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Specific heat of caustic soda solutions

Scope

This Technical Information Paper presents the specific heat of caustic soda solutions as a function of caustic soda (sodium hydroxide, NaOH) concentration and solution temperature.

Safety precautions

Caustic soda is a highly corrosive material which can cause severe burns to the eyes and skin. Eye contact of only a few seconds can cause permanent damage, even blindness. In all cases of bodily contact with caustic soda, begin washing the exposed area **immediately** with large quantities of flowing water. Personnel engaged in the use or handling of caustic soda should wear close-fitting chemical worker's goggles, rubber gloves, rubber apron or suit, and a face shield. The addition of caustic soda to liquid will cause a rise in temperature. If caustic soda becomes concentrated in one area, or is added too rapidly, or is added to hot or cold liquid, a rapid temperature increase can result in dangerous mists or boiling and spattering, which may cause an immediate **violent eruption**.

Statement of accuracy

These data were developed for a standard grade of caustic soda and will be satisfactory for nearly all applications. There are several grades of caustic soda available commercially. If the application of this data is intended for highly accurate calculations, the user should obtain specific data from the supplier of the product being used.

Content

Specific heat of caustic soda solutions, J/g/°C

Weight % NaOH	Temperature, °C										
	0	10	20	30	40	50	60	70	80	100	150
0	4.203	4.190	4.186	4.182	4.173	4.178	4.182	4.186	4.194	4.207	...
2	4.040	4.052	4.060	4.073	4.081	4.090	4.094	4.102	4.115	4.127	...
4	3.918	3.947	3.968	3.985	3.998	4.006	4.019	4.027	4.040	4.048	...
6	3.826	3.868	3.893	3.910	3.931	3.939	3.952	3.960	3.968	3.981	...
8	3.755	3.797	3.826	3.847	3.868	3.880	3.893	3.901	3.910	3.922	...
10	3.692	3.738	3.767	3.797	3.818	3.834	3.843	3.851	3.860	3.868	...
12	3.642	3.696	3.726	3.751	3.776	3.793	3.805	3.813	3.818	3.826	...
14	3.604	3.659	3.692	3.717	3.734	3.755	3.772	3.780	3.780	3.788	...
16	3.571	3.625	3.663	3.692	3.709	3.730	3.742	3.751	3.755	3.759	...
18	3.546	3.600	3.633	3.663	3.688	3.705	3.717	3.726	3.730	3.730	...
20	3.525	3.575	3.613	3.642	3.667	3.684	3.700	3.709	3.709	3.717	...
22	3.504	3.554	3.592	3.621	3.646	3.667	3.684	3.692	3.692	3.700	...
24	...	3.533	3.570	3.600	3.629	3.654	3.671	3.680	3.680	3.688	...
26	...	3.516	3.554	3.583	3.617	3.634	3.659	3.663	3.667	3.671	...
28	...	3.500	3.537	3.570	3.600	3.625	3.642	3.650	3.650	3.659	...
30	...	3.483	3.520	3.554	3.583	3.608	3.625	3.633	3.638	3.642	...
32	...	3.466	3.504	3.533	3.562	3.587	3.608	3.613	3.617	3.621	...
34	...	3.445	3.483	3.512	3.541	3.567	3.583	3.587	3.592	3.596	...
36	...	3.428	3.462	3.491	3.520	3.537	3.554	3.558	3.562	3.567	...
38	...	3.416	3.445	3.470	3.491	3.504	3.520	3.525	3.525	3.533	...
40	...	3.339	3.420	3.441	3.462	3.470	3.479	3.483	3.483	3.487	...
42	...	3.378	3.395	3.407	3.420	3.428	3.428	3.433	3.433	3.437	...
44	...	...	3.361	3.370	3.378	3.378	3.378	3.378	3.374	3.370	...
46	...	...	3.320	3.324	3.332	3.324	3.324	3.300	3.311	3.307	...
48	...	...	...	3.278	3.278	3.269	3.265	3.261	3.253	3.253	...
50	...	...	...	3.232	3.223	3.215	3.211	3.202	3.202	3.194	3.186
52	...	...	...	3.181	3.173	3.165	3.156	3.152	3.148	3.140	3.119
54	...	...	...	3.127	3.119	3.102	3.093	3.093	3.089	3.081	3.047
56	...	...	...	3.073	3.060	3.047	3.039	3.031	3.027	3.018	2.985
58	...	...	...	...	3.014	3.001	2.993	2.985	2.976	2.964	2.930
60	...	...	...	...	2.960	2.951	2.943	2.934	2.926	2.913	2.880
62	...	...	...	...	...	2.905	2.897	2.888	2.880	2.872	2.834
64	...	...	...	...	...	2.863	2.855	2.851	2.842	2.830	2.796
66	...	...	...	...	...	2.826	2.817	2.809	2.800	2.792	2.754
68	...	...	...	...	...	...	2.775	2.771	2.763	2.750	2.717
70	...	...	...	...	...	...	2.742	2.733	2.725	2.713	2.679
72	...	...	...	...	...	...	...	2.700	2.692	2.679	2.646
74	...	...	...	...	...	...	...	...	2.658	2.646	2.612
76	...	...	...	...	...	...	...	...	2.629	2.620	2.583
78	...	...	...	...	...	...	...	...	...	2.587	2.558

Keywords

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Additional information

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