

Shotcrete batch set up:

Proposed two mix designs are very popular in industry from 2005 (www.shieldcrete.com) by highest effectiveness and low cost at \$.18 per SF of 1" thick shotcrete layer.

Concrete mix contains basic aggregates for fine plaster by "PLASTCRETE" or structural placement by "SHIELDCRETE". Shown amount of water is enough to engage batch mixing ability. It looks hopelessly dry on a beginning, but a minute later this is perfect creamy batch with pump ability through the standard hose at 150' to 250'.

Of course you can use your own batch recipe or also you can choose liquid admixture K¹⁰⁰® as 10 OZ per 100 LB of cement or 0.75 Kg per 100 Kg of cement to get all advantages of KALMATRON® admixtures.

PUMPABLE MIXES FOR SHIELDCRETE & PLASTCRETE JOBS

Table 1

Ingredients	SHIELDCRETE 6 SACKS>4,000 PSI = 28 MPa				PLASTCRETE 7 ½ SACKS>4,000 PSI =28 MPa			
	Lbs	CF	Kg	m ³	Lbs	CF	Kg	m ³
Cement Type I; II	564	2.84	335	0.105	700	3.555	400	0.126
Aggregate ¼"// 5 mm	750	4.63	445	0.188				
Coarse Sand	1830	13.10	1050	0.450	2640	18.839	1670	0.7157
Water 28 - 32 Gal*// Liter	235	5.45	140	0.140	266	4.436	152	0.1521
Air content 3%	0	0.81	0	0.11				
KALMATRON® KF-A	15 ÷17	0.17	10	0.0062	17.0	0.17	10	0.0062
Total	3396	27	1980	1.000	3623	27.00	2232	1.000
	W/C=0.417				W/C=0.38			

KALMATRON® KF-A APPLICATION INSTRUCTION

DOSAGE

1. Use shown dosage of KF-A per 1 CY on a ready mix plant or 2 LB per sack of cement (94 LB). It is in a practice to dose KF-A by two "Coca Cola" cans per sack of cement on a job sites.
2. Do not dissolve KF-A with water. Just strew it into the batch.

W/C RATIO

1. For the best workability, use shown amount of water without correlation variable moistness of aggregates.
2. Slump should be at 2 ½" to 3 ½" (6.35 cm to 8.90 cm) on a moment of application.
3. On a moment of delivery from plant maximum slump should be at 3 ½" to 5" (8.90 cm to 13 cm).
4. Add 2 Liter/m³ or ½ Gallon/CY of water if batch still stiff.

EXPECTED RESULTS

1. Highest adhesion to the most known porous materials.
2. Shrinkage is at 2 to 3 times lower. There are no shrinkage cracks.
3. Exothermic heat is lower by 30% to 50% results in no flakes, efflorescence, dusty spots, or slid areas.
4. Water impermeability of PLASTCRETE and SHIELDCRETE at ¼" and 2" thick layers is 100% respectively.
5. Early strengthening on 1st to 3^d day is at 25%.
6. Yield of mixed batch is higher by 8% to 14%.
7. Highest resistance to the chemical and climate corrosion
8. Depending on the Water to Cement ratios applied for both mixes preparation, the strengths expected to be:
 - compressive strength is at 41 MPa to 50 MPa;
 - tensile strength is at 7.5 MPa to 12 MPa.