



TechCement RapidCast 100

Low Carbon Cement for Precast Concrete

Technical Data Sheet

TechCement RapidCast 100 is a novel, non-portland cement utilizing as much as 90% of SCM (secondary cementitious materials). The product qualifies under ASTM C1157 as a hydraulic cement and is compatible with all standard mixing equipment employed with portland cement. As a replacement for Portland cement in precast applications, TechCement 100 provides the same range of slump/spread required to make an SCC (self-consolidating cement) yet can also offer a high-early set strength (90-120 minutes) allowing for rapid de-molding of the precast components. This provides the ability for the precaster to perform multiple pours per day per mold, increasing efficiency and improving the bottom line. By virtue of its high degree of SCM utilization, particularly post-industrial SCMs (fly ash and slag), TechCement 100 also offers one of the lowest GWP values currently on the market with numbers as low as 45 kg CO₂/metric ton. The product offers a very low water/cement ratio, high sulfate resistance and excellent resistance to ASR.

The product is also packaged for manufacture with the environment in mind. Rather than being provided as a fully blended cement, TechCement 100 comes to the precaster in 2 components. The main component, coal fly ash, is shipped directly from the boiler or terminal in a tank truck and blown into a silo. The second component of TechCement, called the “BLACK BOX” consists of a proprietary blend of activators, retarders and viscosity modifying agents that are dosed with each yard of concrete and make up ~ 10% of the total “cement”.

The product mixes and places exactly like Portland cement, except for achieving a high-early set time/strength gain. While SCC mixes are typical for precast, and the data provided shows the performance characteristics of a SCC, the product can be easily adjusted to produce a slump of any desired range (zero-10 inches). The product is also compatible with commercially available liquid additives such as high-range water reducers (superplasticizers), volume stability agents, air entrainment agents as well as defoamers. The results provided represent typical results from production materials. Actual results may vary from third party testing results; however, TechCement materials meet and/or exceed ASTM C928, and exceed established internal quality control standards, (available upon request). All samples were air cured.

TechCement RapidCast 100 is tested according to ASTM C1600 and ASTM C1157.



ASTM TEST RESULTS - TechCement RapidCast 100

Slump/spread		20-28 inches
Workability		75 -100 min.
Final set		90-140 min.
ASTM C39-24 Compression (psi)	2 hours	2,000
	1 day	3,500
	7 days	6,980
	28 days	9,440
ASTM 469-22 Elastic Modulus (psi)	28 days	6.46E+06
ASTM C496-17 Splitting Tensile (psi)	28 days	690
ASTM C490 Length Change (%)	96 days	-0.046
ASTM C1012 Sulfate Immersion (% expansion)	96 days	0.022

Typical Bulk Density of a precast concrete – 140-155 lbs.cf

Scaling Resistance, lbs./ft²

ASTM C 672

0 @ 50 cycles

NOTE: This mix design is meant to accommodate sloped repairs, with a 6–8-inch slump. A self-consolidating concrete (SCC) version is also available for flat surfaces.



TechCement RX-60 Rapid Repair Concrete

Technical Data Sheet

TechCement RX-60 is a fiber-reinforced geopolymer cement repair material that uses no portland cement and is based on supplemental cementitious materials as the cement itself. The product provides 30-40 minutes of placement time and reached its final set in 60-75 minutes. It has a 3-hour strength of 3000psi and a 28-day strength of 7000psi. The product comes as a 50-pound dry product in a 5-gallon pail. It is packaged with a blended aggregate, ¼ inch limestone and C-33 concrete sand with a separate sealed bag of geopolymer cement in the pail.

RX60 can be mixed in a pail with a drill and paddle, in a drum mixer or in a paddle mortar mixer. The product has a low water /cement ratio requiring 1.5 liters of water per unit. No liquid admixtures are required.

MIXING INSTRUCTIONS

TechCement RX-60 comes as a 50-pound dry mixture in a 5-gallon pail.

- Open the pail and remove the bag of cement. The remainder of the unit is a blend of C-33 sand and ¼ inch limestone.
- Place the sand and stone in a drum or paddle mixer along with the required mix water, 1.5 liters. This amount of water will result in a slump of 6-8 inches.
- Multiple units can be mixed simultaneously depending upon the size of the mixer. Each unit is approximately 0.4 cubic feet.
- Blend the water and aggregate in the mixer for at least 1 minute to wet it out.
- Add the cement to the mixer and mix for at least 6 minutes.
- Remove from the mixer and place into the repair area using conventional tools. Place all the product within 30 minutes after removing it from the mixer.
- The product can be applied over a temperature range of 40-100 degrees Fahrenheit. Set times will be longer in colder temps and shorter in higher temps.

TechCement RX-60 is tested according to ASTM C1600 and ASTM C1157

- The results provided represent typical results from production materials. Actual results may vary from third party testing results; however, TechCement materials meet and/or exceed ASTM C928, and exceed established internal quality control standards, (available upon request). All samples were air cured.



ASTM TEST RESULTS - TechCement RX-60 Rapid Repair

Slump		8 inches*
Workability		28 min.
Final set		60-75 min.
ASTM C39-24 Compression (psi)	2 hr	2,000
	1 day	4,900
	7 days	7,430
	28 days	8,910
ASTM 469-22 Elastic Modulus (psi)	28 days	5.58E+06
ASTM C496-17 Splitting Tensile (psi)	28 days	500
ASTM C490 Length Change (%)	96 days	-0.018
ASTM C1012 Sulfate Immersion (% expansion)	96 days	0.017

* Slump designed for working at grade; SCC version available

Scaling Resistance, lbs./ft²

ASTM C 672

0 @ 50 cycles

NOTE: This mix design is meant to accommodate sloped repairs, with a 6–8-inch slump. The self-consolidating concrete (SCC) version is also available for flat surfaces.