

O<sub>2</sub> Ref.: <http://cea.grc.nasa.gov/>

T K	C <sub>p</sub> J/mol-K	H-H298.15 kJ/mol	S J/mol-K	-(G-H298.15)/T J/mol-K	H kJ/mol	Δ H <sub>f</sub> kJ/mol	log K
0	0.	-8.680	0.	INFINITE	-8.680	0	INFINITE
200	29.126	-2.868	193.484	207.826	-2.868	0	0
220	29.158	-2.285	196.262	206.650	-2.285	0	0
240	29.188	-1.702	198.800	205.892	-1.702	0	0
260	29.233	-1.118	201.138	205.437	-1.118	0	0
280	29.299	-0.532	203.307	205.209	-0.532	0	0
298.15	29.378	0.000	205.149	205.149	0.000	0	0
300	29.388	0.054	205.331	205.150	0.054	0	0
320	29.498	0.643	207.231	205.221	0.643	0	0
340	29.629	1.234	209.023	205.393	1.234	0	0
360	29.777	1.828	210.721	205.642	1.828	0	0
380	29.940	2.426	212.335	205.952	2.426	0	0
400	30.115	3.026	213.875	206.310	3.026	0	0
420	30.299	3.630	215.349	206.706	3.630	0	0
440	30.491	4.238	216.763	207.131	4.238	0	0
460	30.688	4.850	218.123	207.579	4.850	0	0
480	30.889	5.466	219.433	208.046	5.466	0	0
500	31.092	6.086	220.698	208.527	6.086	0	0
520	31.295	6.709	221.922	209.019	6.709	0	0
540	31.497	7.337	223.106	209.519	7.337	0	0
560	31.698	7.969	224.256	210.025	7.969	0	0
580	31.896	8.605	225.371	210.535	8.605	0	0
600	32.090	9.245	226.456	211.048	9.245	0	0
620	32.280	9.889	227.511	211.562	9.889	0	0
640	32.466	10.536	228.539	212.076	10.536	0	0
660	32.646	11.187	229.541	212.590	11.187	0	0
680	32.821	11.842	230.518	213.103	11.842	0	0
700	32.990	12.500	231.472	213.615	12.500	0	0
720	33.153	13.162	232.404	214.124	13.162	0	0
740	33.310	13.826	233.314	214.630	13.826	0	0
760	33.461	14.494	234.204	215.133	14.494	0	0
780	33.606	15.165	235.075	215.634	15.165	0	0
800	33.745	15.838	235.928	216.130	15.838	0	0
820	33.879	16.514	236.763	216.623	16.514	0	0
840	34.007	17.193	237.581	217.113	17.193	0	0
860	34.130	17.875	238.383	217.598	17.875	0	0
880	34.248	18.558	239.169	218.079	18.558	0	0
900	34.361	19.244	239.939	218.557	19.244	0	0
920	34.471	19.933	240.696	219.030	19.933	0	0
940	34.578	20.623	241.438	219.499	20.623	0	0
960	34.681	21.316	242.167	219.963	21.316	0	0
980	34.783	22.011	242.884	220.424	22.011	0	0
1000	34.883	22.707	243.587	220.880	22.707	0	0

