



DETERGENT & CLEANING

Sodium Gluconate



Sodium gluconate is used in cleaning formulations across several applications. Gluconate is used in detergent formulations both in industry and home/personal care.

Sodium gluconate is used because of its excellent chelating properties. This makes it desirable in areas where hard water is an issue. In most detergent formulations, gluconate is used as a builder, chelator, anti-redeposition agent and corrosion inhibitor.

Food Industry

Gluconate may be employed in food equipment cleaners for a variety of food processing industries. For instance, gluconate provides excellent sequestration of hard water ions in alkaline detergents, which enhances the ability of the cleaner to emulsify or saponify typical food industry soils (i.e., grease, protein, fat).

Since most food processing equipment is constructed of stainless steel, caustic soda may be applied without concern of damaging the metal. Gluconate when added to caustic soda, can successfully aid in the removal of deposits, such as milkstone, beerstone and hard water scale.

Acid Cleaning

In situations where food industry equipment is constructed of non-ferrous metals, such as copper and aluminum, deposits can be removed using a blend of organic acids. Because gluconic acid has a low order of corrosiveness in comparison with other organic acids, it is an important ingredient in protecting the base metal when removing milkstone and beerstone.

Dish Washing

Many detergent manufacturers are looking for more environmentally friendly dishwashing compounds. Increasing legislation to remove phosphates from these formulations has prompted the development of phosphate-free products. A granular formulation using sodium gluconate, which is based on sodium carbonate and disilicate has been described in the patent literature.¹

Detergent Function

The sequestering function of gluconate in most cleaning operations is to prevent hard water ions, such as calcium and magnesium from complexing with the alkali in the cleaner. If these hard water

ions are allowed to react with alkali components, an insoluble complex will be precipitated. So gluconate can be used as a

- Chelator - Binds hard water ions allowing detergent to function more effectively
- Builder - Binding the hard water ions has the effect of softening the water.
- Anti-Redeposition Agent - Prevents the unwanted ions from being redeposited back onto clothes or dishes.



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- Soil Remover - Since most soil molecules are bound to fabric by calcium bridges, gluconate can break these bonds, thus removing soil and then preventing it from being re-deposited. Sodium gluconate is non-toxic and biodegradable, having no pollution problems when disposed of properly.

Gluconate Source

Because the gluconate anion is the active sequestrant, it does not matter whether the gluconate is introduced as sodium gluconate crystals, liquid gluconate or gluconic acid. Each product for does have a different use level based on molecular weight. Each pound of sodium gluconate crystal is equivalent to 1.8 lbs of gluconic acid and 1.66 lbs of liquid sodium gluconate.

Specifications

Sodium gluconate is available is solid or liquid form. Sodium Gluconate FCC comes in both granular and powder form. Liquid Gluconate 60 (LT) and Gluconic Acid 50% are available in drums, totes or bulk.

References

1 Patent: DE 4,144,956 - (1992) by Volk, Harald. Granular Phosphate-free Detergent Compositions for Machine Dish Washing.

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