ABSTRACT

The durability of concrete structures has been a major concern all over the world. Most of the conventional concrete structures deteriorate rapidly and require frequent and costly repairs before their expected life is served. Insufficient compaction lowers ultimate performance of concrete. Apart from reducing the strengths of concrete, the lack of compaction influences the permeability of concrete, which in turn reduces the durability of concrete structures. Use of Self compacting concrete is one of the best solution to achieve durable concrete structures.

Self-compacting concrete (SCC) is an innovative concrete which does not require vibration for placing and compaction. It is able to flow under its own weight, completely filling formwork and achieving full compaction even in congested reinforcement without segregation and bleeding. The necessity of this type of concrete was proposed by Okamura in 1986. The fundamental study on the workability of self compacting concrete had been carried out by Ozawa and Maekawa (1989) at University of Tokyo in 1989.

In order to achieve self compactability, the researchers and formulators have used high Portland cement content and chemical admixtures. However, cost of such concretes remarkably increased because of high volume of Portland cement and chemical admixtures used therein.

A number of studies have been reported in the literature pertaining to the use of mineral admixtures to enhance the self-compactibility characteristics and also reduction in the material cost of the SCCs. Use of mineral admixtures improve rheological and durability properties of self compacting concrete.
In the present study flyash and rice husk ash is used as powder material. Flyash is obtained from GGSTP, Ropar. The rice husk ash is obtained from nearby Industrial Area of Punjab. From literature survey it can be concluded that SCC mixes have been developed using limestone powder, silica fumes, metakaolin, flyash, stone dust, marble and Ground granulated blast furnace slag and shell lime as filler material. Development of Self compacting concrete mix using rice husk ash and its blending with flyash has not been reported as yet. Rice husk ash is agro waste where as flyash is industrial waste from thermal power station. Utilisations of these waste products as cement replacement will not only help to achieve economical Self compacting concrete mix, but it is envisaged that it shall improve the microstructure and consequently the durability properties of concrete. It shall also provide solution to the problems of disposal of waste and avoid environmental pollution created by these waste products.

The testing standards being laid down by EFNARC (European Federation for Specialist Construction Chemicals and Concrete system) are being adopted world over with minor deviations suited to their requirement. The test to be conducted in laboratory shall be conducted using the equipments as per specifications laid down by EFNARC. The final results from exhaustive analysis may be recommended for use in various big and small sized projects.