MAGNESIUM GLUCONATE

Prepared at the 53rd JECFA (1999) and published in FNP 52 Add 7 (1999), superseding tentative specifications prepared at the 51st JECFA (1998), published in FNP 52 Add 6 (1998). Group ADI "Not specified" for glucono-delta-lactone and gluconates, established at the 51st JECFA in 1998.

SYNONYMS INS No. 580

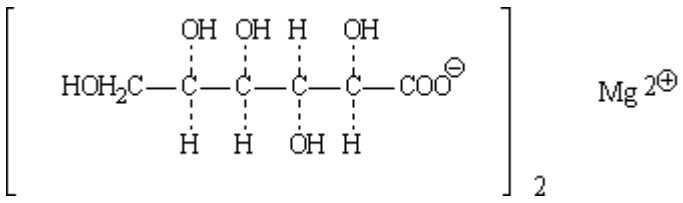
DEFINITION The material of commerce exists as anhydrous, dihydrate or a mixture of both

Chemical names: Magnesium di-D-gluconate

C.A.S. number: Anhydrous: 3632-91-5
Dihydrate: 59625-89-7

Chemical formula: $C_{12}H_{22}MgO_{14}$

Structural formula:



Formula weight: Anhydrous: 414.60
Dihydrate: 450.63

Assay: Not less than 98.0% and not more than 102.0% on the anhydrous basis

DESCRIPTION White to off white, odourless, fine powder

FUNCTIONAL USES Acidity regulator, firming agent, yeast nutrient, nutrient supplement

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Soluble in water; sparingly soluble in ethanol

Test for magnesium (Vol. 4): Passes test

Test for gluconate (Vol. 4): Passes test

PURITY

Water (Vol. 4): Between 3.0% and 12.0% (Karl Fischer Method)

Reducing substances: Not more than 1.0% calculated as D-glucose (Method I)

(Vol. 4)

Lead (Vol. 4)

Not more than 2 mg/kg
Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, “Instrumental Methods.”

METHOD OF ASSAY

Dissolve about 0.6 g of the sample, accurately weighed, in 50 ml of water, add 10 ml of ammonia/ammonium chloride buffer solution and 5 drops of eriochrome black TS. Titrate with 0.05 M disodium ethylenediaminetetraacetate to a deep blue colour.

Calculate % magnesium gluconate, dihydrate (as is basis) from:

$$\frac{\text{ml of disodiumEDTA x M of disodiumEDTA x 45.07}}{\text{sampleweight (g)}}$$

where
45.07 = equivalence factor for magnesium gluconate, dihydrate