

Sodium, Sulfate

Sodium, Exchangeable and Gypsum Requirement

Alkaline soils are characterized by a low electrical conductivity (EC), high exchangeable sodium percentage (ESP) and presence of carbonate and bicarbonate sodium salts.

High alkalinity hinders plant growth since it gives rise to an incomplete solubilization of necessary nutrients such as Iron, Copper and Manganese.

Chlorosis, for instance, is a typical disease of leaves due to Iron deficiency. It is possible to correct soil alkalinity by adding a proper compound (generally gypsum) that removes Sodium and decreases the pH.

The exact quantity of gypsum needed for correction can be calculated with the **HANNA** instruments® kit.

Sulfate

Sulfate is widely present in natural waters. It is not toxic but has to be kept below a certain threshold to prevent it from creating an unpleasant taste in water.

The concentrations are particularly higher close to mine run-off water. Sulfate is widely used as a nutrient in agriculture.

The **HANNA** instruments® kit covers an extensive range.



HI 38000 - Sulfate



HI 38001 - Sulfate

Parameter	Code	Method	Range*	Smallest Increment	Chemical Method	Number of Tests	Weight
Exchangeable Sodium (ES) and Gypsum Requirement (GR)	HI 38083	Titration	ES: 0.00-56.40 meq GR: 0.0-213.0 metric ton/ha	1.95 meq/100 g soil GR: 3.8 metric ton/ha	Calcium sulfate	100	883 g
Sulfate (as SO ₄ ²⁻)	HI 38000	Turbidimetric	20-100 mg/L	5 mg/L	Barium chloride	100	290 g
	HI 38001	Titration	100-1000 mg/L 1000-10000 mg/L	10 mg/L 100 mg/L	Barium chloride	200	640 g

* 1 mg/L = 1 ppm

For spare reagents, see section V. For accessories, see section U.