



High Permeability Pervious Concrete

Pervious concrete is a high porosity concrete composed of Portland cement, coarse aggregates, water, and admixtures. The combination of these ingredients will produce hardened material with interconnecting voids of 2 to 8 mm size. This type of concrete allows precipitation of water and other sources as well as air to pass directly through the sub-base, thereby reducing the runoff from a site and allowing groundwater recharge.

Pervious concrete is a green building alternative suitable for better storm water and land utilization management. It reduces soil erosion and allows for the filtering of deleterious materials. The drainage rate will normally hover around 700 L/min/m². Local vegetation is allowed to thrive with reduced drainage requirements. Typical applications include parking surfaces, areas with light traffic, residential streets, courtyards, drainage areas, pedestrian sidewalks embankments, tennis courts, swimming pool decks, patios, greenhouses and zoo areas.

The high porosity of pervious concrete is attained from the highly interconnected voids structure. Typically pervious concrete has little or no fine aggregate and has just enough cementitious paste to coat the coarse aggregate particles so as to preserve the interconnectivity of the voids. The limestone aggregates used must be properly graded to achieve an air void content structure in the 20% to 35% range. Water cement ratios in the range of 0.25 to 0.35 are normally used to foster the void structure.

To achieve such low water cement ratios, Holderchem provides contractors with efficient high-range and mid-range polycarboxylate based admixtures, which can be adapted to meet climate requirements. Holderchem also offers SBR latex to enhance the performances of the mix design if required.

The low water cement ratio and high void structure tend to speed the hydration process, making placement difficult. Holderchem as part of the pervious concrete system supplies hydration-controlling admixtures to slow down the hydration process. Holderchem also supplies for this application rheology modifying admixtures to make the concrete more manageable by their fattening and lubrication effect.

Typical low slump concrete challenges stem from (1) the need to add water on site to discharge the material from the truck, (2) stiffening and loss of workability from fast cement hydration, and (3) difficulty in placing the concrete. The Holderchem solution resolves these challenges allowing for the easy discharge of trucks by increasing the mix flowability without having to add water and thus without any adverse effect on compressive strength.

Pervious concrete should meet the requirements of ASTM C 1688, which defines the requirements pertaining to density and void content of pervious concrete, and ACI 522 R06. Holderchem can assist customers in the optimization of their mix designs, upon request.

The Batimix admixture pervious concrete system includes the following components:

Batimix HWR 1500 is a high-range water-reducing admixture. It is designed to provide adequate dispersion of the cement particles to achieve better hydration with low water content. The air void structure of pervious concrete negatively affects

strength, but to a large extent loss of strength is compensated by lower water cement ratios.

Batimix Retarder 210 is a hydration-controlled admixture used as a stabilizer to slow down the hydration process and extend the mix workability thus doing without the need to add water on site.

Batimix VMA 510 is a viscosity-modifying admixture. It is used to facilitate pumping process and prevent paste drain down of low slump mixes, so as to enhance mixture flowability and cohesiveness.

Batimix Retarder 220 is a rheology-controlling admixture used to lubricate low slump mixes and ensure suitable flowability for discharging concrete from truck and for placement and compaction.

In addition to the above, Holderchem offers **Batimix Pervious Concrete 501**, as a ready-to-use product requiring simply the mixing with water at the job site. Major benefits include consistent properties of the fresh and hardened product, reduced bleeding and segregation, improved dimensional compatibility, good degree of adhesion to existing substrates, and high level of water penetrability. For more information, kindly refer to Holderchem representatives.

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