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T K	Cp J/mol-K	H-H298.15 kJ/mol	S J/mol-K	-(G-H298.15)/T J/mol-K	H kJ/mol	Δ Hf kJ/mol	log K
1020	34.983	23.406	244.279	221.332	23.406	0	0
1040	35.077	24.106	244.959	221.780	24.106	0	0
1060	35.167	24.809	245.628	222.224	24.809	0	0
1080	35.252	25.513	246.286	222.663	25.513	0	0
1100	35.333	26.219	246.934	223.099	26.219	0	0
1120	35.411	26.926	247.571	223.530	26.926	0	0
1140	35.486	27.635	248.199	223.957	27.635	0	0
1160	35.558	28.346	248.817	224.381	28.346	0	0
1180	35.628	29.058	249.425	224.800	29.058	0	0
1200	35.695	29.771	250.024	225.215	29.771	0	0
1220	35.760	30.486	250.615	225.627	30.486	0	0
1240	35.824	31.201	251.197	226.035	31.201	0	0
1260	35.886	31.918	251.771	226.439	31.918	0	0
1280	35.946	32.637	252.336	226.839	32.637	0	0
1300	36.006	33.356	252.894	227.235	33.356	0	0
1320	36.064	34.077	253.444	227.628	34.077	0	0
1340	36.121	34.799	253.987	228.018	34.799	0	0
1360	36.177	35.522	254.523	228.404	35.522	0	0
1380	36.233	36.246	255.051	228.786	36.246	0	0
1400	36.288	36.971	255.573	229.165	36.971	0	0
1420	36.342	37.697	256.088	229.540	37.697	0	0
1440	36.395	38.425	256.597	229.913	38.425	0	0
1460	36.448	39.153	257.099	230.282	39.153	0	0
1480	36.501	39.883	257.595	230.647	39.883	0	0
1500	36.553	40.613	258.086	231.010	40.613	0	0
1520	36.604	41.345	258.570	231.369	41.345	0	0
1540	36.656	42.077	259.049	231.726	42.077	0	0
1560	36.707	42.811	259.522	232.079	42.811	0	0
1580	36.758	43.546	259.990	232.430	43.546	0	0
1600	36.808	44.281	260.453	232.777	44.281	0	0
1620	36.858	45.018	260.910	233.121	45.018	0	0
1640	36.908	45.756	261.363	233.463	45.756	0	0
1660	36.958	46.494	261.811	233.802	46.494	0	0
1680	37.008	47.234	262.254	234.138	47.234	0	0
1700	37.057	47.975	262.692	234.471	47.975	0	0
1720	37.107	48.716	263.125	234.802	48.716	0	0
1740	37.156	49.459	263.555	235.130	49.459	0	0
1760	37.205	50.203	263.980	235.455	50.203	0	0
1780	37.254	50.947	264.400	235.778	50.947	0	0
1800	37.302	51.693	264.817	236.099	51.693	0	0

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T K	Cp J/mol-K	H-H298.15 kJ/mol	S J/mol-K	-(G-H298.15)/T J/mol-K	H kJ/mol	Δ Hf kJ/mol	log K
1820	37.351	52.439	265.229	236.417	52.439	0	0
1840	37.400	53.187	265.638	236.732	53.187	0	0
1860	37.448	53.935	266.042	237.045	53.935	0	0
1880	37.496	54.685	266.443	237.356	54.685	0	0
1900	37.545	55.435	266.840	237.664	55.435	0	0
1920	37.593	56.186	267.234	237.970	56.186	0	0
1940	37.641	56.939	267.623	238.274	56.939	0	0
1960	37.688	57.692	268.010	238.575	57.692	0	0
1980	37.736	58.446	268.393	238.874	58.446	0	0
2000	37.784	59.202	268.772	239.171	59.202	0	0
2020	37.831	59.958	269.148	239.466	59.958	0	0
2040	37.879	60.715	269.521	239.759	60.715	0	0
2060	37.926	61.473	269.891	240.050	61.473	0	0
2080	37.973	62.232	270.258	240.339	62.232	0	0
2100	38.020	62.992	270.621	240.625	62.992	0	0
2120	38.067	63.753	270.982	240.910	63.753	0	0
2140	38.114	64.514	271.340	241.193	64.514	0	0
2160	38.161	65.277	271.694	241.473	65.277	0	0
2180	38.207	66.041	272.046	241.752	66.041	0	0
2200	38.254	66.805	272.395	242.029	66.805	0	0
2220	38.300	67.571	272.742	242.304	67.571	0	0
2240	38.346	68.337	273.086	242.578	68.337	0	0
2260	38.392	69.105	273.427	242.849	69.105	0	0
2280	38.438	69.873	273.765	243.119	69.873	0	0
2300	38.484	70.642	274.101	243.387	70.642	0	0
2320	38.530	71.413	274.434	243.653	71.413	0	0
2340	38.575	72.184	274.765	243.918	72.184	0	0
2360	38.620	72.956	275.094	244.180	72.956	0	0
2380	38.665	73.728	275.420	244.442	73.728	0	0
2400	38.710	74.502	275.744	244.701	74.502	0	0
2420	38.755	75.277	276.065	244.959	75.277	0	0
2440	38.800	76.052	276.384	245.215	76.052	0	0
2460	38.845	76.829	276.701	245.470	76.829	0	0
2480	38.889	77.606	277.016	245.723	77.606	0	0
2500	38.933	78.384	277.328	245.975	78.384	0	0
2520	38.977	79.163	277.639	246.225	79.163	0	0
2540	39.021	79.943	277.947	246.473	79.943	0	0
2560	39.065	80.724	278.253	246.720	80.724	0	0
2580	39.108	81.506	278.557	246.966	81.506	0	0
2600	39.152	82.289	278.860	247.210	82.289	0	0

