

USES OF CKD OTHER THAN FOR FLUE GAS DESULFURIZATION

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ABSTRACT

Industries such as ready-mixed concrete, precast concrete, and prestressed concrete, have provided many opportunities for the utilization of different types of industrial by-product materials. By-product materials differ vastly in their types and properties; as a result, the applicability of these materials is restricted by their suitability based on chemical and physical properties. Experience and knowledge regarding these materials vary from material to material as well as from place-to-place. In order to evaluate the potential uses of these materials, engineers, researchers, generators, and regulators need to be aware of the physical, chemical, and mineralogical properties of materials, how they can be used, and what limitations may be associated with their use. The primary value of cement kiln dust (CKD) is its cementitious property. Depending on the concentration of free lime (CaO), CKD can be highly cementitious. Therefore, it can be used as a replacement for cements. It can also be agglomerated or palletized to produce an artificial aggregate for special applications. It contains significant amount of alkalis.

The most common beneficial use of CKD is as a stabilizing agent for wastes, where its absorptive capacity and alkaline properties reduce the moisture content, increase the bearing capacity, and provide an alkaline environment for waste materials. Trace metals such as cadmium, lead, mercury, selenium, and radionuclides are generally found in concentrations less than 0.05 percent by weight. The use of CKD in cement-based composites such as concrete, bricks and blocks, and CLSM provides a medium where the chances of leaching out toxic elements becomes negligible as the elements are bonded in a complex structure of hydrated cement paste. Many other advantages of using cement kiln dust in concrete materials are as given below:

- Opens a value added use option for utilization of CKD
- Helps in sustainable development by reducing demand of new landfills
- Uniform finer particle size is useful in manufacturing of self-consolidating concrete and high-performance concrete
- Improves corrosion resistance of reinforcing steel in concrete
- Manufacturing of blended cement