



# GLUCCO

Gluconate Fertilizers



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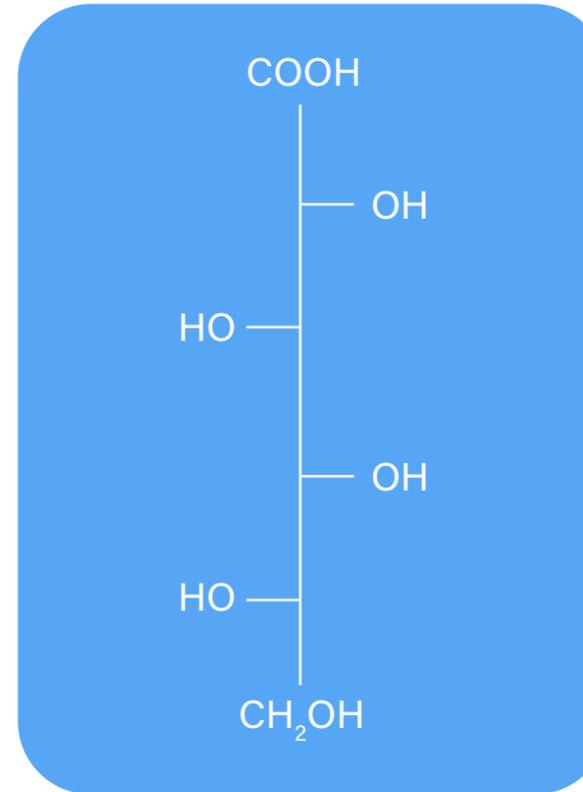
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# General physico-chemical properties



The **fundamental structural characteristic** of gluconic acid is the presence of **more than one hydroxyl** group in the structure and a terminal carboxylic acid, which confers to it some special physico-chemical characteristics.

The presence of more than one hydroxyl group brings some advantages, as for example, **great solubility, biodegradability and chemical stability of the complexes even in alkaline conditions.**



Gluconic acid structure

## Synonyms

- D-Gluconic Acid , Gluconic Acid

## Molecular Formula

- C<sub>6</sub>H<sub>12</sub>O<sub>7</sub>

## Molecular Weight

- 196.16 g/mol

## CAS Registry Number

- 526-95-4

## EINECS

- 208-401-4



# General physico-chemical properties

## Solubility

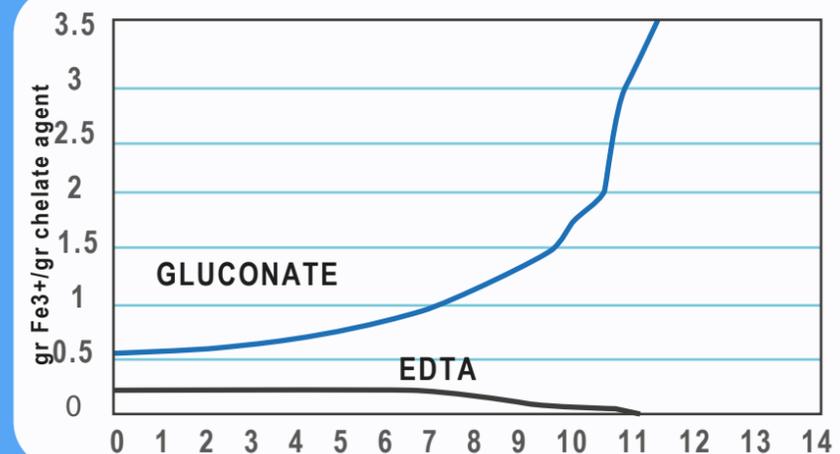
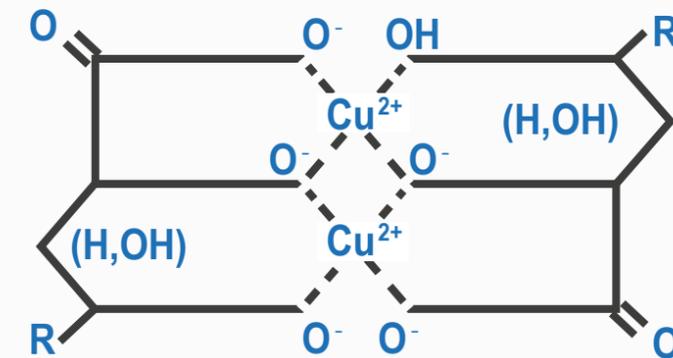
All the relevant agronomic metal complexes have a solubility that exceeds 500g/L, promoting the existence of commercial products in liquid form and with a high concentration of complexed metal. The high solubility of these commercial products facilitates the dissolution of them into the fertilizer matrix and avoids the blockage of the drip nozzles in fertirrigation and hydroponic systems.

