Claims

[Claim 1] A geopolymer grout for protecting prestressing reinforcements, the geopolymer grout comprising metakaolin, fly ash and an activator mixture, the activator mixture comprising sodium hydroxide and sodium silicate, wherein the $Na_2O:SiO_2$ molar ratio of the sodium silicate is between 0.40 and 0.70, and wherein the metakaolin BET specific surface area is greater than or equal to 25 m^2/g.

[Claim 2] The geopolymer grout as claimed in claim 1, the sodium silicate having a mass content of water of between 52.1% and 72.1%, and the activator mixture having a mass content of water less than 65%.

[Claim 3] The geopolymer grout as claimed in claim 2, wherein the activator mixture has a mass content of water of between 40% and 65%.

[Claim 4] The geopolymer grout as claimed in any one of the preceding claims, wherein the metakaolin:fly ash:alkaline silicate solution:sodium hydroxide mass ratio is 1:1:2-3:0.15-0.35.

[Claim 5] The geopolymer grout as claimed in any one of the preceding claims, wherein the grout exhibits aqueous-solution bleeding less than 0.5% of the total mass of the grout.

[Claim 6] The geopolymer grout as claimed in any one of the preceding claims, wherein the grout has a pH of between 13 and 14.

[Claim 7] The geopolymer grout as claimed in any one of the preceding claims, wherein the BET specific surface area of a mixture comprising the metakaolin and the fly ash is greater than or equal to 25 m^2/g and preferably greater than or equal to 30 m^2/g.

[Claim 8] A process for manufacturing a geopolymer grout, the geopolymer grout comprising metakaolin, fly ash and an activator mixture, the activator mixture comprising sodium hydroxide and sodium silicate, the $Na_2O:SiO_2$ molar ratio of the sodium silicate being between 0.40 and 0.70, and the metakaolin BET specific surface area is greater than or equal to 25 m^2/g, wherein the manufacturing process comprises an activation step in which the metakaolin and the fly ash are activated by the activator mixture in order to obtain polymerization of the aggregate.

[Claim 9] The manufacturing process as claimed in claim 8, moreover comprising a prior step of homogenizing the metakaolin and the fly ash.

[Claim 10] The manufacturing process as claimed in claim 8 or 9, moreover comprising a kneading step in which the activator mixture is kneaded with the metakaolin and the fly ash.

[Claim 11] The manufacturing process as claimed in claim 10, wherein water is added at the start of the kneading step, the amount of water added being between 1% and 4% of the weight of the geopolymer grout.

[Claim 12] The manufacturing process as claimed in any one of claims 8 to 11, wherein, in a prior milling step, a mixture comprising the metakaolin and the fly ash is milled in order to obtain a BET specific surface area greater than or equal to 25 m^2/g and preferably greater than or equal to 30 m^2/g.

[Claim 13] A process for installing a structural cable, comprising the following steps:

- fitting a duct containing at least one reinforcement,
- tensioning the reinforcement,
- injecting a geopolymer grout into the duct, and

wherein the geopolymer grout comprises metakaolin, fly ash and an activator mixture, the activator mixture comprising sodium hydroxide and sodium silicate, the Na_2O:SiO_2 molar ratio of the sodium silicate being between 0.40 and 0.70, and wherein the metakaolin BET specific surface area is greater than or equal to 25 m^2/g.

[Claim 14] The installation process as claimed in claim 13, comprising, before injecting the geopolymer grout into the duct, a step of kneading the geopolymer grout for 2 to 5 minutes with an energy of approximately 9 kilojoules per liter, thus obtaining a fluidity through a Marsh cone with a 10 mm diameter nozzle of between 25 seconds and 35 seconds.

[Claim 15] The installation process as claimed in either one of claims 13 and 14, wherein, during the injection, the geopolymer grout is injected into the duct through a hose, the hose having an inside diameter greater than 25 mm and a length limited to 100 m.