

Table 13. Characteristics of primary potassium sources used in turf fertilizers.

Source	Nutrient Percentage			Salt Index per Unit of Nutrient ^a	Acidifying Effect	Comment
	N	P ₂ O ₅	K ₂ O			
Potassium Carriers						
Muriate of potash (potassium chloride)	0	0	60	1.93	Neutral	Most common K source; high burn potential.
Sulfate of potash (potassium sulfate)	0	0	50	0.85	Neutral	Contains 17% S; used instead of KCL to reduce salt index and to provide S; may not leach as rapidly as KCL.
Potassium magnesium sulfate	0	0	18	—	Neutral	Contains 11% Mg and 22% S.
Potassium nitrate	13	0	44	2.44	Basic	K source with supplemental N; low salt concentration, low chloride, fire hazard.

^aGenerally, the higher the salt index/unit of nutrient, the higher the burn potential of the particular fertilizer material.

The potassium content of a fertilizer can be calculated with the following formula:

$\begin{array}{l} \% K_2O \\ \text{(as expressed on} \\ \text{fertilizer bag)} \end{array} \quad \times \quad .083 \quad = \quad \% K \text{ in the fertilizer bag}$
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The soluble potassium portion of a fertilizer is expressed as K₂O. The conversion in the formula above should be used to determine the quantity of actual potassium supplied in an application.

The form of potassium available for plant use is the potassium ion (K⁺), which is absorbed primarily from the soil solution. Although other forms exist, most are unavailable for plant use. Potassium is not readily held in sandy soils (soils low in CEC) and can be lost by leaching. This is a problem not always appreciated, especially by growers whose grass is subjected to heavy rainfall or watering. Soils with an appreciable clay content retain more potassium, since clay particles hold this element.

Potassium competes with calcium and magnesium for plant access. Soils with high levels of either or both of these elements need additional potassium fertilization to satisfy plant needs. In sandy soils, or where turf clippings are not returned, a 2:1 or 1:1 ratio of nitrogen to potassium may be required to maintain an adequate potassium supply. Frequent, light potassium treatments with these ratios should be considered with each nitrogen application.

III. Secondary Plant Nutrients

a. Calcium

The elements calcium (Ca), magnesium (Mg), and sulfur (S) are required in almost the same quantities as phosphorus. The functions of calcium include strengthening cell walls to prevent collapse; enhancing cell division; encouraging plant growth; synthesizing protein; transporting carbohydrates; and balancing cell acidity. Calcium also improves root formation and growth. Plants