



TECH NOTE SERIES

# SAP

## SUPER ABSORBENT POLYMER



HIGH PERFORMANCE WATER RETAINER

## INTRODUCTION

**GROSAFE SAP is a high performance, super absorbent, polymer based, water retainer scientifically formulated using an innovative cross-linked co-polymer of potassium polyacrylate. GROSAFE SAP super absorbent polymer has a range of applications but is primarily used as a highly effective water retainer for soils and substrates in agriculture and horticulture. It is nontoxic and safe to the environment.**

### Water Retaining Agent

As a super absorbent polymer (SAP), potassium polyacrylate can increase moisture availability to plants.

It mixes with soil to increase the soil's capacity for holding water (in the form of a water gel which is active in the soil for 2-3 years) and making it available to plants. This improved soil readily releases moisture, along with water-soluble nutrients, to plant roots on demand. The specific retention of potassium polyacrylate is weaker than the roots of most plants.

It can be used in seed coating, growing seedlings, planting crops, topdressing of crops, planting/transplanting trees, flower storage and transport etc.

### Mechanism

SAP works in a similar manner to a sponge under the soil surface. It is composed of a set of polymeric chains, which are linked together chemically to become a water-insoluble, net-like matrix that gently attracts and holds hydrogen molecules. The immense size and weight of its molecular structure allows each SAP granule to absorb over 500 times its original weight in purified water (150 times when incorporated in soil).

It does not 'bind' water tightly. The SAP granules release just the right amount of water in response to a plant's root suction. There is no waterlogging or other ill effects caused by 'free' water filling air cavities in the soil.

SAP maximizes plant growth by reducing plant stress. It also absorbs and releases soil nutrients, water-soluble fertilizer and chemicals in the same manner as water, creating a healthy microenvironment in the plant root zone. The result is faster germination, quicker emergence of seeds, consistent growth and higher, better-quality yields of edibles with less water and fewer inputs.



Pack sizes: 25kg

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## PRODUCT SPECIFICATIONS

PROPERTIES	SPECIFICATION
solid content (%)	85 - 90
appearance of density	0.85
specific gravity	1.10g/cm <sup>3</sup>
pH	6 - 8.5
appearance	light brown
maximum water absorbency	deionized water: 300 - 500 in soil: 150
water supply capacity (15 times atmospheric pressure)	95%
cation exchange capacity	4.6 meq/g
toxicity in soil	none
packaging	25kg Kraft bags with inner
storage temperature	0 - 35°C
shelf life	5 years
activity in soil	maximum 5 years
dosage	substrate: 1 - 2g/L soil: 10 - 15g/m <sup>2</sup>





### USE RATES

USE SITUATION	USE RATE	COMMENTS
PLANTING	20 - 30g planting hole	Sprinkle SAP over backfilling soil. Backfill ensuring even SAP distribution from the base of planting hole to just below the surface.
SOIL INCORPORATION	100 - 150kg/ha	SAP can be broadcast at the rate of 100 – 150 kg/ha on ground prepared for seeding or transplanting of vegetables and arable crops. Following broadcasting SAP should be incorporated through the soil profile to the estimated root depth of the crop to be sown or planted.
LAWNS & PASTURE	100 - 150kg/ha 10 - 15g/m <sup>2</sup>	SAP is recommended for use when establishing lawns and pasture by incorporating in the seed bed prior to sowing. This ensures effective germination, faster root development and regular, even growth of lawns and pasture.
MIXING WITH FERTILISER	100 - 150kg/ha	SAP can be premixed with fertiliser and added to the fertiliser hopper and soil incorporated at the time of planting pasture, arable broad hectare or row crops at an effective rate of 100 – 150 kg/ha. When incorporated with fertiliser soil moisture is retained and nutrient leaching reduced. Plants fertilised with this mix demonstrate improved yields, at the same time protecting the environment from nutrient leaching. Manufactures trials show better root development of plants and fertiliser savings of 15% - 30% can be achieved.
UNDERSOWING	100 - 150kg/ha	SAP can be undersown into existing pasture or sward of any horticultural crop (vineyards, orchards) using a calibrated undersowing drill. SAP should be undersown to a depth of 100 – 150 mm in late winter/early spring when soil conditions are moist and drill coulter penetration is enhanced. The rate for undersowing is 100 – 150 kg/ha.
HYDROSEEDING	20 - 30g/m <sup>2</sup>	SAP can be used in hydroseeding to stabilise newly graded soils. Mixed with or without cellulose mulch, it makes it possible to maintain a minimum of surface water permitting rapid germination of seedlings, even in dry areas. The vegetation cover develops rapidly and uniformly over the whole treated surface. There are no dry spots without grass.
SOIL MIXES	150g/m <sup>3</sup>	When mixed with a substrate SAP acts as a super absorbent water retainer providing a reduction in water stress. It ensures that plant cuttings and transplants take root better and that seedlings grow faster. Irrigation frequencies can be reduced by 30% - 50%, saving time and water. SAP is an ideal addition to substrates for containers, hanging baskets and house plants.