

Secondary Alumina for producing cement clinker

Every Portland cement contains clinker minerals like Tricalciumsilicate (C_3S) and Tricalciumaluminate (C_3A) etc. They are powering the performance of the cement respectively the strength of the concrete.

Alumina is a crucial ingredient of the cement raw materials to form these very minerals when burning the cement clinker. Thereby, the exact amount of the alumina has to be adjusted derived to the clinker quality in terms of lime saturation factor, silica ratio and alumina ratio.

Secondary ALUMINA from the salt slag processing is well suited to introduce Alumina as a substitute as well as an additive of other common raw materials like clay, slags, fly ash, bauxite, etc., into the clinker burning process of a cement kiln due to the following reasons:

- Secondary ALUMINA consists of natural high alumina minerals like Gibbsite, Boehmite, Corundum and Spinel and contains ard. 70 % of Alumina that is available for the clinker mineral formation by 100%.
- Secondary ALUMINA is permanently available in Europe, North America and Middle East offering a safely supplying new Alumina source at attractive prices.
- Due to its minor constituent fluorspar Secondary ALUMINA can boost the formation of clinker minerals like C_3S , C_3A and $11CaO \cdot 7Al_2O_3 \cdot CaF_2$. Thereby, it favorably affects the lime saturation and silica ratio. As a result, Secondary ALUMINA can improve the burnability of the clinker as well as the early setting strength development of the cement.
- By affecting the lime saturation factor while simultaneously keeping stable the burnability, a cement of a higher performance will be produced, able to contain more mineral aggregates without any drop of strength. Thereby, the specific CO_2 -emission of the cement meal production can be decreased.
- As an actively working Alumina raw material, Secondary ALUMINA is especially well suited to improve the melt formation of heavily burnable as well as heterogeneous raw meals.
- When producing special clinkers, Secondary ALUMINA offers new applications for rapid setting special cements among others.
- Secondary ALUMINA has a fineness similar to a cement raw meal. Therefore, it consumes less comminution energy than lumpy alumina raw materials.
- Secondary ALUMINA usually is available as a bulk ware of ard. 20 % moisture. According to the customers demand further grades like pumpable and free-flowing silo ware, lumpy or fine-grained calcinates or tailor-made bulk mixtures of iron oxide and Secondary ALUMINA can be supplied.

Secondary ALUMINA of more than 2 million tons has been used successfully by a couple of cement kilns in Europe and North America since 1994.

Usually, depending on the raw materials situation on site, the amount of Secondary ALUMINA added to a cement kilns feed ranges from 1 up to 3 percent by mass of the total raw meal input.

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