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T K	Cp J/mol-K	H-H298.15 kJ/mol	S J/mol-K	-(G-H298.15)/T J/mol-K	H kJ/mol	Δ Hf kJ/mol	log K
2620	39.195	83.072	279.160	247.453	83.072	0	0
2640	39.238	83.856	279.458	247.694	83.856	0	0
2660	39.281	84.642	279.754	247.934	84.642	0	0
2680	39.323	85.428	280.049	248.173	85.428	0	0
2700	39.366	86.215	280.341	248.410	86.215	0	0
2720	39.408	87.002	280.632	248.646	87.002	0	0
2740	39.450	87.791	280.921	248.880	87.791	0	0
2760	39.492	88.580	281.208	249.114	88.580	0	0
2780	39.534	89.371	281.493	249.345	89.371	0	0
2800	39.575	90.162	281.777	249.576	90.162	0	0
2820	39.617	90.954	282.059	249.805	90.954	0	0
2840	39.658	91.746	282.339	250.034	91.746	0	0
2860	39.699	92.540	282.617	250.260	92.540	0	0
2880	39.739	93.334	282.894	250.486	93.334	0	0
2900	39.780	94.129	283.169	250.711	94.129	0	0
2920	39.820	94.925	283.443	250.934	94.925	0	0
2940	39.860	95.722	283.715	251.156	95.722	0	0
2960	39.900	96.520	283.985	251.377	96.520	0	0
2980	39.940	97.318	284.254	251.597	97.318	0	0
3000	39.980	98.117	284.521	251.815	98.117	0	0
3020	40.019	98.917	284.787	252.033	98.917	0	0
3040	40.058	99.718	285.051	252.249	99.718	0	0
3060	40.097	100.520	285.314	252.464	100.520	0	0
3080	40.136	101.322	285.575	252.678	101.322	0	0
3100	40.175	102.125	285.835	252.892	102.125	0	0
3120	40.213	102.929	286.094	253.104	102.929	0	0
3140	40.251	103.734	286.351	253.314	103.734	0	0
3160	40.289	104.539	286.606	253.524	104.539	0	0
3180	40.327	105.345	286.861	253.733	105.345	0	0
3200	40.365	106.152	287.114	253.941	106.152	0	0
3220	40.402	106.960	287.365	254.148	106.960	0	0
3240	40.439	107.768	287.616	254.354	107.768	0	0
3260	40.476	108.577	287.864	254.559	108.577	0	0
3280	40.513	109.387	288.112	254.762	109.387	0	0
3300	40.549	110.198	288.359	254.965	110.198	0	0
3320	40.586	111.009	288.604	255.167	111.009	0	0
3340	40.622	111.821	288.848	255.368	111.821	0	0
3360	40.658	112.634	289.090	255.568	112.634	0	0
3380	40.694	113.448	289.332	255.767	113.448	0	0
3400	40.729	114.262	289.572	255.965	114.262	0	0

