

This paper presents results of an experimental study which investigates the effect of four pozzolan additions made from various by-product materials on physical and mechanical properties of ultra-high performance fibre-reinforced concrete (UHPRFC) compared with the silica fume (SF): waste bricks (WB) and three types of metakaolin (MK) as calcined clays at 750 °C: calcined clay of Djbel Debbagh quality 3 (DD), calcined sludge incineration at the manufacture of paper (PS) and calcined silt of dams (SD) having median particle sizes less than 45 µm are used as addition. For each addition, five percentages of steel fibres (1, 1.5, 2, 2.5 and 3%) were used to improve the performance of concrete. The results suggest that the use of WB, PS and SD has no significant effect on the compressive strength as compared with SF concretes. Calcined clay DD can be used as pozzolanic materials in making UHPRFC. This MK competes with the SF, after 28 days of curing, the concrete containing 25% of DD and 2.5% steel fibre presents a compressive strength of 179 MPa compared with the concrete containing 25% of SF and 2.5% steel fibre, which presents strength of 183 MPa