

## THERMAL APPLICATIONS NOTE

### Literature Values For Water Specific Heat Capacity

Specific heat capacity measurements by DSC require the use of well-characterized reference material (usually sapphire) to obtain results. However, when analyzing liquids, suitable sized sapphire reference material may be difficult to obtain. One alternative is to use purified water. The table below summarizes specific heat capacity data (literature values) for water as a function of temperature.

Temperature	Specific Heat		Temperature	Specific Heat	
°C	cal./g/°C	J/g/°C	°C	cal./g/°C	J/g/°C
0	1.00738	4.2177	29	0.99804	4.1786
1	1.00652	4.2141	30	0.99802	4.1785
2	1.00571	4.2107	31	0.99799	4.1784
3	1.00499	4.2077	32	0.99797	4.1783
4	1.00430	4.2048	33	0.99797	4.1783
5	1.00368	4.2022	34	0.99795	4.1782
6	1.00313	4.1999	35	0.99795	4.1782
7	1.00260	4.1977	36	0.99797	4.1783
8	1.00213	4.1957	37	0.99797	4.1783
9	1.00170	4.1939	38	0.99799	4.1784
10	1.00129	4.1922	39	0.99802	4.1785
11	1.00093	4.1907	40	0.99804	4.1786
12	1.00060	4.1893	41	0.99807	4.1787
13	1.00029	4.1880	42	0.99811	4.1789
14	1.00002	4.1869	43	0.99816	4.1791
15	0.99976	4.1858	44	0.99819	4.1792
16	0.99955	4.1849	45	0.99826	4.1795
17	0.99933	4.1840	46	0.99830	4.1797
18	0.99914	4.1832	47	0.99835	4.1799
19	0.99897	4.1825	48	0.99842	4.1802
20	0.99883	4.1819	49	0.99847	4.1804
21	0.99869	4.1813	50	0.99854	4.1807
22	0.99857	4.1808	51	0.99862	4.1810
23	0.99847	4.1804	52	0.99871	4.1814
24	0.99838	4.1800	53	0.99878	4.1817
25	0.99828	4.1796	54	0.99885	4.1820
26	0.99821	4.1793	55	0.99895	4.1824
27	0.99814	4.1790	56	0.99905	4.1828
28	0.99809	4.1788	57	0.99914	4.1832

Temperature			Temperature		
Specific Heat			Specific Heat		
°C	cal./g/°C	J/g/°C	°C	cal./g/°C	J/g/°C
58	0.99924	4.1836	79	1.00213	4.1957
59	0.99933	4.1840	80	1.00229	4.1964
60	0.99943	4.1844	81	1.00248	4.1972
61	0.99955	4.1849	82	1.00268	4.1980
62	0.99964	4.1853	83	1.00287	4.1988
63	0.99976	4.1858	84	1.00308	4.1997
64	0.99988	4.1863	85	1.00327	4.2005
65	1.00000	4.1868	86	1.00349	4.2014
66	1.00014	4.1874	87	1.00370	4.2023
67	1.00026	4.1879	88	1.00392	4.2032
68	1.00041	4.1885	89	1.00416	4.2042
69	1.00053	4.1890	90	1.00437	4.2051
70	1.00067	4.1896	91	1.00461	4.2061
71	1.00081	4.1902	92	1.00485	4.2071
72	1.00096	4.1908	93	1.00509	4.2081
73	1.00112	4.1915	94	1.00535	4.2092
74	1.00127	4.1921	95	1.00561	4.2103
75	1.00143	4.1928	96	1.00588	4.2114
76	1.00160	4.1935	97	1.00614	4.2125
77	1.00177	4.1942	98	1.00640	4.2136
78	1.00194	4.1949	99	1.00669	4.2148
			100	1.00697	4.2160

**REFERENCE:** Osborne, Stimson, and Ginnings, *B. of S. Jour. Res.*, 23, 238 (1939) in Handbook of Chemistry and Physics, 53rd ed., Cleveland, Ohio, D128 (1972-1973).

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