

Chemical Ice Control...Redux



Here's an update to "Are You Using the Right Amount of Ice Control Chemical," which appeared in the January/February 2005 issue of *Government Engineering*.

By Duane E. (Dewey) Amsler Sr.

Table 3 of the aforementioned article was revised post-publication and is now presented here. The table is based on absolute ice melting ability (over an infinite period of time) as determined from the solution phase curves of the five chemicals (one of

many ways of looking at chemical performance.) There are large differences among the chemicals in terms of the rate of ice melting and there can be variations in results based on chemical purity and other test conditions. As a result, the table values should be considered as starting points to be refined by local

conditions. The table changes nothing with regard to the performance of sodium chloride. All of the other original article's content is correct. **GE**

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Table 3. Equivalent Application Rates for Five Ice Control Chemicals

Temperature (°F)	NaCl		CaCl ₂		MgCl ₂		KAc		CMA	
	100%* Solid lb/lm	23%* Liquid gal/lm	90-92%* Solid lb/lm	32%* Liquid gal/lm	50%* Solid lb/lm	27%* Liquid gal/lm	100%* Solid lb/lm	50%* Liquid gal/lm	100%* Solid lb/lm	25%* Liquid gal/lm
31.5	100	45	109	32	90	31	159	30	159	69
31.0	100	46	111	32	91	32	161	31	161	72
30.5	100	47	111	33	91	32	155	30	155	71
30.0	100	48	107	33	94	33	158	31	158	74
29.0	100	49	109	34	91	33	155	31	155	79
28.0	100	52	109	34	91	33	152	31	152	81
27.0	100	54	109	35	90	34	153	31	153	86
26.0	100	56	104	34	96	36	191	33	161	95
25.0	100	57	102	34	99	35	167	35	167	108
24.0	100	61	108	38	102	41	167	35	167	114
23.0	100	62	112	41	102	41	164	35	164	117
22.0	100	65	110	41	102	42	160	35	160	121
21.0	100	68	107	40	101	42	155	35	155	125
20.0	100	70	108	42	98	42	150	34	150	129
15.0	100	90	103	44	96	44	142	34	142	170
10.0	100	120	101	49	95	47	138	35	138	265
5.0	100	165	104	57	96	51	139	37	139	630

NaCl: sodium chloride
 CaCl₂: calcium chloride
 MgCl₂: magnesium chloride
 KAc: potassium acetate
 CMA: calcium magnesium acetate

Table by Duane E. (Dewey) Amsler, Sr., courtesy of Salt Institute (www.saltinstitute.org).

* Typical percent concentrations of the solid and liquid forms with the balance being largely water.

General note: The above application rates are normalized to 100 lb/lm of dry solid NaCl. The application rates corresponding to a dry solid NaCl rate other than 100 lb/lm are determined by multiplying the equivalent chemical application rates for a given temperature by the ratio of the desired dry solid NaCl rate to 100 lb/lm. For example, if a 100 lb/lm of dry solid NaCl application rate were recommended at a temperature of 20°F, then switching to a 90 to 82 percent concentration of solid CaCl₂ would require a slightly higher application rate of 216 lb/lm.