

# MAGNESIUM OXIDE

*Prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 57th JECFA (2001). An ADI not limited' was established at the 9th JECFA (1965)*

**SYNONYMS** INS No. 530

## DEFINITION

Chemical names Magnesium oxide

C.A.S. number 1309-48-4

Chemical formula MgO

Formula weight 40.31

Assay Not less than 96.0% after ignition at about 800°

**DESCRIPTION** Very bulky white powder, known as light magnesium oxide, or as a relatively dense, white powder, known as heavy magnesium oxide. 5 g of light magnesium oxide occupy a volume of 40 to 50 ml, while 5 g of heavy magnesium oxide occupy a volume of 10 to 20 ml.

**FUNCTIONAL USES** Anticaking agent

## CHARACTERISTICS

### IDENTIFICATION

Solubility (Vol. 4) Practically insoluble in water; insoluble in ethanol

Alkalinity The sample is alkaline to moistened litmus paper

Test for magnesium  
(Vol. 4) Passes test

### PURITY

Loss on drying (Vol. 4) Not more than 5% after ignition at 800° to 825° to constant weight

Alkali (free) and soluble salts Boil 2 g of the sample, weighed to the nearest mg, with 100 ml of water for 5 min in a covered beaker and filter while hot. Add methyl red TS and titrate 50 ml of the cooled filtrate with 0.1 N sulfuric acid. Not more than 2 ml of the acid should be consumed. Evaporate 25 ml of the filtrate to dryness and dry at 105° for 1 h. Not more than 10 mg of residue should remain.

Calcium oxide Not more than 1.5%  
Weigh 400 mg of the sample to the nearest 0.1 mg, and dissolve in a mixture of 3 ml of sulfuric acid and 22 ml of water. Add 50 ml of ethanol, and allow the mixture to stand overnight. If crystals of magnesium sulfate separate, warm the mixture to about 50° to dissolve. Filter through a tared, previously ignited, porcelain filter crucible, and wash the precipitate several

times with a mixture of 2 volumes of ethanol and 1 volume of dilute sulfuric acid TS. Ignite the crucible and contents at a dull red heat, cool and weigh. The weight of calcium sulfate obtained, multiplied by 0.4119, gives the equivalent of calcium oxide in the sample taken for the test.

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**

Ignite about 400 mg of the sample to constant weight at 800° to 825° in a tared platinum crucible. Weigh the residue accurately, dissolve in 25.0 ml of N sulfuric acid, boil gently to remove any carbon dioxide and cool. Add methyl red TS and titrate the excess acid with N sodium hydroxide. Subtract from the volume of N sulfuric acid consumed the number of ml of N sulfuric acid corresponding to the weight of CaO in the sample taken, using as a factor 28.04 mg of CaO for each ml of N sulfuric acid. The difference is the volume of N sulfuric acid used to neutralize the magnesium oxide and each ml is equivalent to 20.16 mg MgO.