

G. Ottonello, M. Bokreta, and P.F. Sciuto (1996) Parameterization of energy and interactions in garnets: End-member properties American Mineralogist 81, March-April.

Table 14. Calculated static energy differences ($U_p - U_0$; kJ/mole) of end-member garnets for various values of the hardness factor ρ (Å)

P(kbar)	Pyrope		Almandine		Spessartine		Grossular Uvarovite		Andradite		0.480	0.490
	0.480	0.490	0.450	0.460	0.450	0.460	0.480	0.490	0.500	0.510		
0	0	0	0	0	0	0	0	0	0	0	0	0
10	-1.125	-2.875	-1.875	-3.875	-1.129	-3.172	-3.234	-5.18	-1.676	-3.383	0.121	-1.687
20	2.812	-0.75	0	-4.062	2.051	-1.992	2.649	-1.195	0.941	-2.418	1.84	-1.738
30	2.375	-2.938	0.437	-5.625	3.668	-2.355	3.098	-2.668	2.675	-2.328	3.367	-1.996
40	4.812	-2.188	1.875	-6.187	5.5	-2.523	8.141	0.496	6.105	-0.543	7.418	0.305
50	8.625	-0.125	6.562	-3.437	9.719	-0.254	10.805	1.281	8.496	0.215	10.188	1.332
60	14.125	3.625	12.25	0.313	14.707	2.758	18.613	7.238	14.308	4.402	15.738	5.141
70	15.625	3.5	14.75	0.813	18.156	4.242	22.891	9.644	20.086	8.574	21.867	9.547
80	22.628	8.812	18.25	2.375	22.457	6.602	30.59	15.496	25.367	12.25	26.59	12.555
90	30.441	14.937	24.187	6.375	30.672	12.895	39.903	23.008	30.82	16.094	33.52	17.754
100	35.535	18.347	30.062	10.313	37.047	17.363	47.613	28.891	39.187	22.887	40.961	23.492
110	40.562	21.714	33.937	12.313	44.363	22.762	58.004	37.469	47.55	29.672	49.606	30.442
120	48.109	27.617	43.375	19.813	52.617	29.109	65.153	42.797	58.39	38.953	57.879	37.035
130	54.73	32.558	49.562	24.125	60.348	34.906	76.172	52.035	63.965	42.953	66.977	44.442
140	62.906	39.097	57.562	30.313	68.746	41.445	88.383	62.465	75.902	53.328	76.195	51.981
150	73.578	48.152	65	35.813	79.977	50.797	95.641	67.91	84.882	60.758	87.043	61.164
160	81.242	54.191	74.375	43.25	88.73	57.672	110.231	80.75	93.769	68.101	98.195	70.633
170	91.5	62.855	82.605	49.688	97.082	64.141	120.86	89.605	106.933	79.722	108.52	79.305
180	100.652	70.371	91.664	56.875	108.934	74.141	132.563	99.531	117.55	88.789	121.109	90.239
190	109.543	77.664	101.535	64.938	118.902	82.254	145.289	110.492	129.047	98.746	132.082	99.551
200	122.019	88.543	111.402	72.938	127.25	88.719	159.125	122.609	142.914	111.086	142.852	108.653
210	130.335	95.273	121.843	81.563	141.281	100.922	171.625	133.34	152.902	119.539	158.402	122.594
220	139.023	102.367	131.039	88.863	152.699	110.5	184.977	144.957	166.437	131.578	169.649	132.176
230	152.214	113.972	143.402	99.383	163.367	119.34	199.793	158.039	178.351	141.976	183.277	144.172
240	166.046	126.222	152.925	107.074	175.91	130.031	212.758	169.277	192.062	154.183	197.203	156.449
250	176.425	135.007	163.906	116.234	187.691	139.973	228.176	182.961	206.047	166.644	211.004	168.629
260	188.082	145.101	178.152	128.648	200.363	150.828	243.063	196.105	218.59	177.676	224.512	180.504
270	201.543	156.996	189.414	138.102	213.422	162.059	258.301	209.641	234.293	191.883	240.719	195.082
280	210.437	164.339	199.746	146.606	227.102	173.922	274.539	224.164	248.316	204.387	252.945	205.676
290	223.429	175.757	213.558	158.629	239.098	184.094	289.637	237.57	262.179	216.769	268.637	219.758
300	237.019	187.781	224.882	168.129	255.18	198.387	305.238	251.465	277.058	230.14	284.098	233.578

