

PRODUCT PROFILE

CALCIUM CHLORIDE FOR CONTROL OF ALKALIES IN PORTLAND CEMENT

The raw materials used in the production of Portland Cement clinker are sometimes very high in alkali content. If these alkalis find their way into the cement, they can promote destructive forces in finished concrete. High concentrations of alkalis in concrete have been known to create expansive reactions with certain mineral constituents in some aggregates. These reactions can cause stresses of such magnitude as to cause failure in the form of cracking and disintegration of finished concrete.

It has long been known that the addition of Calcium Chloride to the kiln feed brings about a reduction of the alkali content of the resulting clinker. Treatment with Calcium Chloride causes the alkalis present in the kiln feed to be lost by volatilization. An addition rate of $1/3$ to $1/2$ percent by weight of dry kiln feed materials will result in significant reduction of the potassium oxide levels. This will allow effective alkaline control to be achieved. At higher addition rates, the sodium oxide constituent, which is much more difficult to volatilize, may be reduced. The method affords a means of reducing the alkali content to any desirable level. The removal of alkali content to any desirable level. The removal of alkali has been found to be proportional to the amount of Calcium Chloride used.

The use of Calcium Chloride allows the cement plant operator to make changes between the manufacture of different types of cements without requiring the use of special low alkali raw materials in large tonnages and at high expense, making material flow greatly simplified. Also, the requirement for harder or prolonged burning to promote volatilization is reduced or eliminated. This produces an important cost benefit in the energy-intensive manufacture of Portland Cement by reducing the fuel requirements. The method can be used in existing plants with little change in plant design.

Calcium Chloride may be added in solid (flake) form to the kiln feed or may be injected as a liquid directly to the kiln. Contact your nearest Hill Brothers representative for more information on the use of Calcium Chloride for alkalinity control.

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