816
0.84	4.57888	1.87819	1.5141	0.95766	5.34114	24.6412	0.39892
0.88	4.59449	1.88126	1.51657	0.9561	5.36738	24.87529	0.39935
0.92	4.6101	1.88536	1.51902	0.95456	5.39949	25.10253	0.39965
0.96	4.62413	1.88803	1.52146	0.95303	5.42347	25.31941	0.40004
1	4.64497	1.89112	1.52387	0.95152	5.44986	25.63038	0.40072

Table S2 Properties of erythritol crystal (T=295 K)

P, GPa	v_l, km/s	v_t, km/s	ρ, g/cm^3	V/V_0	G, GPa	B, GPa	σ
0	3.51238	1.58681	1.435	1	3.61326	12.89765	0.37189
0.04	3.57788	1.5951	1.43979	0.99667	3.6633	13.55888	0.37607
0.08	3.64339	1.60339	1.44431	0.99356	3.71309	14.2337	0.38
0.12	3.72474	1.61274	1.4486	0.99061	3.76771	15.08639	0.38473
0.16	3.79599	1.62223	1.4527	0.98782	3.82297	15.84819	0.38836
0.2	3.85875	1.63489	1.45661	0.98516	3.89335	16.51079	0.39069
0.24	3.90241	1.64436	1.46039	0.98262	3.94879	16.98809	0.39214
0.28	3.95478	1.64996	1.46404	0.98016	3.98569	17.59705	0.3947
0.32	3.9807	1.65871	1.46761	0.97778	4.03789	17.88537	0.39502
0.36	4.01916	1.66884	1.47111	0.97545	4.09708	18.31476	0.39591
0.4	4.03663	1.67446	1.47455	0.97318	4.13437	18.52822	0.39615
0.44	4.07634	1.68188	1.47794	0.97095	4.18066	18.99794	0.39749
0.48	4.10771	1.69001	1.48126	0.96877	4.23067	19.36696	0.39819
0.52	4.11613	1.69472	1.48454	0.96663	4.26372	19.48119	0.39801
0.56	4.14477	1.70106	1.48777	0.96453	4.30501	19.83285	0.39879
0.6	4.18097	1.70838	1.49095	0.96247	4.35142	20.27524	0.39986
0.64	4.19201	1.71315	1.4941	0.96044	4.38498	20.42375	0.39982
0.68	4.2075	1.72102	1.49721	0.95845	4.4346	20.60713	0.3996
0.72	4.23225	1.72515	1.50027	0.95649	4.46504	20.93435	0.40043
0.76	4.24641	1.73092	1.50331	0.95456	4.50403	21.11725	0.40044
0.8	4.27814	1.73531	1.50631	0.95266	4.53594	21.53647	0.4016
0.84	4.30388	1.73935	1.50928	0.95079	4.56609	21.88393	0.40246
0.88	4.32908	1.7434	1.51221	0.94894	4.59626	22.22722	0.40327
0.92	4.34342	1.74744	1.51511	0.94712	4.62648	22.4299	0.4035
0.96	4.36253	1.75045	1.51799	0.94533	4.65123	22.70386	0.40412
1	4.37708	1.75323	1.52085	0.94355	4.67479	22.92026	0.40451

Table S3 Properties of erythritol glass (T=77 K)