【CLAIMS】

【Claim 1】

A method for optimizing strength development of ultra-high strength concrete with mixture design in which mixing materials including water, cement, silica fume, blast furnace slag, gypsum, sand, and gravels are mixed with compressive strength of 120MPa or more and a low water-binder ratio of 20% and less, the method characterized in that dry-mixing of the gravels and the silica fume is first conducted for 20 to 40 seconds and the other mixing materials are put and mixed.

【Claim 2】

A method for optimizing strength development of ultra-high strength concrete with mixture design in which mixing materials including water, cement, silica fume, blast furnace slag, gypsum, sand, and gravels are mixed with compressive strength of 120MPa or more and a low water-binder ratio of 20% and less, the method characterized in that the water is finally put and mixed for 150 to 200 seconds, and after a stationing operation where the mixing operation stops for 200 to 400 seconds is conducted, the mixing operation is conducted for 150 to 200 seconds.

【Claim 3】

A method for optimizing strength development of ultra-high strength concrete with mixture design in which mixing materials including water, cement, silica fume, blast furnace slag, gypsum, sand, and gravels are mixed with compressive strength of 120MPa or more and a low water-binder ratio of 20% and less, the method characterized in that the mixture design of the ultra-high strength concrete is conducted with a slump flow of 850±50mm.

【Claim 4】

~~A method for optimizing strength development of ultra-~~ high strength concrete with mixture design in which mixing materials including water, cement, silica fume, blast furnace slag, gypsum, sand, and gravels are mixed with compressive strength of 120MPa or more and a low water-binder ratio of 20% and less, the method characterized in that the mixture design of the ultra-high strength concrete is conducted with an air content between 1.0% and 2.0%.

【Claim 5】

A method for optimizing strength development of ultra-high strength concrete with mixture design in which mixing materials including water, cement, silica fume, blast furnace slag, gypsum, sand, and gravels are mixed with compressive strength of 120MPa or more and a low water-binder ratio of 20% and less, the method characterized in that self-compacting casting of the ultra-high strength concrete is conducted.

【Claim 6】

A method for optimizing strength development of ultra-high strength concrete with mixture design in which mixing materials including water, cement, silica fume, blast furnace slag, gypsum, sand, and gravels are mixed with compressive strength of 120MPa or more and a low water-binder ratio of 20% and less, the method characterized in that after the casting of the ultra-high strength concrete, wet curing of the ultra-high strength concrete is conducted for 14 to 28 days and air dry curing is then conducted.

【Claim 7】

A method for optimizing strength development of ultra-high strength concrete with mixture design in which mixing materials including water, cement, silica fume, blast furnace ~~slag, gypsum, sand, and gravels are mixed with compressive~~

~~strength of 120MPa or more and a low water-binder ratio of~~ 20% and less, the method characterized in that two or more steps are selected from the following steps of:

conducting the mixture design of the ultra-high strength concrete with a slump flow of 850±50mm;

conducting the mixture design of the ultra-high strength concrete with an air content between 1.0% and 2.0%;

conducting first dry-mixing of the gravels and the silica fume for 20 to 40 seconds and conducting the putting and mixing of the other mixing materials in the mixing process of the ultra-high strength concrete;

conducting final mixing of the water for 150 to 200 seconds and after conducting a stationing operation where the mixing operation stops for 200 to 400 seconds, conducting the mixing for 150 to 200 seconds in the mixing process of the ultra-high strength concrete;

conducting self-compacting casting of the ultra-high strength concrete; and

conducting wet curing for 14 to 28 days after the casting of the ultra-high strength concrete and conducting air dry curing.

【Claim 8】

The method for optimizing strength development of ultra-high strength concrete according to any one of claims 1 to 7, wherein the mixture design of the ultra-high strength ~~concrete has the compressive strength of more than 200MPa.~~

【CLAIMS】

【Claim 1】

A method for optimizing strength development of ultra-high strength concrete with mixture design wherein mixing materials including water, cement, silica fume, blast furnace slag, gypsum, sand, and gravels are mixed with compressive strength of 120 MPa or more and a low water-binder ratio of 20 wt% or under, the method comprising the steps of:

dry-mixing of the gravels and the silica fume for 20 to 40 seconds and mixing the other mixing materials with the mixed gravels and silica fume; and

adding the water to the mixture, mixing the water and the mixture for 150 to 200 seconds, conducting a stationing operation wherein the mixing operation stops for 200 to 400 seconds, and mixing the mixture for 150 to 200 seconds.

【Claim 2】

The method according to claim 1, wherein the mixture design of the ultra-high strength concrete is conducted with a slump flow of 850±50 mm.

【Claim 3】

The method according to claim 1, wherein the mixture design of the ultra-high strength concrete is conducted with an air content between 1.0% and 2.0%.

【Claim 4】

The method according to claim 1, wherein self-compacting casting of the ultra-high strength concrete is conducted.

【Claim 5】

The method according to claim 1, wherein after the casting of the ultra-high strength concrete, wet curing of

the ultra-high strength concrete is conducted for 14 to 28 days, and air dry curing is then conducted.

【Claim 6】

The method according to claim 1, wherein the mixture design of the ultra-high strength concrete is conducted to obtain an extremely high strength concrete having the compressive strength of more than 200 MPa.