

Description

CALCIUM CHLORIDE (CaCl₂) is a white inorganic salt of 94 - 97% purity available in various forms.

Typical Properties

Appearance : White pellet, flake or powder
Purity : 94 - 97%

Features and Benefits

CALCIUM CHLORIDE is used to prepare solids free workover and completion fluids with densities up to 11.6 lb/gal.

CALCIUM CHLORIDE is also used to increase the density of various calcium chloride/calcium bromide/zinc bromide blends.

CALCIUM CHLORIDE brines contribute to formation damage control by stabilizing the water sensitive clays during workover and completion operations.

CALCIUM CHLORIDE is utilized to adjust the activity of the water phase in invert emulsion systems.

An exothermic reaction takes place when CALCIUM CHLORIDE is added to water. This results in an increase in brine temperature.

Application

CALCIUM CHLORIDE is utilized to build clear brine workover and completion fluids for formations with pressure gradients ranging from 0.437 to 0.603 psi/ft. It is also used to control activity of water phase in oil-base drilling fluids.

Limitations

CALCIUM CHLORIDE brines may cause scale formation when formation waters are rich in carbonate and sulfate ions. This problem is also anticipated in wells producing gas with significant amount of carbon dioxide.

Treatment

Refer to mixing table (Table-1) to obtain the desired density and crystallization temperature. CALCIUM CHLORIDE is added to fresh water through the rig hopper while agitating until solids completely dissolve.

Packaging

CALCIUM CHLORIDE is supplied in 25 kg (55 lb) moisture-proof, multiwall sacks.

Table 1. Mixing Schedule for 1 bbl Calcium Chloride Brine Using Powdered CaCl₂ (94 - 97%)

Density (lb/gal)	Specific Gravity	CaCl ₂ (wt%)	Water (bbl)	CaCl ₂ (lb/bbl)	TCT (°F)
8.4	1.008	0.8	1.000	2.9	31
8.5	1.020	2.2	0.997	8.2	30
8.6	1.032	3.5	0.994	13.4	29
8.7	1.044	4.9	0.991	18.7	27
8.8	1.056	6.2	0.987	24.2	25
8.9	1.068	7.5	0.984	29.4	24
9.0	1.080	9.7	0.970	39	21
9.1	1.092	11.1	0.965	45	19
9.2	1.104	12.4	0.960	50	17
9.3	1.116	13.7	0.955	56	15
9.4	1.128	15.0	0.950	62	12
9.5	1.140	16.2	0.946	68	9
9.6	1.152	17.5	0.940	74	6
9.7	1.164	18.7	0.935	80	3
9.8	1.176	19.9	0.930	86	0
9.9	1.188	21.1	0.925	92	-4
10.0	1.200	22.3	0.919	99	-8
10.1	1.212	23.5	0.913	105	-13
10.2	1.224	24.6	0.907	111	-18
10.3	1.236	25.8	0.901	117	-23
10.4	1.248	26.9	0.895	124	-29
10.5	1.261	28.0	0.889	130	-36
10.6	1.273	29.1	0.883	136	-43
10.7	1.285	30.2	0.876	143	-51
10.8	1.297	31.3	0.869	149	-59
10.9	1.309	32.4	0.862	156	-40
11.0	1.321	33.5	0.855	163	-22
11.1	1.333	34.6	0.847	170	-11
11.2	1.345	35.6	0.841	176	0
11.3	1.357	36.7	0.832	183	13
11.4	1.369	37.7	0.825	190	27
11.5	1.381	38.8	0.817	197	35
11.6	1.393	39.8	0.809	204	44