



# MIX DESIGN

## 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

Mix Designation	Features	Set Times (Hrs)		Easy to Remove
		65 <sup>0</sup> +	44 <sup>0</sup> -64 <sup>0</sup>	28 day Strength
<b>CF1</b>	Flowable Cohesive Non-bleeding Fast Setting Mix	3-5	4-6	<b>Machine Removable</b> Less than 200 psi or 1.38 mpa
<b>CF2</b>	Flowable Cohesive Non-Bleeding Low Strength Medium Fast Set Times	4-7	5-9	<b>Hand or Machine Removable</b> Less than 150 psi or 1.03 mpa
<b>CF3</b>	Designed for easy placement and pumping Normal Set Times	6+	12+	<b>Machine Removable</b> Less than 200 psi or 1.38 mpa
<b>CF4</b>	Ultra flowable and consistent. Designed for excellent pumpability through 2" lines Normal Set Times	6+	12+	<b>Machine Removable</b> Less than 200 psi or 1.38 mpa

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- **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)
<b>CF1</b>	113.5	125 -150	0	2600	30	<b>3 oz.</b>	1.5±	7 – 9
<b>CF2</b>	115	75 – 100	0	2500	32	<b>3 oz.</b>	1.5±	7 – 9
<b>CF3</b>	112	50	250	2500	34	<b>3 oz.</b>	1.5±	7 – 9
<b>CF4</b>	110	50	350	2300	35	<b>3 oz.</b>	1.5±	7 – 9

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

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