

SUBJECT: ZoneSealant 2000 Foamer/Stabilizer for Freshwater and Saturated-Salt Slurries

Table 1—ZoneSealant 2000 Foamer/Stabilizer Specifications

Part Number (5-gal pail)	516.01266 (101204006 SAP)	Form	Clear liquid
		Density	8.89 lb/ft ³
Part Number (55-gal drum)	516.01267 (101204007 SAP)	Viscosity	60 cp
		Specific Gravity	1.066
Part Number (HalTank)	516.01295 (101207218 SAP)	pH	6.0 to 7.5

Introduction

ZoneSealant 2000 foamer/stabilizer (formerly FDP-C580) is a new, single-component foamer/stabilizer that can be used in freshwater, seawater, and salt slurries (Table 1). This foamer/stabilizer can allow the generation of foamed cement in freshwater and salt solutions that contain sodium chloride (NaCl) (up to saturation) and the normal dosage of potassium chloride (KCl) and calcium chloride (CaCl₂).

General Information

Operators can use ZoneSealant 2000 foamer/stabilizer in standard applications that require foamed cements, and its use requires the same considerations that are normally given to foamed-cement systems. The material has been tested with premium cement (Table 2), MicroMatrix cement (Table 3, Page 2), and slag cement (Table 4, Page 2).

Table 2—Premium Cement at 140°F with ZoneSealant 2000 Foamer/Stabilizer

Slurry No.	Base Density (lb/gal)	Foamed Density (lb/gal)	Foaming Surfactant (% bvow) ^a	Foaming Time (sec)	NaCl (% bwow) ^b	24-hour Compressive Strength (psi)	Thickening Time (hr:min)
1	15.80	11.2	2	<10	0	1,103	3:05
2	15.95	11.0	2	<10	5	900	—
3	16.20	11.0	2	10	10	1,220	—
4	16.59	11.5	2	10	18	1,013	—
5	17.50	11.2	2	10	37	625	5:45

^aby volume of water

^bby weight of water

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Table 3—MicroMatrix Cement (50 lb/sk) at 140°F with ZoneSealant 2000 Foamer/Stabilizer

Slurry No.	Base Density (lb/gal)	Foamed Density (lb/gal)	Foaming Surfactant (% bwow)	Foaming Time (sec)	NaCl (% bwow)	24-hour Compressive Strength (psi)	Thickening Time (hr:min)
6	12.03	10	1	<10	0	835	1:00
7	12.26	10	1	<10	5	830	—
8	12.58	10	1	10	10	820	—
9	13.09	10	1.5	10	18	720	0:50
10	14.32	10	2.5	10	37	619	—
Flo-Stop 4000 with 0.55% EZ-FLO Additive							
—	15.24	12	1	<10	0	343 at 45°F	3:50 at 65°F

Table 4—Slag Cement (94 lb/sk) at 140°F with ZoneSealant 2000 Foamer/Stabilizer

Slurry No.	Base Density (lb/gal)	Foamed Density (lb/gal)	Foaming Surfactant (% bwow)	Foaming Time (sec)	NaCl (% bwow)	24-hour Compressive Strength (psi)	Thickening Time (hr:min)
11	15.03	12	2	<10	0	2,250	1:20
12	15.18	12	2	10	5	—	—
13	15.42	12	2	10	10	—	—
14	15.80	12	2	10	18	—	—
15	16.71	12	3.5	10	37	1,588	0:40

Compressive Strength

Foamed cements containing ZoneSealant 2000 foamer/stabilizer exhibit good compressive-strength development (Tables 2 through 4).

Concentration

The appropriate concentration for ZoneSealant 2000 foamer/stabilizer depends upon the specific application. Table 5 lists common concentrations.

Table 5—Recommended ZoneSealant 2000 Foamer/Stabilizer Concentrations

Foamed Cement Application	ZoneSealant 2000 Concentration (% bwow)
General	1 to 3.5
Salt concentration >18%	2 to 3.5
Flo-Stop	1

Rheology

Rheological properties for ZoneSealant 2000 foamer/stabilizer are listed in Table 6.

Table 6—Rheological Properties^a

Slurry No.	Fann Readings (cp) at Standard Speeds (rev/min) with No. 1 Spring					
	600 rev/min	300 rev/min	200 rev/min	100 rev/min	6 rev/min	3 rev/min
1	118	75	63	50	21	14
3	90	54	42	35	18	15
6	68	54	48	40	24	20
8	75	56	51	40	25	21
13	69	54	47	38	24	20

^aTesting conducted at ambient temperatures.

Compatibility

Defoamers

Caution Do not use defoamers or dispersants (NF and D-AIR defoamers, CFR-2, CFR-3, Halad®-9, Halad®-12, Halad®-22A additives, etc.). These materials will destabilize the foam.

Accelerators

For foamed cements containing ZoneSealant 2000 foamer/stabilizer, the recommended accelerators are Econolite additive, Silicalite additive, CaCl₂, Thix-Set cement, and VersaSet additive.

Retardation

ZoneSealant 2000 foamer/stabilizer is not a strong retarder.

Caution Do not use HR® retarders with ZoneSealant 2000 foamer/stabilizer because these retarders act as dispersants and will break the foam.

MicroMatrix cement retarder and blends of SCR-100 and HR®-25 retarders have been successfully used in special foamed-cementing formulations that incorporate MicroMatrix cement, Silicalite additive, and Class C fly ash. To achieve extended pumping times, use Diacel LWL lightweight additive and/or WG-17 set retarders.