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T K	C <sub>p</sub> J/mol-K	H-H298.15 kJ/mol	S J/mol-K	-(G-H298.15)/T J/mol-K	H kJ/mol	Δ H <sub>f</sub> kJ/mol	log K
3420	40.765	115.077	289.811	256.163	115.077	0	0
3440	40.800	115.893	290.049	256.359	115.893	0	0
3460	40.835	116.709	290.285	256.554	116.709	0	0
3480	40.870	117.526	290.521	256.749	117.526	0	0
3500	40.904	118.344	290.755	256.942	118.344	0	0
3520	40.939	119.162	290.988	257.135	119.162	0	0
3540	40.973	119.981	291.220	257.327	119.981	0	0
3560	41.007	120.801	291.451	257.518	120.801	0	0
3580	41.041	121.621	291.681	257.708	121.621	0	0
3600	41.074	122.443	291.910	257.898	122.443	0	0
3620	41.108	123.264	292.137	258.086	123.264	0	0
3640	41.141	124.087	292.364	258.274	124.087	0	0
3660	41.174	124.910	292.589	258.461	124.910	0	0
3680	41.207	125.734	292.814	258.647	125.734	0	0
3700	41.239	126.558	293.037	258.832	126.558	0	0
3720	41.272	127.383	293.260	259.017	127.383	0	0
3740	41.304	128.209	293.481	259.201	128.209	0	0
3760	41.336	129.036	293.701	259.383	129.036	0	0
3780	41.368	129.863	293.921	259.566	129.863	0	0
3800	41.400	130.690	294.139	259.747	130.690	0	0
3820	41.431	131.519	294.357	259.928	131.519	0	0
3840	41.463	132.348	294.573	260.108	132.348	0	0
3860	41.494	133.177	294.789	260.287	133.177	0	0
3880	41.525	134.007	295.003	260.465	134.007	0	0
3900	41.556	134.838	295.217	260.643	134.838	0	0
3920	41.586	135.670	295.429	260.820	135.670	0	0
3940	41.617	136.502	295.641	260.996	136.502	0	0
3960	41.647	137.334	295.852	261.171	137.334	0	0
3980	41.677	138.167	296.062	261.346	138.167	0	0
4000	41.707	139.001	296.271	261.520	139.001	0	0
4020	41.737	139.836	296.479	261.694	139.836	0	0
4040	41.766	140.671	296.686	261.866	140.671	0	0
4060	41.796	141.506	296.892	262.038	141.506	0	0
4080	41.825	142.343	297.098	262.210	142.343	0	0
4100	41.854	143.179	297.302	262.381	143.179	0	0
4120	41.883	144.017	297.506	262.551	144.017	0	0
4140	41.912	144.855	297.709	262.720	144.855	0	0
4160	41.940	145.693	297.911	262.889	145.693	0	0
4180	41.968	146.532	298.112	263.057	146.532	0	0
4200	41.997	147.372	298.313	263.224	147.372	0	0

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4220	42.025	148.212	298.512	263.391	148.212	0	0
4240	42.052	149.053	298.711	263.557	149.053	0	0
4260	42.080	149.894	298.909	263.722	149.894	0	0
4280	42.108	150.736	299.106	263.887	150.736	0	0
4300	42.135	151.579	299.302	264.052	151.579	0	0
4320	42.162	152.422	299.498	264.215	152.422	0	0
4340	42.189	153.265	299.693	264.378	153.265	0	0
4360	42.216	154.109	299.887	264.541	154.109	0	0
4380	42.243	154.954	300.080	264.703	154.954	0	0
4400	42.269	155.799	300.273	264.864	155.799	0	0
4420	42.296	156.645	300.464	265.024	156.645	0	0
4440	42.322	157.491	300.655	265.185	157.491	0	0
4460	42.348	158.337	300.846	265.344	158.337	0	0
4480	42.374	159.185	301.035	265.503	159.185	0	0
4500	42.400	160.032	301.224	265.661	160.032	0	0
4520	42.425	160.881	301.412	265.819	160.881	0	0
4540	42.451	161.729	301.599	265.976	161.729	0	0
4560	42.476	162.579	301.786	266.133	162.579	0	0
4580	42.501	163.428	301.972	266.289	163.428	0	0
4600	42.526	164.279	302.157	266.445	164.279	0	0
4620	42.551	165.129	302.342	266.600	165.129	0	0
4640	42.576	165.981	302.526	266.754	165.981	0	0
4660	42.601	166.832	302.709	266.908	166.832	0	0
4680	42.625	167.685	302.891	267.061	167.685	0	0
4700	42.649	168.537	303.073	267.214	168.537	0	0
4720	42.673	169.391	303.254	267.367	169.391	0	0
4740	42.697	170.244	303.435	267.518	170.244	0	0
4760	42.721	171.099	303.615	267.670	171.099	0	0
4780	42.745	171.953	303.794	267.820	171.953	0	0
4800	42.769	172.808	303.972	267.971	172.808	0	0
4820	42.792	173.664	304.150	268.120	173.664	0	0
4840	42.815	174.520	304.328	268.270	174.520	0	0
4860	42.839	175.377	304.504	268.418	175.377	0	0
4880	42.862	176.234	304.680	268.567	176.234	0	0
4900	42.884	177.091	304.855	268.714	177.091	0	0
4920	42.907	177.949	305.030	268.862	177.949	0	0
4940	42.930	178.807	305.204	269.008	178.807	0	0
4960	42.952	179.666	305.378	269.155	179.666	0	0
4980	42.975	180.525	305.551	269.301	180.525	0	0
5000	42.997	181.385	305.723	269.446	181.385	0	0

