

**Use of fly ash as substitute of sand in construction activities**

†2895. SHRI DHARMENDRA PRADHAN : Will the Minister of HOUSING AND URBAN POVERTY ALLEVIATION be pleased to state:

- (a) whether research has been undertaken on the use of fly ash as a substitute of sand in construction activities;
- (b) if so, the details thereof;
- (c) the present status thereof; and
- (d) the rate of success achieved in this regard ?

THE MINISTER OF HOUSING AND URBAN POVERTY ALLEVIATION (KUMARI SELJA) : (a) and (b) No research on use of fly ash for part replacement of sand for construction purpose has been taken up by this Ministry. However, this parameter has been studied in projects related to “use of high volume flyash in concrete” and in projects like “maximizing the use of flyash in cement and concrete” etc. by the National Council for Cement and Building Materials under Ministry of Commerce and Industry. In addition, some limited research work on use of bottom ash which contains varying percentage of flyash as part replacement of sand has been done.

(c) Presently, only one project is in progress at the National Council for Cement and Building Materials which is an Indo-Norwegian project wherein use of bottom ash as part replacement of sand is being studied and results are not yet available.

(d) In the studies conducted by the National Council for Cement and Building Materials on high volume flyash concrete, it has been found that in low and medium grade concrete i.e. upto M20, while replacing part of cement with flyash, additional replacement of sand (5-10%) with flyash conforming to IS:3812-Part-I is advantageous. In studies on use of bottom ash, it is seen that to make the part replacement of bottom ash (say up to 30%) as techno-economically viable alternative, sieved bottom ash after removal of 150 $\mu$  and 300 $\mu$  down size shall be preferable for usage in concrete. The bottom ash after part removal of 150 $\mu$  and 300 $\mu$  sieve size can also be used in mortar making for use in masonry and plastering work.

**Homeless families in the country**

2896. SHRI DILIPBHAI PANDYA : Will the Minister of HOUSING AND URBAN POVERTY ALLEVIATION be pleased to state:

- (a) the State-wise and percentage-wise as per the 2001 and 2011 census total homeless families in rural, tribal and urban areas;

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† Original notice of the question was received in Hindi.