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EUROPEAN READY MIXED CONCRETE ORGANIZATION

EFFECT OF WASH WATER ON THE PROPERTIES OF CONCRETE

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Abstract

Concrete production, due to the ingredient of cement, is one of the most polluted industries in the World. In order to reduce the CO₂ foot print in cement industry affords have been spending in recent years. Ready-mixed concrete industry, being aware of the importance of sustainability, have been considering precautions to reduce the pollution, which is in its own responsibility. Ready-mixed concrete industry also consumes large amount of water, not only as mixing water in concrete, but also for washing the truck mixers after certain loading-discharging cycles. Wash water, due to its high alkalinity, is accepted as a hazardous material; for this reason, discharging of wash water to the landfill is not the best solution; instead utilization of this water in concrete production should be considered. In ready-mixed concrete plants, in order to reuse the wash water, water settlement basins are used. In some of the plants, after settlement of the solids in wash water, the liquid part with low amount of solid particles are being utilized. In other plants, the water in the pool is agitated by rotating impeller in the pools; in this way not only the water in the pool but also suspended fine materials can be used in concrete as a part of binder (cementitious material) or as a replacement material for sand. In this study, first the chemical compositions of the wash water utilized in plants were analysed, then the usage of wash water in concrete production was investigated by taking samples from different plants. Furthermore, some plants are applying pressure to separate the fine materials exist in wash water; this filtered material left from such a process was also analysed and its possible use in concrete was explored.

Keywords: Ready-mixed concrete, wash water, sustainability, concrete plant.