

Magnesium Sulfate

What is Magnesium Sulfate?

Magnesium sulfate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$) fertilizer is formed of water soluble, pure and crystal particles so as to cover magnesium deficiencies in your plants. It contains 15% MgO and 28% SO_3 . As it is water soluble it can be applied via sprinklers or on leaves. Chemical and physical properties of magnesium sulfate are given below.

Magnesium oxide (MgO) 15%

Sulfide tri-oxide (SO_3) 25%

Moisture at 25 centigrade 0,1%

pH 5,5 – 7,5

White crystals.

It cannot be mixed with phosphorous fertilizers.

Where is it used?

Magnesium is the essential element for chlorophyll that provides the green color of plants. Therefore it is of utmost importance for production of chlorophyll. Magnesium ions are involved in protein synthesis, various enzymatic reactions and production of vitamins.

When magnesium is deficient, green color is lost in old leaves. In some plant spots are observed. High levels of magnesium

deficiency causes reddish purple colors in leaves. As deficiency level increases green parts get lost.

Sulfur in magnesium sulfate is a major component of proteins. It helps development of enzymes and vitamins. It is necessary in metabolism activation, photosynthesis, chlorophyll, and starch and sugar circulation. It is a major component of amino acids. Deficiency of sulfur causes light green color formation in young leaves. Deficiency of sulfur is seen in soils with sand and low organic material content. If the plant cannot get enough sulfur, fruits do not develop in time. Besides sulfur helps in reducing pH values of basic soils.

Magnesium needs:

Magnesium needs occur at times when magnesium is washed away from sandy soils; in plants which require high levels of magnesium; pH levels are too low and when high levels of ammonium, calcium and potassium fertilizers are used.

Cabbage, corn, cucumber, eggplant, melon, pepper, potato, tomato, watermelon, bananas, citrus fruits, apples and grapes are more sensitive to magnesium deficiencies.

Application method:

Magnesium sulfate may be applied via soil or leaves. To get fast and effective results from application magnesium fertilizers one should apply via leaves. The below given methods are recommended for application with sprinkler or via leaves:

Plant	Via leaves (together with agricultural disinfection process) From start of fruiting till color change 2-3 times with 15-days intervals 600 grams of fertilizer is dissolved in 100	Via soil/with sprinkler 300-500 grams of fertilizer is given according to the age of the tree 2-3 weeks before buds emerge when given via soil
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Citrus fruit	liters of water	100-200 grams of fertilizer is given via sprinkler from fruiting to color change according to the age of the tree in each watering.
Vegetables	200-300 grams of fertilizer is dissolved in 100 liters of water and given 2-3 times after plantation of seedlings.	2-3 kg/1/10 hectares may be applied 2-3 times after plantation of seedlings.
Vineyard	500 grams of fertilizer is dissolved in 100 liters of water between beads form and color changes happen.	5-10 kg of fertilizer is applied to 1/10 hectares together with initial upper fertilizing process.
Field vegetables, melon - watermelon	500 grams of fertilizer is dissolved in 100 liters of water during plantation of seedlings, fruiting and color changes.	8-10 kg of fertilizer is given per 1/10 hectares in interval anchoring or initial watering so that 500 grams of fertilizer is provided to each 1/10 hectare via sprinkler.
Bananas		To each 1/10 hectare 10-15 kg of fertilizer is divided to number of watering via sprinkler.
Cherry, Plums,	Together with disinfection process from fruit to color change stages 500	5-6 kg is applied to each 1/10 hectare together with upper fertilizing or initial watering

Peaches	grams of fertilizer is dissolved in 100 liters of water.	
Hazelnut		100 grams per tree in autumn or spring.
Potato	500 grams of fertilizer is dissolved in 100 liters of water and applied before flowering.	In interval anchoring and initial watering stages 5 kg/1/10 hectare or 0,5-0,8 kg in each sprinkler watering.
Strawberry	Before planting seedlings and flowering 300 grams of fertilizer is dissolved in 100 liters of water.	In plantation of seedlings 3 kg/1/10 hectare of fertilizer is given via sprinklers, Fruit-before harvest stage 5 kg/1/10 hectare of fertilizer is divided into number of watering.
Flowers Flowers in pots		Planting of seedlings - Budding 2 kg/min Budding - Flowering 5 kg/min Harvesting 3 kg/min

Amount of magnesium that products absorb from the land is given below:

Plant	For tons of product	Magnesium absorbed (MgO) in kilograms	Plant	For tons of product	Magnesium absorbed (MgO) in kilograms
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Rice	0,9	4
Corn	0,95	6
Barley	0,65	4
Wheat	0,6	4
Sugar beets	6	7
Potato	6	10
Soy	1	10
Sunflower	0,35	10
Hazelnut	0,09	3
Carrot	3	3
Cucumber	3	12
Lettuce	3	2
Melon	4	6
Water melon	8	12
Tomato	10	6
Cabbage	3	1

Egg plant	6	3
Apples	4,5	4
Pears	2,5	2
Peach	4	4
Orange	3	4
Tangerine	3	3
Lemon	3	3
Bananas	4	14
Strawberries	1	2
Grapes	2	4
Cotton	0,4	6
Tea plant	0,1	3
Tobacco plant	0,3	3
Pepper	4	4
Spinach	3	4