

## SHIELDCRETE TECHNICAL DATA SHEET

SHIELDCRETE is a pre-bagged High Performance Concrete with high batch' installment properties placing in concrete repair applications using the formwork method, shotcrete lining, and flatworks.

It is no dilatation, free of shrinkage cracks and no curing after application with minimal range of layer thickness at 8 mm to 50 mm or at  $\frac{1}{3}$ " to 2". Applied as a layer or been casted, it has no expansion in both the plastic and hardening phases without compensation of water. Layer of SHIELDCRETE is water impermeable under the hydraulic pressure at 14 bar and structurally stable to aggressive environment at pH of 3÷2.

### SHIELDCRETE APPLICABILITY BY COMPRESSIVE STRENGTH

CONCRETE HARDNESS	PSI	TYPICAL APPLICATION	SHIELDCRETE APPLICABILITY
Very hard	10,000 or more	Nuclear Plants, Loading decks	●
Hard	6,000 - 8,000	Bridges, Piers, Chemical facility	●
Medium	4,000 - 6,000	Roads, Housing projects	●
Soft	3,000 or less	Sidewalks, Patios, Parking lots	●

### SHIELDCRETE CONSUMPTION For layer at 20 mm thick

SHIELDCRETE BATCH INSTALLATION	CONSUMPTION PER A BAG		CONSUMPTION PER AREA	
	LB	Kg	LB per 1 SF	Kg per 1 m <sup>2</sup>
1 BAG 50 LB or 22.7 Kg	50	22.7	9	45.3
Water per 1 bag = .65 GL or 2.2 Liters	5.4	2.4	.12	4.4
Total: D = 134 LB/CF = 2265 Kg/m <sup>3</sup> .	55.4	25.1	9.9	49.7

### Technique of concrete resurfacing by SHIELDCRETE layers

1. For chemical adhesion without surface cleaning, prepare Kalmatron® KF-G by dissolution with water as 3 Lbs per 1 GL (300 Gram/1 Liter) respectively.
2. Spray Kalmatron® KF-G by 1 GL per 40 SF (2 Liters/m<sup>2</sup>) on area of application.
3. Apply SHIELDCRETE no sooner than after 45 minutes with thickness at  $\frac{1}{3}$ " ÷ 2" (8 mm ÷ 50 mm).
4. When shiny surface is required, spray Kalmatron® KF-G before polishing.
5. Curing is not required.

## SHIELDCRETE INSTALLATION

1. Batch must be no smaller than 200 Lbs (91 Kg).
2. Turn on mixer for 3 minutes.
3. In a case of the batch stiffness do not add water. Continue mixing another 2 minutes.
4. Continue mixing during of application. Do not stop mixer.
5. Vibrate until coarse aggregate appears on a surface.

## ESSENTIALS AND CURING

1. After application, do not provide curing procedure and do not use curing compounds.
2. Do not spray water on a fresh SHIELDCRETE surface.
3. Do not cover fresh SHIELDCRETE with films or blankets.
4. Average of expected results by 28 days:

Compressive Strength is at 7,100 PSI or 50 MPa;

Tensile Strength is at 1,140 PSI or 8 MPa;

Water impermeability is at 1,700 PSI or W14;

$\rho = 1800 \text{ [kg/m}^3\text{]}$  - density;

$\alpha = 14.5 \text{ [}10^{-6} \text{ m/m}^\circ\text{C]}$  - coefficient of linear thermal expansion;

$\lambda = 1.73 \text{ [W/m }^\circ\text{C]}$  - coefficient of thermal conductivity;

$E = 3 \times 10^4 \text{ MPa} = 3 \times 10^4 \text{ kg/mm}^2 = 30 \text{ kg/mm}^2$  - Young modulus;

$\nu = 0.107967$  - Poisson ratio;

**Mohs' Scale of Hardness  
of materials at the age after 100 days**

Material	N° by the Mohs' scale		
	Original	Not Treated	Treated
Ordinary Stucco	2.5 ÷ 3		
Stucco & Kalmatron KF-A		4	4 +
Shotcrete & Kalmatron KF-A		4 +	4.5
Ordinary Concrete 5,000 PSI	4.5 ÷ 5.5		
PATCHCRETE – 3 MM		5.5 ÷ 6	
PATCHCRETE – 5 MM		5.5 ÷ 6+	6 + 7+
High Alumina Concrete 51	6 ÷ 6 +		
SHIELDCRETE – 20 MM		6.5 ÷ 7	7 + 8 +

The data above is not linear, but exceed experimental results of the ASTM C779 / C779M - 05 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces by rotating – cutter drill press and ASTM C 418 Method for abrasion resistance of concrete by sandblasting.