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Table 14. (Continued)

P(kbar)	Knoringite		Calderite		Skiagite		Khoharite		MnCrGarnet		FeCrGarnet	
	0.500	0.510	0.460	0.470	0.460	0.470	0.480	0.490	0.470	0.480	0.470	0.480
0	0	0	0	0	0	0	0	0	0	0	0	0
10	-0.879	-2.399	-3.395	-5.227	-0.602	-2.394	-2.344	-3.973	-0.426	-2.214	-2.25	-4.024
20	0.547	-2.454	-2.477	-6.094	0.636	-2.934	-1.406	-4.625	3.785	0.266	0.98	-2.512
30	0.067	-4.418	-0.368	-5.762	3.003	-2.328	0.047	-4.758	5.894	0.61	1.707	-3.508
40	1.41	-4.547	1.878	-5.301	3.953	-3.16	1.465	-4.938	10.16	3.149	4.207	-2.746
50	5.551	-1.852	3.964	-4.977	6.796	-2.062	6.477	-1.477	13.836	5.102	8.644	-0.016
60	7.309	-1.555	9.273	-1.438	9.109	-1.488	11.024	1.492	17.652	7.196	13.715	3.371
70	11.348	1.027	11.136	-1.34	12.531	0.191	13.434	2.332	22.578	10.387	17.23	5.179
80	17.094	5.343	17.398	3.187	17.343	3.277	17.059	4.425	28.781	14.914	21.379	7.656
90	19.493	6.32	24.222	8.297	19.957	4.164	23.25	9.074	34.426	18.852	28.777	13.379
100	22.985	8.39	29.812	12.144	26.914	9.398	28.469	12.753	44.84	27.594	34.902	17.828
110	30.637	14.613	36.66	17.273	31.671	12.441	36.102	18.851	49.652	30.727	39.957	21.226
120	36.586	19.167	42.734	21.633	39	18.078	42.266	23.496	58.84	38.243	48.398	28.019
130	42.598	23.761	50.203	27.375	45.625	22.988	47.375	27.093	65.734	43.461	56.18	34.133
140	51.801	31.585	58.289	33.758	54.933	30.629	56.629	34.835	77.082	53.161	64.398	40.734
150	60.176	38.574	67.386	41.164	61.652	35.668	65.906	42.605	83.535	57.942	69.348	44.011
160	67.231	44.242	75.789	47.855	69.203	41.531	74.192	49.414	94.898	67.68	81.078	54.109
170	75.633	51.246	86.386	56.758	79.425	50.074	82.082	55.785	105.164	76.282	90.953	62.39
180	82.207	56.449	96.941	65.636	84.882	53.836	90.027	62.222	114.457	83.926	98.648	68.453
190	91.934	64.816	107.398	74.437	94.906	62.211	99.262	69.984	126.832	94.676	108.301	76.488
200	100.192	71.695	117.812	83.14	105.636	71.285	110.016	79.25	137.652	103.856	119.644	86.203
210	111.489	81.64	128.058	91.699	116.851	80.836	121.817	89.585	149.074	113.653	127.992	92.926
220	121.094	89.855	139.75	101.722	124	86.305	130.606	96.875	158.933	121.883	140.055	103.398
230	131.082	98.507	151.804	112.117	137.984	98.656	143.402	108.218	170.777	132.114	151.473	113.215
240	140.567	106.636	162.214	120.847	147.679	106.684	152.996	116.32	184.242	143.961	161.933	122.07
250	152.391	117.105	174.472	131.433	158.093	115.461	165.383	127.257	196.265	154.364	173.055	131.586
260	164.278	127.656	186.019	141.332	169.132	124.848	176.66	137.074	209.488	165.957	184.672	141.601
270	174.965	136.98	199.46	153.086	180.679	134.742	188.457	147.41	221.758	176.625	197.121	152.469
280	184.11	144.785	212.496	164.508	191.898	144.336	199.02	156.488	237.98	191.258	207.957	161.719
290	196.055	155.386	226.089	176.422	204.523	155.301	209.699	165.707	249.738	201.407	221.355	173.523
300	208.981	166.996	238.992	187.687	216.437	165.582	224.531	179.109	265.445	215.493	236.508	187.105