

DESCRIPTION Fritz FL-17 is a powdered universal cement fluid loss and gas migration control additive recommended for blending with cement to control the loss of filtrate from a cement slurry.

- ADVANTAGES**
- FL-17 can be used in casing and liner cementing using fresh to saturated salt-water cement slurries.
 - It is ideally suited for squeeze cementing in coil tubing due to its non-gellation properties.
 - In primary cementing, it functions as a gas migration control additive because of its non-gellation characteristics.
 - It provides exceptional filtrate control when used with retarders at bottom hole circulating temperatures up to 400°F (204 C).

- APPLICATION**
- Temperature range is 80°F – 400°F. (27 C to 204 C)
 - FL-17 may be used for fluid loss control in any API class of cement (A, C, G, or H).
 - It may be used in fresh to saturated salt water slurries and is compatible with other additives such as dispersants, silica flour, retarders, defoamers and weighting materials.

- PROPERTIES**
- Brown Powder
 - Specific Gravity – 1.47
 - Solubility limited by resultant viscosity
 - Water requirement – none
 - pH – Neutral
 - Packaged in 50 lb. bags
 - Loading Rate – 0.2 to 3.0% bwc
 - See Fluid Loss & Gas Migration Control Data

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FL-17 FLUID LOSS TESTING

TEMP., °F	FL-17, % BWC	WATER, % BWC	SALT, % BWW	#1 SILICA SAND	RETARDER, % BWC	ATM. VIS., Bc		RHEOLOGY (rpm)						FLUID LOSS, CC
						i	f	600	300	200	100	6	3	
100	0.8%	38.0%	0%	0%	0.0%	13	15	330+	318	238	140	15	10	28
100	0.8%	38.0%	18%	0%	0.0%	12	15	330+	274	211	134	31	28	148
100	0.8%	38.0%	36%	0%	0.0%	14	16	330+	292	225	141	31	25	202
180	0.3%	38.0%	36%	0%	0.0%			Gelled						
180	0.5%	38.0%	36%	0%	0.0%	11	8	226	133	96	57	11	10	539
180	0.8%	38.0%	36%	0%	0.0%	10	10	282	169	123	71	8	6	120
180	0.8%	38.0%	0%	0%	0.1%	17	20	330+	330+	305	214	91	88	52
180	0.8%	38.0%	18%	0%	0.1%	11	6	203	107	73	39	4	3	41
180	0.8%	38.0%	36%	0%	0.1%	13	7	235	142	103	60	6	5	38
180	0.3%	38.0%	0%	35%	0.5%	11	9	212	112	78	40	5	4	64
180	0.5%	38.0%	0%	35%	0.5%	11	10	276	160	113	60	5	4	38
180	0.8%	38.0%	0%	35%	0.5%	20	14	330+	315	220	121	10	5	22
180	0.3%	38.0%	18%	35%	0.5%	10	9	206	105	71	37	4	3	92
180	0.5%	38.0%	18%	35%	0.5%	14	10	255	131	90	47	4	3	38
180	0.8%	38.0%	18%	35%	0.5%	20	12	330+	217	154	83	7	4	29
180	0.3%	38.0%	36%	35%	0.5%	10	9	235	115	76	41	4	3	80
180	0.5%	38.0%	36%	35%	0.5%	12	9	260	127	90	48	5	4	42
180	0.8%	38.0%	36%	35%	0.5%	20	11	330+	196	139	76	6	4	23
245	0.5%	38.0%	0%	35%	0.5%	11	10	276	160	113	60	5	4	42
245	0.8%	38.0%	0%	35%	0.5%	11	10	276	160	113	60	5	4	19
245	0.5%	38.0%	18%	35%	0.5%	14	10	255	131	90	47	4	3	43
245	0.8%	38.0%	18%	35%	0.5%	20	12	330+	217	154	83	7	4	25
245	1.5%	38.0%	18%	35%	0.5%	21	10	330+	205	146	83	7	5	18
245	0.5%	38.0%	36%	35%	0.5%	12	9	260	127	90	48	5	4	46
245	0.8%	38.0%	36%	35%	0.5%	20	11	330+	196	139	76	6	4	28
308	1.5%	47.9%	0%	35%	1.5%	19	10	330+	173	121	65	6	3	88
308	1.5%	41.7%	18%	35%	1.5%	25	12	330+	208	146	85	7	4	30
308	1.0%	41.7%	36%	35%	1.0%	15	11	330+	330+	226	137	8	5	26
308	1.5%	41.7%	36%	35%	1.0%	15	12	330+	330+	231	140	12	7	22

* ALL TESTING WAS PERFORMED WITH CLASS H CEMENT UNLESS OTHERWISE NOTED.

