

Calcium chloride-based heat transfer fluids

Process Applications

- Refrigeration systems and process cooling
- Ground freezing
- Ice & snow melting systems
- Dust control
- Ice skating rinks
- Open bath cooling

Calcium Chloride Brine Series Overview

Calcium Chloride brine solutions are comprised of raw, food grade, and inhibited calcium chloride. Inhibited Calcium Chloride brines are blended with specially formulated additive packages depending on your system specifications.

The Calcium Chloride heat transfer fluid provides users with a stable, safe, and efficient product for applications where freeze protection is needed.

Properly used and maintained, Calcium Chloride solutions provide excellent thermophysical properties. Each individual Calcium Chloride brine has its own advantages, and custom blends can be readily made to meet your system's requirements.

Product	Description	Temperature Range
Raw Calcium Chloride	Uninhibited calcium chloride solution	Contact Dynalene
Food-Grade Calcium Chloride	Food grade calcium chloride solution (inhibited or uninhibited)	-40°C (-40°F) to 100°C (212°F)
Inhibited Calcium Chloride	Inhibited calcium chloride solution	-40°C (-40°F) to 100°C (212°F)

Corrosion Protection

Dynalene can provide corrosion inhibitor packages for Calcium Chloride brines that reduces the corrosion rate. However, corrosion inhibitors do not completely prevent metal corrosion in calcium chloride brines.

Quantity & Availability

Calcium Chloride brines are offered in 1, 2.5, 5, 30, 55, and 265-gallon containers as well as 5,000-gallon tankers. Pricing depends on quantity, and Dynalene, Inc. will work with you to try to fit your budget

Benefits of Choosing Calcium Chloride Brines

- Pre-mixed solutions
- Custom blends
- Ability to be re-inhibited
- Cost-effective
- Total fluid care option
- Proven performance
- Available worldwide
- Environmentally safe

Dynalene's Fluid Care Program

Coupling our Dynalene fluids with a fluid care program can extend the life of your systems significantly. We offer yearly testing of the heat transfer fluid in your system and can track changes in the fluid year to year so adjustments can be made to keep your system working at its best.

Freezing Points of Calcium Chloride Brines:

wt% CaCl ₂	Freezing Point
10	-7°C (20°F)
20	-20°C (-4°F)
25	-32°C (-25°F)
26	-35°C (-31°F)
27	-39°C (-38°F)
28	-43°C (-46°F)
29	-47°C (-53°F)
29.6	-51°C (-60°F)
30	-46°C (-51°F)

Properties of Calcium Chloride Brines:

Composition:	Calcium chloride, inhibitors
Appearance:	Clear, light yellow
Odor:	Little or none
Melting Temperature (29.6 wt%):	-51°C (-60°F)
Boiling Point (29.6 wt%):	111°C (231°F)
pH:	6.5 to 8.5
Flash Point:	None

Properties of Calcium Chloride Brines

Density

1 lb/gal = 119.826 kg/m³

Calcium Chloride Brine density, lb/gal						
Temp, °F	wt% calcium chloride					
	15%	20%	25%	29%	30%	32%
-40				10.99	11.09	
-30				10.97	11.06	
-20			10.55	10.94	11.04	11.24
-10			10.53	10.92	11.02	11.22
0		10.09	10.51	10.90	11.00	11.20
10		10.07	10.49	10.88	10.98	11.18
20	9.63	10.04	10.46	10.85	10.95	11.15
30	9.60	10.01	10.43	10.82	10.92	11.12
40	9.57	9.98	10.40	10.79	10.89	11.09
50	9.55	9.96	10.38	10.77	10.87	11.07
60	9.52	9.93	10.35	10.74	10.84	11.04
70	9.49	9.90	10.32	10.71	10.81	11.01
80	9.46	9.87	10.29	10.68	10.78	10.98
90	9.43	9.84	10.26	10.65	10.75	10.95
100	9.41	9.82	10.24	10.63	10.73	10.93

Viscosity

1 cP = 0.001 Pa·s

Calcium Chloride Brine viscosity, cP						
Temp, °F	wt% calcium chloride					
	15%	20%	25%	29%	30%	32%
-40				34.1	35.8	
-30				26.1	27.9	
-20			16.0	20.0	22.1	25.3
-10			12.0	15.8	17.0	19.4
0		6.9	9.4	12.1	13.5	15.5
10	4.2	5.5	7.8	9.5	10.1	12.0
20	3.1	4.2	6.1	7.3	8.0	9.6
30	2.6	3.4	4.6	5.8	6.2	7.8
40	2.2	2.8	3.8	4.8	5.1	6.6
50	2.0	2.3	3.2	4.0	4.1	5.4
60	1.8	2.1	2.7	3.4	3.5	4.5
70	1.6	1.8	2.4	3.1	3.1	4.0
80	1.4	1.6	2.1	2.8	2.8	3.5
90	1.4	1.5	1.9	2.5	2.5	3.3
100	1.3	1.4	1.7	2.3	2.3	3.1

Values from ASHRAE Fundamentals Handbook, 2001

1 BTU/lb·°F = 4.186 kJ/kgK

Specific Heat

Calcium Chloride Brine specific heat, BTU/lb·°F						
Temp, °F	wt% calcium chloride					
	15%	20%	25%	29%	30%	32%
-40				0.634	0.628	
-30				0.637	0.631	
-20			0.665	0.640	0.634	0.621
-10			0.669	0.643	0.637	0.624
0		0.717	0.673	0.647	0.640	0.628
10	0.782	0.721	0.676	0.650	0.644	0.631
20	0.785	0.725	0.680	0.653	0.647	0.634
30	0.788	0.729	0.684	0.657	0.650	0.637
40	0.791	0.733	0.687	0.660	0.654	0.641
50	0.795	0.737	0.691	0.664	0.657	0.644
60	0.798	0.740	0.695	0.667	0.660	0.647
70	0.801	0.744	0.698	0.670	0.664	0.650
80	0.804	0.748	0.702	0.674	0.667	0.654
90	0.807	0.752	0.706	0.677	0.670	0.657
100	0.810	0.756	0.709	0.680	0.674	0.660

1 BTU/hr-ft·°F = 1.73 W/mK

Thermal Conductivity

Calcium Chloride Brine thermal conductivity, BTU/hr-ft·°F						
Temp, °F	wt% calcium chloride					
	15%	20%	25%	29%	30%	32%
-40				0.279	0.278	
-30				0.282	0.281	
-20			0.288	0.286	0.285	0.284
-10			0.292	0.290	0.289	0.288
0		0.299	0.296	0.294	0.293	0.292
10	0.307	0.303	0.301	0.298	0.298	0.296
20	0.312	0.308	0.305	0.303	0.302	0.300
30	0.317	0.313	0.310	0.307	0.306	0.304
40	0.322	0.318	0.315	0.311	0.310	0.309
50	0.327	0.323	0.319	0.315	0.314	0.313
60	0.332	0.327	0.324	0.320	0.319	0.317
70	0.337	0.332	0.328	0.324	0.323	0.321
80	0.342	0.337	0.333	0.328	0.327	0.325
90	0.347	0.342	0.338	0.332	0.331	0.330
100	0.352	0.347	0.342	0.336	0.335	0.334

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