Lab Work No. 4

Determination of the setting time of cement paste

The setting time of the cement paste is determined using a Vicat's Apparatus, but instead of a pestle, a steel needle with a cross section of 1 mm^2 and a length of 50 mm is fixed on the bottom of the movable rod. Before starting the test, check the movement of the metal rod of the Vicat's Apparatus, the position of the arrow, which should be at zero when the needle is resting on a plate lubricated with a thin layer of machine oil.

Cement dough of normal density is prepared according to the method described in laboratory work No. 3.

Immediately after cooking, the dough is placed in a Vicat's Apparatus ring mounted on a glass plate and gently shaken five to six times to remove air. Excess dough is removed with a knife and the surface is leveled. A ring with cement paste is placed on the device’s table, the rod is lowered until the needle touches the surface of the dough and the rod is fixed with a screw. Then quickly unscrew the clamping screw so that the needle can freely immerse in the dough. The needle is immersed in the dough every 5 minutes before the start of setting and every 10 minutes after the start of setting, moving the ring every time so that the needle does not fall into the same place. After each dive, wipe the needle.

The start time of setting is taken from the moment of mixing with water until the moment when the needle does not reach the plate by 1-2 mm. The setting time of the cement paste is considered to be the time from the beginning of mixing to the moment when the needle drops into the dough by no more than 1 mm.

The results of the experiments are entered in table 4.

Table 4

Cement Paste Setting Time Testing Results

Exp. №	Cement Mass, g	Water Volume, ml	The Time from the Start of Mixing with Water, min	Readout on the Scale of the Device, mm	The Beginning of the Setting of Cement, min	The End of the Setting of Cement, min