



T E C H N I C A L B U L L E T I N CF 946

CellFlow™

For Controlled Low Strength Material (CLSM) - Flowable Fill

A superior replacement for conventionally compacted engineered fill material.

Important advantages for:

- Contractors - Faster set times in all weather conditions.
- Engineers and Specifiers - Will not subside after placement.
- Pump Operators - More cohesive, low - bleed mixes will not segregate and jam lines.
- Maintenance departments - Will remain excavatable for the life of the project.

CellFlow Flowable Fill is the solution to these construction demands.

Typical Mixes

		Set Times (Hrs)		Easy to Remove
Mix Designation	Features	65⁰⁺	44⁰-64⁰	28 day Strength
CF1	Flowable Cohesive Non-bleeding Fast Setting Mix	3-5	4-6	Machine Removable Less than 200 psi or 1.38 mpa
CF2	Flowable Cohesive Non-Bleeding Low Strength Medium Fast Set Times	4-7	5-9	Hand or Machine Removable Less than 150 psi or 1.03 mpa
CF3	Designed for easy placement and pumping Normal Set Times	6+	12+	Machine Removable Less than 200 psi or 1.38 mpa
CF4	Ultra flowable and consistent. Designed for excellent pumpability through 2" lines Normal Set Times	6+	12+	Machine Removable Less than 200 psi or 1.38 mpa

- **CF1** For fast set applications. Ideal for utility trench work in situations where rapid paving is required to open roads quickly. This mix sets in under 5 hours in cold saturated soil conditions. Ultimate strengths are capped at less than 200 psi or 1.38 mpa for long-term excavatability.
- **CF2** Meets a wide range of trench and surface-work fill needs in non-vehicular applications. Strengths are capped at less than 150 psi or 1.03 mpa.
- **CF3** Excellent stability. Excellent pumpability. Strengths are capped at less than 200 psi or 1.38 mpa.
- **CF4** Meets the tough pumping demands of small diameter pump lines. Strengths are capped at less than 200 psi or 1.38 mpa.

Typical Mix Designs

CellFlow is added at the jobsite and mixed for 5 minutes at mixing speed

These designs are for **ONE CUBIC YARD** after foaming with CellFlow

Mix Designation	CLSM (Lb/cu foot)	Cement (Lb)	Fly ash (Lb)	Sand C-33 (Lb)	Water (Gal)	CellFlow (per cu yd)	Slump before CellFlow (inches)	Slump After CellFlow (inches)
CF1	113.5	125 -150	0	2600	30	3 oz.	1.5±	7 – 9
CF2	115	75 – 100	0	2500	32	3 oz.	1.5±	7 – 9
CF3	112	50	250	2500	34	3 oz.	1.5±	7 – 9
CF4	110	50	350	2300	35	3 oz.	1.5±	7 – 9

These designs are for **ONE CUBIC METER** after foaming with CellFlow

Mix Designation	CLSM (kg/m ³)	Cement (kg)	Flyash (kg)	Sand C-33 (kg)	Water (liters)	CellFlow (per cu meter)	Slump before CellFlow (mm)	Slump After CellFlow (mm)
CF1	1818	75 -90	0	1545	115	120 cc.	380±	178 – 228
CF2	1842	45 – 60	0	1485	120	120 cc.	380±	178 – 228
CF3	1794	30	115	1485	129	120 cc.	380±	178 – 228
CF4	1762	30	160	1365	132	120 cc.	380±	178 – 228

Controlled Low Strength Material (CLSM) is referred to by American Concrete Institute (ACI) Committee 229-R-94 report as material typically having compressive strength less than 300 psi or 2.07 mpa. A CLSM compressive strength of 50 - 100 psi or 0.34 – 0.69 mpa equates to an allowable bearing capacity of a well compacted soil.

- **NOTE:** Our appreciation is extended to our many customers who have provided us with these successful CellFlow flowable fill typical mix designs. Mix performance and design requirements vary due to local material conditions, availability and economics. Please refer to your local geological engineer for design criteria. These designs are typical designs only. CF 946-0600