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T K	C <sub>p</sub> J/mol-K	H-H298.15 kJ/mol	S J/mol-K	-(G-H298.15)/T J/mol-K	H kJ/mol	Δ H <sub>f</sub> kJ/mol	log K
5020	43.019	182.245	305.895	269.591	182.245	0	0
5040	43.041	183.106	306.066	269.735	183.106	0	0
5060	43.063	183.967	306.236	269.879	183.967	0	0
5080	43.084	184.828	306.406	270.023	184.828	0	0
5100	43.106	185.690	306.576	270.166	185.690	0	0
5120	43.127	186.553	306.744	270.308	186.553	0	0
5140	43.149	187.415	306.912	270.450	187.415	0	0
5160	43.170	188.279	307.080	270.592	188.279	0	0
5180	43.191	189.142	307.247	270.733	189.142	0	0
5200	43.212	190.006	307.414	270.874	190.006	0	0
5220	43.233	190.871	307.580	271.014	190.871	0	0
5240	43.253	191.736	307.745	271.154	191.736	0	0
5260	43.274	192.601	307.910	271.294	192.601	0	0
5280	43.294	193.467	308.074	271.433	193.467	0	0
5300	43.315	194.333	308.238	271.571	194.333	0	0
5320	43.335	195.199	308.401	271.709	195.199	0	0
5340	43.355	196.066	308.563	271.847	196.066	0	0
5360	43.375	196.933	308.726	271.984	196.933	0	0
5380	43.395	197.801	308.887	272.121	197.801	0	0
5400	43.414	198.669	309.048	272.258	198.669	0	0
5420	43.434	199.538	309.209	272.394	199.538	0	0
5440	43.453	200.406	309.369	272.529	200.406	0	0
5460	43.473	201.276	309.528	272.665	201.276	0	0
5480	43.492	202.145	309.687	272.799	202.145	0	0
5500	43.511	203.015	309.846	272.934	203.015	0	0
5520	43.530	203.886	310.004	273.068	203.886	0	0
5540	43.549	204.757	310.161	273.202	204.757	0	0
5560	43.567	205.628	310.318	273.335	205.628	0	0
5580	43.586	206.499	310.475	273.468	206.499	0	0
5600	43.605	207.371	310.631	273.600	207.371	0	0
5620	43.623	208.243	310.786	273.732	208.243	0	0
5640	43.641	209.116	310.941	273.864	209.116	0	0
5660	43.659	209.989	311.096	273.995	209.989	0	0
5680	43.677	210.862	311.250	274.126	210.862	0	0
5700	43.695	211.736	311.403	274.256	211.736	0	0
5720	43.713	212.610	311.556	274.387	212.610	0	0
5740	43.731	213.485	311.709	274.516	213.485	0	0
5760	43.748	214.360	311.861	274.646	214.360	0	0
5780	43.766	215.235	312.013	274.775	215.235	0	0
5800	43.783	216.110	312.164	274.904	216.110	0	0

O<sub>2</sub>

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T K	Cp J/mol-K	H-H298.15 kJ/mol	S J/mol-K	-(G-H298.15)/T J/mol-K	H kJ/mol	Δ Hf kJ/mol	log K
5820	43.800	216.986	312.315	275.032	216.986	0	0
5840	43.817	217.862	312.465	275.160	217.862	0	0
5860	43.834	218.739	312.615	275.287	218.739	0	0
5880	43.851	219.616	312.764	275.415	219.616	0	0
5900	43.868	220.493	312.913	275.541	220.493	0	0
5920	43.884	221.370	313.062	275.668	221.370	0	0
5940	43.901	222.248	313.210	275.794	222.248	0	0
5960	43.917	223.126	313.357	275.920	223.126	0	0
5980	43.934	224.005	313.504	276.045	224.005	0	0
6000	43.950	224.884	313.651	276.170	224.884	0	0

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