© 2007 CERATECH INC.

NP - Not Published ND - Not Determined

Mechanical Properties	Fondag FS: No data for type of test specimen	Fondag FS: 4"x8" Cylinders	Fondag FS: 2" Cubes	FIREROK: 4"x8" Cylinders
Compressive Strength, psi (MPa)				
1 Hour	NP			ND
2 Hours	NP			ND
3 Hours	>4000 (27.6)			ND
4 Hours	NP			3010 (20.8)
6 Hours	NP			ND
24 Hours	8000 (55.2)			4905 (33.8)
7 Days	8500 (58.6)			7415 (51.1)
28 Days	9000 (62.0)			9730 (67.1)
Flexural Strength, psi (MPa)				
7 Days	NP			1030 (7.1)
28 Days	NP			1105 (7.6)
Tensile Strength, psi (MPa)				
7 Days (@ 24 hours with moist cure)	800 (5.5)			ND
28 Days	NP			590 (4.0)
Bond Strength, psi (MPa)				
7 Days	NP			2503 (17.6)
28 Days	NP			3056 (21.0)
Scaling Resistance, lbs/ft2 (kg/m2)				
25 cycles	NP			0 (0)
50 cycles	NP			0 (0)
Modulus of Elasticity, (MOE) - psi (GPa)				
28 Days	8.93			4.7 (31.8)
Coefficient of Thermal Expansion. (CTE) -in/in/˚F				
28 Days	5.0			1.37
Length Change, % of Total Length				
28 Days Soak / 28 Days Dry (@ 28 days with ambient cure)	-0.08			-0.052/-0.057
Rapid Freeze Thaw Resistance, %RDM				
300 cycles	NP			100%
Ponding, Chloride Ion Concentrations @ 0.5" - 1.0" depths				
90 Days	NP			<0.05%
Abrasion Resistance 28 day				
millimeters of wear per ASTM C944 (2005)	NP			0.17

Special Strength Issues & Requirements:

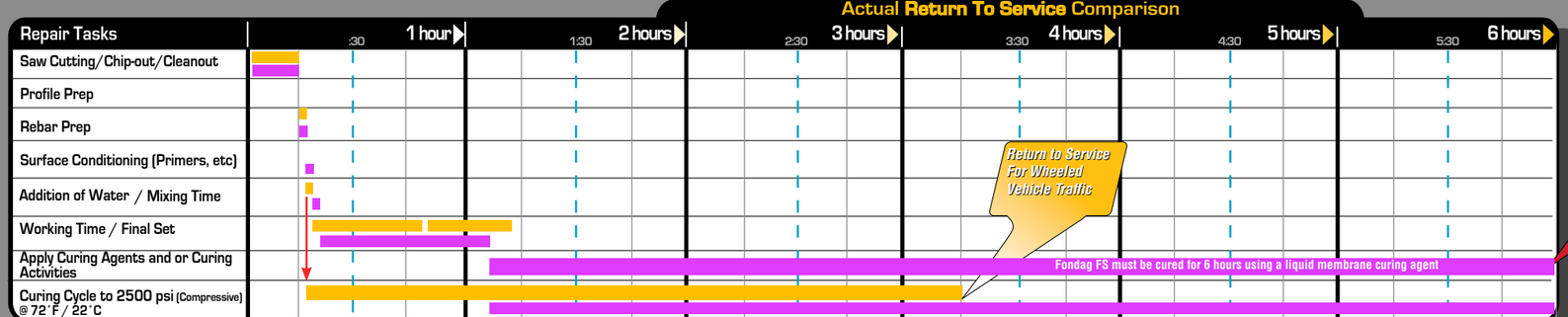
Fondag FS withstands thermal cycling between -395˚F (-184˚C) to 2000˚F (1100˚C)
Firerok will withstand thermal cycling up to 1800˚F (982˚C)

