

CONCRETE ADMIXTURES

SODIUM GLUCONATE



Sodium Gluconate is widely used in the concrete industry in several applications. One of the reasons gluconates finds favour over other materials because of its uniform quality and consistent performance.

ADVANTAGES:

1. Reducing water without sacrificing workability and strength.
2. Retarding setting time and improving workability without increasing water addition. This will aid in difficult conditions, such as, long hauling times, hot summer days or tropical weather operations and placement of concrete in large areas.
3. Improved resistance to freeze-thawing.
4. Decreased bleeding, segregation, dry shrinkage and cracking.

Water Reducing

As a water reducer, sodium gluconate allows better workability of the concrete mix and provides increased slump. By careful modifications of the water-cement ratio and the addition of Sodium Gluconate, adjustments can be made to increase strength of the structure or actually reduce the cement content while maintaining the original strength.

Set Retarding

Besides its wetting agent function, Sodium Gluconate is a good retarder. Retarding admixtures are used in hot-weather concreting operations when delays in transport and handling between mixing and placing may result in early setting and loss of workability. In concreting deep bore holes where the temperature is usually higher than 90 ° C, retarders have to be used. In the construction of large structural units and dams the manufacture of exposed aggregate panels, retarders are incorporated into concrete. Recently retarders have also been used to maintain concrete returned from the ready-mix concrete trucks.

The action of retarders is related mainly to their influence on the tricalcium silicate and tricalcium aluminate components of cement. Sodium gluconate's retarding action is possibly related to the poisoning effect on the hydrating and physical characteristics of these components. This induction period can be controlled

between 4.5 and 55 hrs with 0.05 and 0.15% of gluconate. The exact retarding effect is dependent on temperature, water: Cement ratio, cement type etc.

The table below shows a specific example of how the retardation of the set depends on the added amount of sodium gluconate.

% of Sodium Gluconate added based on weight of cement	Time (Hours) to beginning or end of setting Compared with a control series Portland Cement 275	
	Beginning	End
0.05	0.4	0.5
0.10	1.1	1.7
0.15	3.4	3.9
0.20	6.9	8.7
0.30	16.5	17.2

CORROSION INHIBITOR

Sodium Gluconate is an excellent chelator and as such provides a degree of protection against corrosion of the re-bar used in concrete.

In addition to concrete, the inclusion of gluconates can modify the physical characteristics of mortar, grout and various masonry products.

SPECIFICATIONS

Sodium Gluconate is available in Liquid Form, Liquid Gluconate 60 is available in Drums/ IBC. Gluconic Acid 50% is also available in Bulk. In addition, Liquid Sodium Gluconate 70/HC are widely used in the concrete industry.