## Chemical stability

The complexes are formed because the covalent interactions between the free electrons pair of the hydroxyl groups of the substance and the free orbital of the metals.

The structural changes of the metal complexes of polyhydroxy carboxylates as a function of the pH give also to the complexes the capacity of being stable in a wide range of pH.

All those properties allows to gluconic acid exceed the stoichiometry and form stable complexes up to pH 10.



# Method of use of the product

Taking the advantage of their high stability in solution, some gluconates-based formulations have been also used in fertirrigation (drip irrigation) and hydroponics.

## Soil

Gluconates metal complexes have a high stability at high pH's providing them of a high mobility through the soil media in order to and a **high solubility (>500g/L for all the micronutrient complexes)**, achieve the micronutrient transfer to the plant successfully.

## Foliar

**Foliar feeding is widely used and accepted as an essential part of crop production.** It targets the growth stages where declining rates of photosynthesis and levelling off of root growth and nutrient absorption occur, in attempts to help translocation of nutrients into the seed, fruit, tuber or vegetative production. Secondly, foliar feeding can be an effective management tool to favourable influence pre-productive growth stages by compensating for environmentally induced stresses of adverse growing conditions and/or nutrient availability.

The primary objective of foliar spray is to get maximum absorption of nutrients into the plant tissue. Not all the fertilizers are suitable to be used as foliar spray. In order to be efficiently absorbed by the plant cells, **formulations should meet the following standards:**

- Low salt index
- High solubility

Choosing the correct fertilizers source for foliar application of secondary and micronutrients becomes very critical. In this respect, organic complexing agents have shown to enhance secondary and micronutrient foliar absorption (Wittwer, 1964).

## Fertirrigation

Fertirrigation consists on the application of fertilizers through an irrigation system. **Benefits of fertirrigation over traditional broadcast or drop-fertilizing methods include:**

- Increased nutrient uptake by plants
- Reduction in fertilizer and chemicals needed
- Reduced leaching to the water table
- Reduction in water usage due to the plant's resulting increased root mass's ability to trap and hold water.
- Application of nutrients at the precise time they are needed

In this long period of time, **gluconates have proven to be efficient as well as safe for the crop and the environment.** No phytotoxicity symptoms have observed when applied in foliar spray. Besides, when used in drip irrigation systems, fertilizers containing glucoheptonates are easily dissolved in the solution and do not lead to drip plugging. Moreover, they have shown to be compatible with other fertilizers and plant protection products.



# Gluconate products

GLUCCO Fe

**Glucco Fe**  
 Iron  
 %w/v 6.9

GLUCCO Zn

**Glucco Zn**  
 Zinc  
 %w/v 5,8

GLUCCO Mn

**Glucco Mn**  
 Manganese  
 %w/v 6.0

GLUCCO MnZn

**Glucco Mn Zn**  
 Manganese 5,0  
 Zinc 5,0

GLUCCO Mg

**Glucco Mg**  
 Magnesium (MgO) 6,0  
 Complexant Agent: Gluconic Acid

GLUCCO Mo

**Glucco Mo**  
 Molybdenum (Mo) 6.0  
 pH 9 - 10  
 Density: 1.2  
 Natural Chelating Agent (Hepta-Gluconic Acid)



# Gluconate products



GLUCCO **P**

## Glucoco P

Phosphorus ( $P_2O_5$ ) 40,0  
 Chelating agent - Gluconic acid  
 Density 1,32

%w/v



GLUCCO **ZnB**

## Glucoco Zn B

Zinc (Zn) 6,50  
 Boron (B) 4,00  
 Density: 1,37

%w/v



GLUCCO **Ca**

## Glucoco Ca

Calcium (CaO) 8,0  
 Density: 1,2  
 Natural Chelating Agent  
 (Gluconic Acid)

%w/v



GLUCCO **K**

## Glucoco K

Potassium ( $K_2O$ ) 20,0  
 Natural Chelating Agent  
 (Gluconic Acid)

%w/v



GLUCCO **Ca+B**

## Glucoco Ca B

Calcium (CaO) 12,0  
 Boron (B) 1,25  
 Complexing Agent:  
 Gluconic Acid  
 Density: 1,38 g/cc

%w/v





# GLUCCO

Gluconate Fertilizers

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