

Sodium Chloride Brine Tables for 60°F (15.5°C)

Brine Strength			Pound/Gallon Brine			Gram/Liter Brine		Freezing Point	
Salometer Degree	Specific Gravity	Baume Degree	NaCl % Wt	NaCl	Water	NaCl	Water	°F	°C
0	1.000	0.00	0.00	.000	8.328	.0	998	+32.0	0
2	1.004	.06	.53	.44	8.318	5.3	996	+31.5	-2
4	1.007	1.1	1.06	.089	8.297	10.6	995	+31.1	-5
6	1.011	1.6	1.58	.133	8.287	16.0	993	+30.5	-8
8	1.015	2.1	2.11	.178	8.275	21.4	991	+30.0	-11
10	1.019	2.7	2.64	.224	8.262	26.8	990	+29.3	-1.5
12	1.023	3.3	3.17	.270	8.250	32.3	998	+28.8	-1.8
14	1.026	3.7	3.70	.316	8.229	37.9	986	+28.2	-2.1
16	1.030	4.2	4.22	.362	8.216	43.4	985	+27.6	-2.4
18	1.034	4.8	4.75	.409	8.202	49.0	983	+27.0	-2.8
20	1.038	5.3	5.28	.456	8.188	54.6	981	+26.4	-3.1
22	1.042	5.8	5.81	.503	8.175	60.3	979	+25.7	-3.5
24	1.046	6.4	6.34	.552	8.159	66.1	977	+25.1	-3.8
26	1.050	6.9	6.86	.600	8.144	71.9	976	+24.4	-4.2
28	1.054	7.4	7.39	.649	8.129	77.7	974	+23.7	-4.6
30	1.058	7.9	7.92	.698	8.113	83.6	972	+23.0	-5.0
32	1.062	8.5	8.45	.747	8.097	89.5	970	+22.3	-5.4
34	1.066	9.0	8.97	.797	8.081	95.4	968	+21.6	-5.8
36	1.070	9.5	9.5	.847	8.064	101.4	966	+20.9	-6.2
38	1.074	10.0	10.03	.897	8.047	107.5	964	+20.2	-6.5
40	1.078	10.5	10.56	.948	8.030	113.5	962	+19.4	-7.0
42	1.082	11.0	11.09	.999	8.012	119.6	960	+18.7	-7.4
44	1.086	11.5	11.61	1.050	7.994	125.8	957	+17.9	-7.8
46	1.090	12.0	12.14	1.102	7.976	132.0	955	+17.1	-8.3
48	1.094	12.5	12.67	1.154	7.957	138.2	953	+16.2	-8.8
50	1.098	12.9	13.20	1.207	7.937	144.5	951	+15.4	-9.2
52	1.102	13.4	13.73	1.260	7.918	150.9	949	+14.5	-9.7
54	1.106	13.9	14.25	1.313	7.898	157.2	946	+13.7	-10.2
56	1.110	14.4	14.78	1.366	7.878	163.7	944	+12.8	-10.7
58	1.114	14.8	15.31	1.420	7.858	170.1	941	+11.8	-11.2
60	1.118	15.3	15.84	1.475	7.836	176.7	939	+10.9	-11.7
62	1.122	15.8	16.37	1.529	7.815	183.2	936	+9.9	-12.3
64	1.126	16.2	16.89	1.584	7.794	189.8	934	+8.9	-12.8
66	1.130	16.7	17.42	1.639	7.772	196.5	932	+7.9	-13.4
68	1.135	17.2	17.95	1.697	7.755	203.7	929	+6.8	-14.0
70	1.139	17.7	18.48	1.753	7.733	210.0	926	+5.7	-14.6
72	1.143	18.1	19.00	1.809	7.710	216.7	924	+4.6	-15.2
74	1.147	18.6	19.53	1.866	7.686	223.5	921	+3.4	-15.9
76	1.152	19.1	20.06	1.925	7.669	230.6	918	+2.2	-16.5
78	1.156	19.6	20.59	1.982	7.645	237.4	916	+1.0	-17.2
80	1.160	20.0	21.12	2.040	7.620	244.4	913	-.4	-18.0
82	1.164	20.4	21.64	2.098	7.596	251.5	911	-1.6	-18.6
84	1.169	21.0	22.17	2.158	7.577	258.5	908	-3.0	-19.4
86	1.173	21.4	22.70	2.218	7.551	265.7	905	-4.4	-20.2
88	1.178	21.9	23.23	2.279	7.531	272.9	902	-5.8	-21.0
88.3**	1.179	22.0	23.31	2.288	7.528	274.1	901	-6.0**	-21.0**
90	1.182	22.3	23.75	2.338	7.506	280.1	899	-1.1	-18.5
92	1.186	22.7	24.28	2.398	7.479	287.4	896	+4.8	-15.0
94	1.191	23.3	24.81	2.459	7.460	294.7	893	+11.1	-11.6
95	1.193	23.5	25.08	2.491	7.444	298.4	892	+14.4	-9.8
96	1.195	23.7	25.34	2.522	7.430	302.1	890	+18.0	-7.8
97	1.197	23.9	25.60	2.552	7.417	305.8	888	+21.6	-5.8
98	1.200	24.2	25.87	2.585	7.409	309.6	887	+25.5	-3.6
99	1.202	24.4	26.13	2.616	7.394	313.4	886	+29.8	-1.2
99.6	1.203	24.5	26.29	2.634	7.386	315.6	885	+32.3 †	+2 †
100	1.204	24.6	26.40	2.647	7.380	317.2	884	+60.0 ‡	+15.5 ‡

The above table applies to brine tested at the temperature of 60°F
 For brine tested at a warmer or colder temperature than 60°F see Table of Salometer Corrections on reverse side of this card.

