

A REVIEW ON THE PARTIAL REPLACEMENTS OF THE CEMENT IN CONCRETE WITH VARIOUS INDUSTRIAL INGREDIENTS

Shahrukh Khan

M.Tech Student (Rama University, Kanpur, Uttar Pradesh, India)

Satish Parihar

Assistance Professor (Rama University, Kanpur, Uttar Pradesh, India)

Abstract:

In this paper a study is been done to ensure the utilization of the numerous industrial by products for the partial replacement of cement to produce M-25 grade concrete. By getting into study of various industrial products, a new type of by products are come into existence which in many ways are beneficial for the atmosphere, makes the environment pollution free and ensures the economic ease concerning to cement as well.

The percentage of replacement of cement were adopted as 5%, 10%, 15%, 20% and 25% and even on this bases will get to know the less consumption percentage of cement. The entire approach is done to full fill the mechanical properties and the environmentally assurance for the use of industrial by products in the partial replacement of cement.

Introduction:

The population in the world is increasing thereby the demands are also increasing in terms of every sector. In construction scenario, cement is the most significant and demanding building material which act as a strong binder. Cement is such a material that is widely used for the construction but liberates more carbon dioxide which is harmful for the environment.

For the construction purpose, cement is used with brick, stone, aggregates, sand etc.; thus cement is the backbone for binding the structure. The demand of cement is not increased in India but in other countries also and the table showing below the world cement demand.

Table-World Cement Demand

| Item | 2010 | 2015 | 2016 | Annual Growth | |
|---------------|--------|--------|--------|---------------|-------|
| | | | | 05/00 | 10/05 |
| Cement Demand | 1630.0 | 2250.0 | 2830.0 | 6.7 | 4.7 |
| North America | 149.6 | 170.0 | 196.0 | 2.6 | 2.9 |
| Western | 208.5 | 233.0 | 233.0 | 1.1 | 2.2 |
| Asia/Pacific | 954.5 | 1470.0 | 9.0 | 9.0 | 5.2 |
| Other Region | 328.2 | 401.5 | 506.6 | 4.1 | 4.7 |

By the study of the various researches, many of the by products are come into existence which can be used as a partial replacement of the cement. Some of the industrial by products are:

- **Red Mud**
- **Rice Husk**
- **Plastic Fibers**
- **Natural Fibers**

These are the byproducts that are in the residue forms of their finished products, thus this can be used in recyclable form as a partial replacement of cement. But the problems are come into existence when the structure needs to full fill the mechanical requirements, environment issues and economic factor as well.

Discussions& Conclusion:

By using these types of Industrial by products we need to perform the various tests which will ensure the best usage percentage and thus cement less consumed percentage as well.

After the depth study of the various papers it concludes that the industrial by products are more feasible and mechanically and even environmentally beneficial for the partial replacement of cement scenario.

References:

1. Kiran Kumar M S and Raghavendra naik. “experimental study on utilization of industrial by products (red mud & copper slag) in concrete block and concrete”. International Journal of civil and structural engineering research.

2. Mr. a. B. Sawant, Mr. Dilip B. kamble, Ms. Triveni B. Shinde. “Utilization of industrial waste (red mud) in concrete construction”.
3. Komal Chawla and Bharti tekwani. “Studies of glass fiber reinforced concrete composite”. International Journal of structural and civil engineering research.
4. R. N. Swamy, “Testing and test methods of fiber Cement Composite”
5. Jose James & M. Subbarao, “Reactivity of Rice Husk Ash” cement and concrete research, vol, 16, 2012, pp296-3029
6. Gemma Rodriguez De Sensale “Strength development of concrete with rice husk ash” cement & concrete composites 28(2011) 158 – 160.7