Mixing & Placing

Material Composition	Fondag FS: Single Component, Calcium Aluminate, Concrete	FIREROK: Single component, pre-extended mineral composite, structural concrete.
Site Preparation		
● Saw Cutting Repair Perimeter • Surface profile	No data • No data	**Recommended, 1.13" min. depth • 0.06" min. surface amplitude**
● Rebar Prep	No data	**Remove loose scale, ensure structural integrity**
● Surface Conditioning	Surfaces must be rough, clean, sound and pre-soaked SSD	Clean, dampened w/no standing water and stable - no primers or scrub coats required
● Material Profile Min. • Max. • Layerability • Consolidation	4.00 in. minimum depth • No data for maximum depth • No cold joint interface information • No data	**1.13" as packaged • No maximum. Do not featheredge** • Can be layered (prior to subsequent placements reaching final set) • **Self Consolidating**
Mixing Requirements		
● Special Product Prep	No data	**None**
● Applicable Mixing Equipment	No data	**Grout Mixer • Concrete Mixer**
● Mix Water Quality • Volume Required • Tolerance	Potable • 0.5 gallons • + 0.05 gallons	**Potable and Non-Potable • 2 quarts per 54 Lb. unit • adjust for slump**
● Mix Water Temperatures	No data	**50˚F/10˚C to 75˚F/24˚C depending on ambient temperatures**
● Aggregate Extension	Pre-extended with 0.5"aggregate	**Packaged pre-extended with 3/8", (No. 8) crushed granite**
● Additives Required	Do not add admixtures	
● Mixing Time	5 minutes minimum	**6 - 7 minutes**
Placement		
● Working Time @ 72˚F • Initial Set • Final set	45 minutes • No data • No data	**up to 30 minutes • 30 - 35 minutes • 45 - 60 minutes**
● Application Temp. Min. • Max • Pumping	0˚F • No data	**30˚F / -1˚C • 120˚F/49˚C**
Curing Requirements	**Prevent rapid moisture loss during first 6 hours, coat with several layers of liquid membrane**	**None**
● Minimum Cure Time Before Applying Non-Breathing Overlayments		**4 - 6 hours**
● Clean-up • Shelf Life	**Water • 6 months - 1 year**	**Water • 1 year**
● Safety	**No data given on manufacturers product data sheet**	Standard Portland CC handling precautions
Cost Per Foot³ Standard Package Configuration / Cost	**50 Lb. Bag $24.00**	**53.5 Lb. Bag** (Pre-Extended w/ high density, Low absorption, 3/8" fractured stone) **/ $30.00**
Yield Per Standard Unit (ft³): NEAT | @ 50% Extension | @ 100% Extension	0.32	0.40
Base Cost per (ft³): NEAT | @ 50% Extension | @ 100% Extension (Aggregate estimated at $ 0.10/lb.)	$75.00	$75.00
Estimated Secondary Repair Costs		
Labor: Assumption ▶ **4 Man Crew @ Avg. Wage & Benefits = 72$ / Hr.** Hours Required To Perform Repair **To Point of Return of Service To Wheeled Traffic** as Derived From Chart Below. Includes: Site Prep, Saw Cutting, Chip-out, Clean-out, Profile Abrading Rebar Preparation, Host Conditioning, Priming, Scrub Coats, Material Prepartion, Mixing, Placing, Finishing, Curing Activities, Clean-up & traffic control device removal.	$432.00 6 Hrs @ 72.00	$234.00 3.25 Hrs @ 72.00 — *Best VALUE!*
Other Products: Assumption ▶ Includes Primers, Bonding Agents Rebar Protective Agents & Curing Compounds	$4.00 $4.00 $4.00	$ 0 $ 0 $ 0
Approximated "REAL Cost" Per Cubic Foot of Repair	$511.00	$309.00

Notes:

Actual Return To Service Comparison



CERATECH REPAIR PRODUCT COMPETITIVE PRODUCT **RTS** : Retun To Service

Data shown in RED above are estimates

CERATECH Product ▶ FIREROK High Temperature Concrete

Competitive Product ▶ Fondag FS (fast set)