

Controlled low strength material (CLSM) flowable fill produced using our AERFLOW™ product is a superior replacement for conventionally compacted engineered fill material.

### BENEFITS

- ▶ Fast and Economical
- ▶ Self - Leveling / Self - Compacting
- ▶ Shrink Resistant
- ▶ Non-corrosive / Non-conductive
- ▶ Easy to Excavate
- ▶ Sound Deadening

### APPLICATIONS

- ▶ Utility Trenches
- ▶ Building Excavations
- ▶ Pipe Bedding
- ▶ Roadway Base
- ▶ Sub Base Stabilization
- ▶ Abandoned Tank Fills
- ▶ Road Cuts
- ▶ Slope Stabilization
- ▶ Sink Hole Fills



Initial Mix with 1.5 in slump, before addition of AERFLOW™



Mix after the addition of AERFLOW™ with slump of 7-9 in

AERFLOW™ is a biodegradable, synthetic anionic liquid concentrate specially formulated to produce a stable, voluminous microbubbled foam. It is used in direct combination with sand/cement slurries for the production of controlled low strength material (CLSM) concrete. This material, also known as flowable fill, is engineered with densities ranging from 100 to 115 pcf.

AERFLOW™ CLSM is a lightweight, foam-enhanced cementitious fill material, which is typically purchased from your local ready mix supplier. AERFLOW™ CLSM is manufactured by mixing portland cement, sand and AERFLOW™ liquid concentrate in the concrete mixer according to an exact pre-engineered mix design. AERFLOW™ flowable fill mixes may be formulated to achieve a wide range of flow, strength, and weight characteristics.

AERFLOW™ produces an air cell structure that is stable and well-distributed, consistently creating a 20-24% increase in volume. AERFLOW™ flowable fill is fluid by nature due to the engineered air bubble system, not excess water. The air cell structure moves like lubricated ball bearings sliding over one another.

3 ounces of AERFLOW™ liquid concentrate per cubic yard of finished concrete will increase the slump of the initial mix from 1.5 inches to 7-9 inches.

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## CELLULAR LOW STRENGTH FLOWABLE FILL

AERFLOW™ is added at the jobsite and mixed for 5 minutes at mixing speed.

### TYPICAL MIXES:

MIX	FEATURES	SET TIMES		REMOVABLE
		65° +	44°-64°	AT 28 DAYS
CF1	<ul style="list-style-type: none"> <li>Flowable</li> <li>Non-bleed</li> <li>Cohesive</li> <li>Fast Set</li> </ul>	3-5	4-6	Machine Removable Less than 200psi
CF2	<ul style="list-style-type: none"> <li>Flowable</li> <li>Non-bleed</li> <li>Cohesive</li> <li>Low Strength</li> <li>Med-Fast Set</li> </ul>	4-7	5-9	Hand or Machine Removable Less than 150psi
CF3	<ul style="list-style-type: none"> <li>Easy Placement</li> <li>Pumpable</li> <li>Normal Set</li> </ul>	6+	12+	Machine Removable Less than 200psi
CF4	<ul style="list-style-type: none"> <li>Flowable</li> <li>Pumpability</li> <li>Consistent</li> <li>Normal Set</li> </ul>	6+	12+	Machine Removable Less than 200psi

### TYPICAL MIX DESCRIPTIONS

**CF1** - This mix is for fast set applications. Ideal for utility trench work in situations where rapid paving is required to open roads quickly. This mix will typically set in under 5 hours in cold, saturated soil conditions. Ultimate strengths are typically less than 200 psi or 1.38 mpa for long-term excavatability.

**CF2** - This mix will meet a wide range of trench and surface-work backfill needs when used in non-vehicular applications. Strengths are typically less than 150 psi or 1.03 mpa

**CF3** - This mix has excellent stability and pumpability. Strengths are typically less than 200 psi or 1.38 mpa.

**CF4** - This mix will meet tough pumping demands of small diameter pump lines. Strengths are typically less than 200 psi or 1.38 mpa.

### TYPICAL MIX DESIGNS:

MIX	CLSM (lb/ft³)	CEMENT (lb)	FLYASH (lb)	SAND C-33 (lb)	WATER (Gal)	AERFLOW (per ft³)	SLUMP BEFORE (in)	SLUMP AFTER (in)
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 YARD after foaming with AERFLOW™

MIX	CLSM (kg/m³)	CEMENT (kg)	FLYASH (kg)	SAND C-33 (kg)	WATER (L)	AERFLOW (per m³)	SLUMP BEFORE (mm)	SLUMP AFTER (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

These designs are for ONE CUBIC METER after foaming with AERFLOW™

Controlled low strength material (CLSM) is referred to by ACI Committee 229-R-94 report as material typically having compressive strength of less than 300psi. A CLSM compressive strength of 50-100 psi equates to an allowable bearing capacity of a well compacted soil.

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\*The strength at any given density and mix proportion will also vary with the type of cement and the final water content of the mix. Increases in strength will result by reduction of the w/c ratio, such as is possible with efficient mixing equipment and by curing in low pressure steam. Other admixtures may contribute to strength increases.