800°C and 1000°C the structure of cement paste is honeycomb structure and large cracks exist in cement paste which is separated from aggregate.

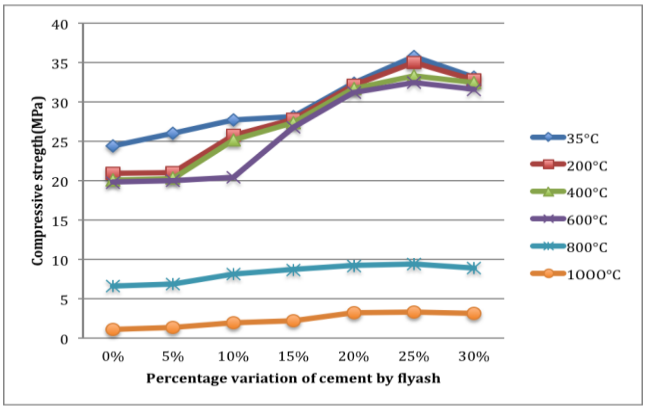

Figure 1: Variation of compressive strength for flyash concrete when subjected to different temperatures for 4 hrs and intermittent cooling

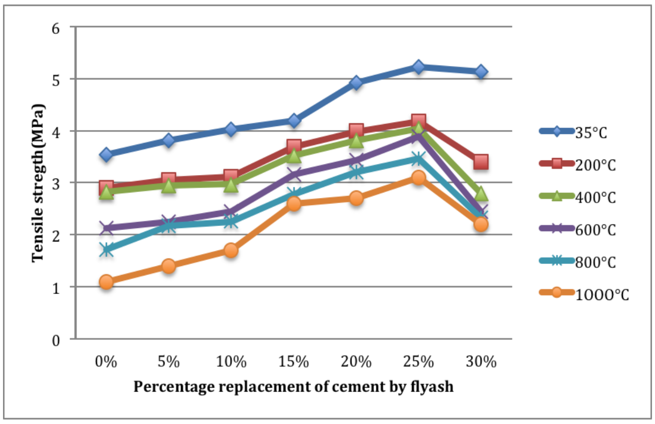

Figure 2: Variation of tensile strength for flyash concrete when subjected to different temperatures for 4 hrs and intermittent cooling

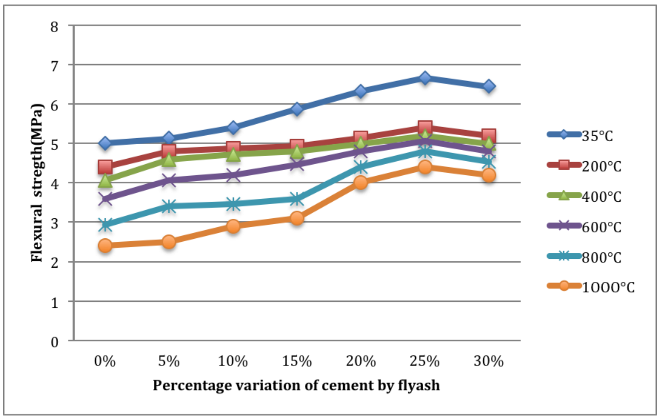

Figure 3: Variation of flexural strength for flyash concrete when subjected to different temperatures for 4 hrs and intermittent cooling

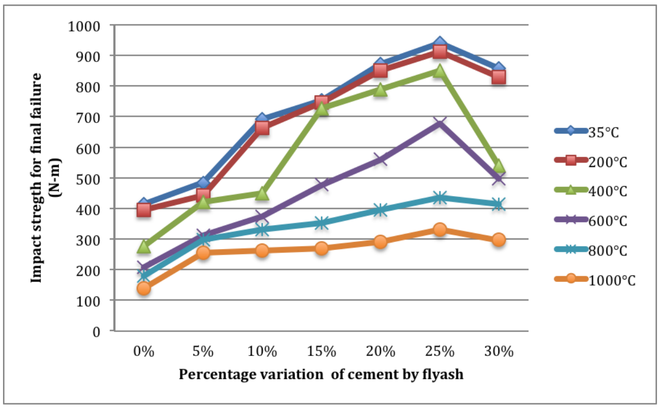

Figure 4: Variation of impact strength for flyash concrete when subjected to different temperatures for 4 hrs and intermittent cooling

5. Conclusions

The following conclusions are derived from the results reported in the paper.

a) Results of investigation reveal that it is feasible to replace cement by fly ash to achieve strength, economy and to achieve problem of waste disposal.
b) The compressive strength, tensile strength, impact strength and flexural strength were found to increase with increase in the percentage replacement of cement by fly ash up to 25% at elevated temperature of 200°C with intermittent cooling and thereafter decreased.
c) Similarly when concrete is subjected to sustained elevated temperature of 400°C, 600°C, 800°C and 1000°C with intermittent cooling the strength parameters are maximum corresponding to 25% replacement of cement by fly ash.
d) The results of this investigation suggest that the fly ash could be very conveniently used as a partial replacement of cement in structural concrete even at sustained elevated temperature with intermittent cooling.

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