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FL-17 FLUID LOSS TESTING

ADDITIVE	% BWC	WATER, GAL./SK	TEMP., °F	ATM. VIS., Bc		RHEOLOGY (rpm)						FLUID LOSS, CC	THICKENING TIME, H:MM	COMMENTS
				i	f	600	300	200	100	6	3			
FL-17	0.3	4.3	80	6	7	161	92	64	35	4	3	224		
FL-17	0.5	4.3	80	8	9	242	143	101	56	6	3	57		
FL-17	0.7	4.3	80	8	11	300+	182	129	71	6	4	34		
FL-17	1.0	4.3	80	11	14	300+	294	211	115	9	6	19		
NEAT	0.0	4.3	125										2:04	API 8,000 FT. CASING SCH. 5G
FL-17	0.5	4.3	125	7	7	169	101	73	41	5	3	100		
FL-17	0.6	4.3	125										3:51	API 8,000 FT. CASING SCH. 5G
FL-17	0.8	4.3	125	9	8	277	165	119	67	6	4	38		
FL-17	1.0	4.3	125	8	11	300+	213	153	85	7	5	28		
FL-17	1.0	4.3	180	9	7	176	90	61	32	3	2	34		10% SALT WATER; 0.2% FR-1 BWC
FL-17	1.0	4.3	180	10	7	161	84	58	30	3	2	34		18% SALT WATER; 0.2% FR-1 BWC
FL-17	1.0	4.3	180	12	8	162	107	77	42	4	2	32		SATURATED SALT WATER, 0.2% FR-1 BWC

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FL-17 ZERO STATIC GEL STRENGTH & GAS MIGRATION CONTROL TESTING

SLURRY COMPOSITION	TEMP., °F	THICKENING TIME, H:MM	ZERO STATIC GEL STRENGTH, MINUTES	TRANSITION TIME, MINUTES	UCA 50 PSI, H:MM	UCA 500 PSI, H:MM	UCA 24 HR., PSI
H CEMENT+ RETARDER	140		27	195	8:00	9:05	3206
H CEMENT+ RETARDER+ 0.6% FL-17	140	3:45	372	22	4:28	5:50	2669
H CEMENT+ RETARDER	200		47	14	4:14	4:56	3212
H CEMENT+ RETARDER+ 0.6% FL-17	200	3:30	144	32	3:25	3:59	3456
H CEMENT+ RETARDER	250		67	62	3:16	4:04	2154
H CEMENT+ RETARDER+ 1.4% FL-17	250	3:39	152	27	3:47	4:35	1878

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FL-17 LOW TEMPERATURE TESTING

SLURRY DESIGN

CEMENT	JOPPA CLASS H
FL-17	0.6% bwc
CaCl ₂	1% bwc
WATER	40% bwc
TEMPERATURE	80°F

FLUID LOSS 38 cc

ATMOSPHERIC CONSISTOMETER

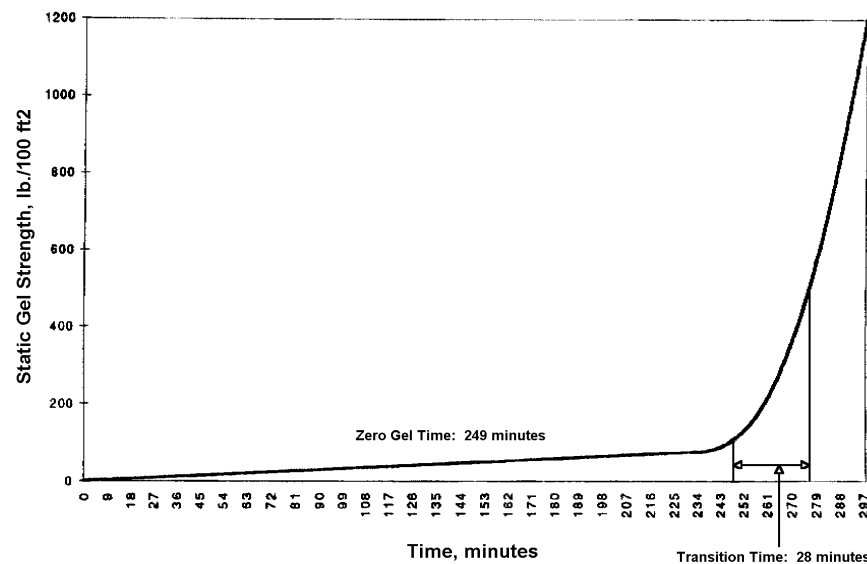
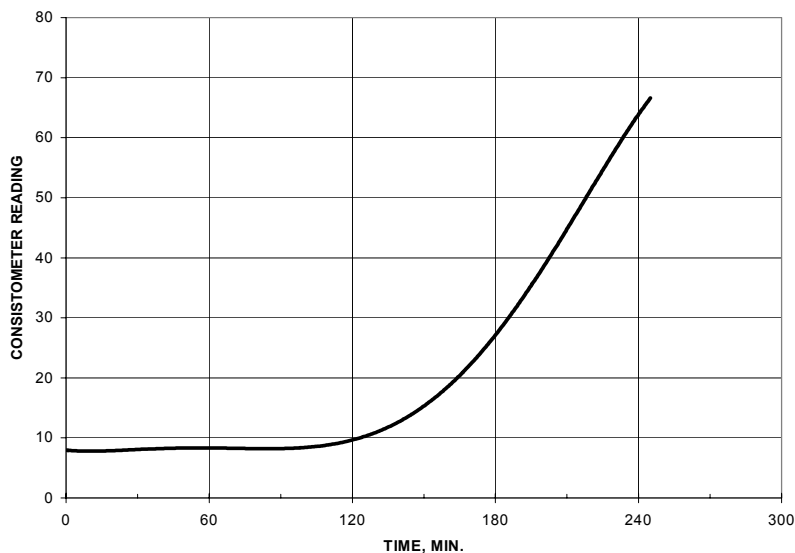
INITIAL	7
FINAL	8

UCA DATA

50 PSI @	03:54
2500 PSI @	24:00
3641 PSI @	48:00

RHEOLOGY DATA

<u>RPM</u>	<u>READING</u>
600	247
300	144
200	103
100	57
6	5
3	4



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