*Temperature at which freezing begins. Ice forms, brine concentrates, and the freezing point lowers to eutectic
 **Eutectic point. For brines stronger than eutectic, the temperatures shown are the saturation temperatures for sodium chloride dihydrate. Brines stronger than eutectic deposit excess sodium chloride as dihydrate when cooled, and freeze at eutectic

† Transition temperature from anhydrous salt to dihydrate

‡ Saturated brine at 60°F



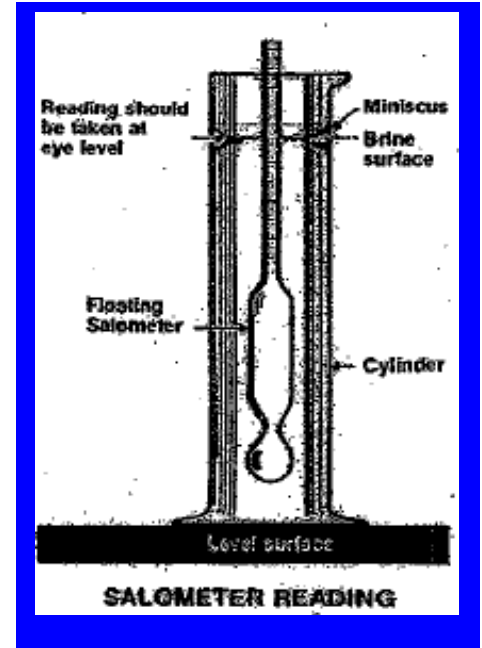
HOW TO USE A SALOMETER

A salometer is a hydrometer that measures the density of a sodium chloride brine using a scale marked for percent of saturation, 0°S to 100°S. A 70°S brine, for example, is 70% of fully saturated brine, which at 60°F would contain 1.75lbs of NaCl/gallon with a specific gravity of 1.139.

There are different types of salometer scales. Some are based on a different saturation point, with 100°S representing 25% NaCl rather than 26.4%. Most are calibrated at 60°F but some are intended for cooler temperatures such as 38°F.

Proper procedures for taking a salometer reading are:

- 1) Select a clean, straight-walled glass cylinder with a diameter at least twice that of the salometer bulb, and with sufficient height to allow for complete immersion of the salometer scale. The cylinder should be tall enough to allow the salometer to float at a 0°S reading
- 2) Place the cylinder on a level surface and fill with a sufficient volume of brine to raise the liquid level near the top of the cylinder after the salometer is immersed.
- 3) Record the brine temperature. If significantly different than 60°F, a temperature correction to the reading will be necessary (see chart).
- 4) Carefully immerse a clean, dry salometer into the brine. Assure that the salometer is floating and not touching the cylinder walls. After the salometer has stabilized, take a reading at the brine surface at eye level at the bottom of the meniscus, the concavity formed on the cylinder walls at the bring surface (see illustration).
- 5) Check new salometers by first placing them in clear water, where the reading should be nearly 0°S at 60°F. Empty the cylinder, rinse it with saturated salt solution and then refill with saturated brine at 60°F. The reading should be near 100°S and not less than 98°S.



When sodium chloride brines are tested at temperatures other than 60°F (15.5°C), the recorded corrections in the chart below should be applied to readings before entering the salometer chart on the reverse side. Extrapolate correction values for intermediate salometer readings and temperatures.

Salometer Correction Chart

Brine Salometer Reading	Salometer Corrections (S°)*					
	Temperature of Brine					
	0°F -18°C	20°F -7°C	40°F 4°C	60°F 15.5°C	80°F 27°C	100°F 39°C
100°	- 7.2	- 4.8	- 2.4	0	+ 2.7	+ 5.4
80°	- 6.7	- 4.5	- 2.2	0	+ 2.6	+ 5.1
60°	--	- 4.1	- 2.0	0	+ 2.4	+ 4.7
40°	--	- 3.5	- 1.7	0	+ 2.1	+ 4.1
20°	--	- 2.6	- 1.3	0	+ 1.6	+ 3.3
0°	--	--	+ 1.0	0	+ 1.2	+ 2.4

* Below 60°F, subtract correction from salometer reading.
Above 60°F, add correction to salometer reading.

Variation of Solubility with Temperature

Temp °F (°C)	NaCl Saturation	
	g/L Water	% Wt. Brine
0 (-18)	313	23.83
32 (0)	356	26.30
40 (4)	357	26.33
60 (15.5)	359	26.40
80 (27)	361	26.67
100 (38)	364	26.68



Technical Services

For further information please contact: Alkar-RapidPak, Inc. (608)-592-3211