Quality of growing media matters

PRODUCT SHEET

STONE WOOL

Stone wool is a fibrous substrate made from melted and spun basalt-like materials. It has a high water retention capacity and is free of plant diseases. In horticulture, it is mainly used as a growing medium in slabs, blocks, and plugs.

What is stone wool?

At its core, stone wool is a natural product. It can form during volcanic eruptions. Industrially, stone wool is mainly produced from basalt-like materials. Basalt is a volcanic igneous rock. This rock is heated to about 1600 °C, after which the molten mass is spun in different directions into the desired fibre structure. This production method results in a lightweight, homogeneous, and clean substrate. The fibres are structurally strong and flexible, making the product highly suitable for automation and supporting a seamless transition from plug to block to slab. Because the fibres do not bind elements (no CEC), both water content and EC are fully measurable and precisely controllable. Water and nutrients are completely available to the plant, allowing adjustments in cultivation strategies to take effect quickly and effectively in the crop.

In horticulture, stone wool is used as a growing medium. It is available in various types and sizes, including slabs, blocks, and plugs. For this purpose, binders are added to the fibres during production to maintain shape, and wetting agents are added to improve water uptake. Stone wool can be recycled after use. In construction, stone wool is also used, as an insulation material, for which it is made water-repellent during production.

Origin

The igneous rock basalt is a natural, widely available raw material and is extracted worldwide in volcanic regions. For the production of stone wool for horticultural applications, the basalt usually comes from quarries near the production site in order to minimize transport distances and thus reduce CO_2 emissions.

Properties

Due to the high temperature during production, it can be assumed that stone wool does not contain any plant-pathogenic organisms, such as viruses, fungi, and bacteria. After production, clean storage and transport are important. The various engineered fibre structures ensure rapid and uniform water distribution and good re-saturation.

An overview of the properties of stone wool:

Chemical

Nutrient level	very low
Unwanted salts	very low
pH-H_2O	7.0-9.0
pH-buffering capacity	none
Nitrogen immobilization	none
Pesticide residues	none

Physical

Air content (%-v)	3-30
Water uptake characteristic (WOK)	moderate-fast
Water retention capacity	very high
Stability	high

Biological

Susceptibility to saprotrophic fungi	none
Human pathogens	none

Purpose of use

Very high water retention capacity (up to 95% volumetric fraction). Water is almost entirely and easily available to the crop.

Application

For decades, stone wool has been used as substrate mats and blocks, mainly in vegetable cultivation (such as tomatoes, cucumbers, and peppers), in ornamental horticulture (such as gerberas and roses), and for the propagation of young plants. For perennial crops, firmer mats with higher density are used. In, for example, orchid cultivation, small blocks of stone wool are used as substrate. The product is usually used only once for cultivation. After use, it can be cleaned and fully processed into a raw material for bricks or reused in the production of stone wool.

Distinctive RHP quality

Stone wool with the RHP quality mark meets strict requirements for both the manufacturing process and product quality. This includes a controlled composition and specific chemical, physical, and phytosanitary properties.
The controlled production process ensures consistent, uniform quality on a large scale.