HIGH STRENGTH CONCRETE COMPOSITION AND METHOD OF PREPARATION

FIELD OF THE INVENTION

The present invention relates to a novel high strength (60 to 100 MPa) concrete composition. The present invention further relates to a process for the preparation of the concrete composition.

BACKGROUND OF THE INVENTION

Articles such as preformed concrete building blocks, roof and floor tiles, paving slabs, structural members, etc. have traditionally been formed from concrete comprising a mixture of cement, such as hydraulic or Portland cement, mineral aggregate, and water, plus various optional additives such as air reducing agents, water reducers, water proofing and possibly other components. These materials are reinforced with reinforcement such as steel bars, wires or fibres. The materials are generally blended in a concrete mixer and the resultant wet mixture is placed and densified in a mould or form to produce a desired shape. Hydration of the cement paste then takes place over a period of time after which the mould or form is removed to form the concrete element. Concrete formed in this manner has reasonable strength and durability in most environments; however the concrete typically takes many days or even weeks to harden to full strength.

Concretes are also often used for non-structural applications. U.S. Pat. No. 4,900,359 entitled "Cellular concrete"; U.S. Pat. No. 5,183,505 entitled "Cellular concrete"; and U.S Pat. No. 6,488,762 entitled "Composition of materials for use in cellular lightweight concrete and methods thereof" relate to concrete for non-structural applications. Lightweight concretes are not very economical on a large manufacturing scale, because the mixture requires a large amount of expensive lightweight aggregates.

EP-A-0931 030 discloses a concrete mixture comprising aggregates, hydraulic binder, and a silica fume having a specific surface area below 200 m^2 /g.

US Pat. No. 6,008,275 discloses a cementitious mixture comprising low-grade cement, e.g. Ordinary Portland Cement partially replaced with pozzolanic cement containing e.g. fly ash, slag, and natural pozzolans. The cementitious mixture also comprises a polycarboxylate polymer based water reducer and an accelerator.