Self-leveling mortar usually contains eleven constituents. They are as follows: HAC, OPC, calcium sulphate, calcium carbonate, silica sand, resin, superplasticizer, low cellulose, defoamer, retarder and accelerator. This self-leveling mortar is characterized by the following properties: compressive strength, flow value, tensile bond adhesion, abrasion resistance, and length change.

In this study the objective is to develop the self-leveling mortar with target properties using Taguchi’s orthogonal array technique. Each of the eleven factors was studied at two levels. The base formula was taken as follows:

\[ \text{CFL} = 55.0, \text{CaSO}_4 = 32.5, \text{OPC} = 285.0, \text{CaCO}_3 = 157.5, \text{Silica sand} = 414.6, \text{Resin} = 22.5, \]
\[ \text{Casein} = 8.0, \text{Low cellulose} = 0.75, \text{Defoamer} = 3.25, \text{Retarder} = 1.35, \text{Accelerator} = 2.8. \]

And the following changes were made to the base formula to get the experimental composition.

\[ \text{CFL} = 15.0, \text{CaSO}_4 = 17.5, \text{OPC} = 15.0, \text{CaCO}_3 = 7.5, \text{Silica sand} = 35.4, \text{Resin} = 2.5, \]
\[ \text{Casein} = 2.0, \text{Low cellulose} = 0.25, \text{Defoamer} = 1.75, \text{Retarder} = 0.35, \text{Accelerator} = 2.2. \]

The two level of each factor were derived as:

- **Base formula + change = level 1** and,
- **Base formula + change = level 2**.

The raw material for each mixture were mixed. This sample were cast and the Above stated property were measured. The formulation that is closest to the target was:

\[ \text{CFL} = 70.0, \text{CaSO}_4 = 50.0, \text{OPC} = 300.0, \text{CaCO}_3 = 165.0, \text{Silica sand} = 450.0, \text{Resin} = 20, \]
\[ \text{Casein} = 10, \text{Low cellulose} = 0.5, \text{Defoamer} = 5.0, \text{Retarder} = 1.0, \text{Accelerator} = 5.0 \]
The properties of this best composition are as follows:

Compressive strength = 29.0 N/mm², Flow value = 171 mm, Tensile bond adhesion = 1.0 N/mm², Abrasion resistance = 2149 mm³, Length change = +0.01 %.

Effect of various constituents on different property was evaluated by using response Table, graphic display and by statistical method. Coefficient for the effect of each constituent on each property has been calculated by subtracting the sum of the compositions in higher level (level 2) and the sum of composition in lower level (level 1) and the difference of two is divided by the changes made.