



by TECHNICAL

STONE WOOL SUBSTRATES

BASIS OF GREAT GROWTH

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Established in 1993, TechnOMICOL is Europe's largest manufacturer and supplier of roofing, waterproofing and thermal insulation materials.

One of the company's product areas is the production of stone wool based thermal insulation materials, and substrates for hydroponic plant cultivation. These kinds of products are made by the largest CIS plant, TECHNO, in Ryazan. Along with the TECHNOMICOL thermal insulation materials that are well-known on the market, the factory produces stone wool substrates for hydroponic plant cultivation under the SPELAND and SPELAND ECO brands.



more than **20**
years in the market

over **69 billion**
roubles in annual turnover

5000
qualified employees

represented in **79**
countries
worldwide

41 production sites
in Russia, Ukraine,
Belarus, Lithuania,
Czech Republic and
Italy

17 training centers

5 scientific
centers

over **500**
independent business
partners

FROM BASALT – TO HIGH-YIELDING CROPS

The base raw materials for the SPELAND and SPELAND ECO substrates are gabbro-basaltic rocks – magmatic formations that result from volcanic eruptions. This unique raw material is natural, ecologically clean and safe.

To obtain high-quality fibers at the plant, it is provided with a careful selection of batch compositions.





MODERN PRODUCTION

The TECHNO plant, located in Ryazan, is equipped with modern European equipment for the production of stone wool materials. All of the line processes are automated and are carried out under the continuous supervision of the operators, using modern visualization software that allows them to provide operational influences on the product quality and characteristics during the manufacturing process.

The raw materials first enter the cupola section, where they are melted at temperatures of up to 1700°C. An important part in obtaining the correct quality a semi-finished product is a fiberization process that is carried out on a double four-roll centrifuge, with the molten material fed into a receiving wire-belt mesh conveyor.

Binding components are introduced at the stage of the fiber formation. Modern technologies allow us to minimize the content of afibrillar inclusions, and to reach, to the maximum possible extent, a homogeneous structure of the semi-finished product. This parameter has a significant effect on the uniform distribution of the nutrient solution over the substrate volume and, respectively, on the development of a strong and healthy root system in the future plants.

Then, at the pendulum placement and corrugating stage, the required density and strength parameters for the final product are set. The line equipment allows us to set the desired fiber orientation, according to the type of the output products: vertical-chaotic (multidirectional), horizontal or vertical. The final stage of forming the semi-finished product occurs in the polymerization chamber.



The new automated production line for the SPELAND and SPELAND ECO substrates is equipped with modern European high-tech equipment. It was designed and manufactured by leading European companies, under special orders from the TechnoNICOL company.

The introduction of innovative solutions throughout the process has helped to improve the properties of the finished products, enhance the packaging quality, expand the range of products and provide consumers with high-quality substrates.

The production facilities and equipment at the TECHNO plant allow for the provision of substrates for up to 800 hectares of greenhouses per year. The annual capacity of the new line is: 200 000 m³.





UNDER CLOSE SUPERVISION

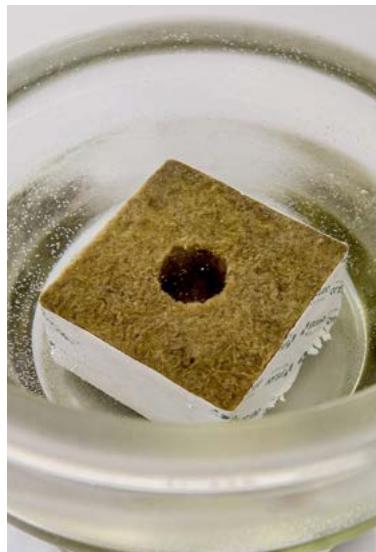
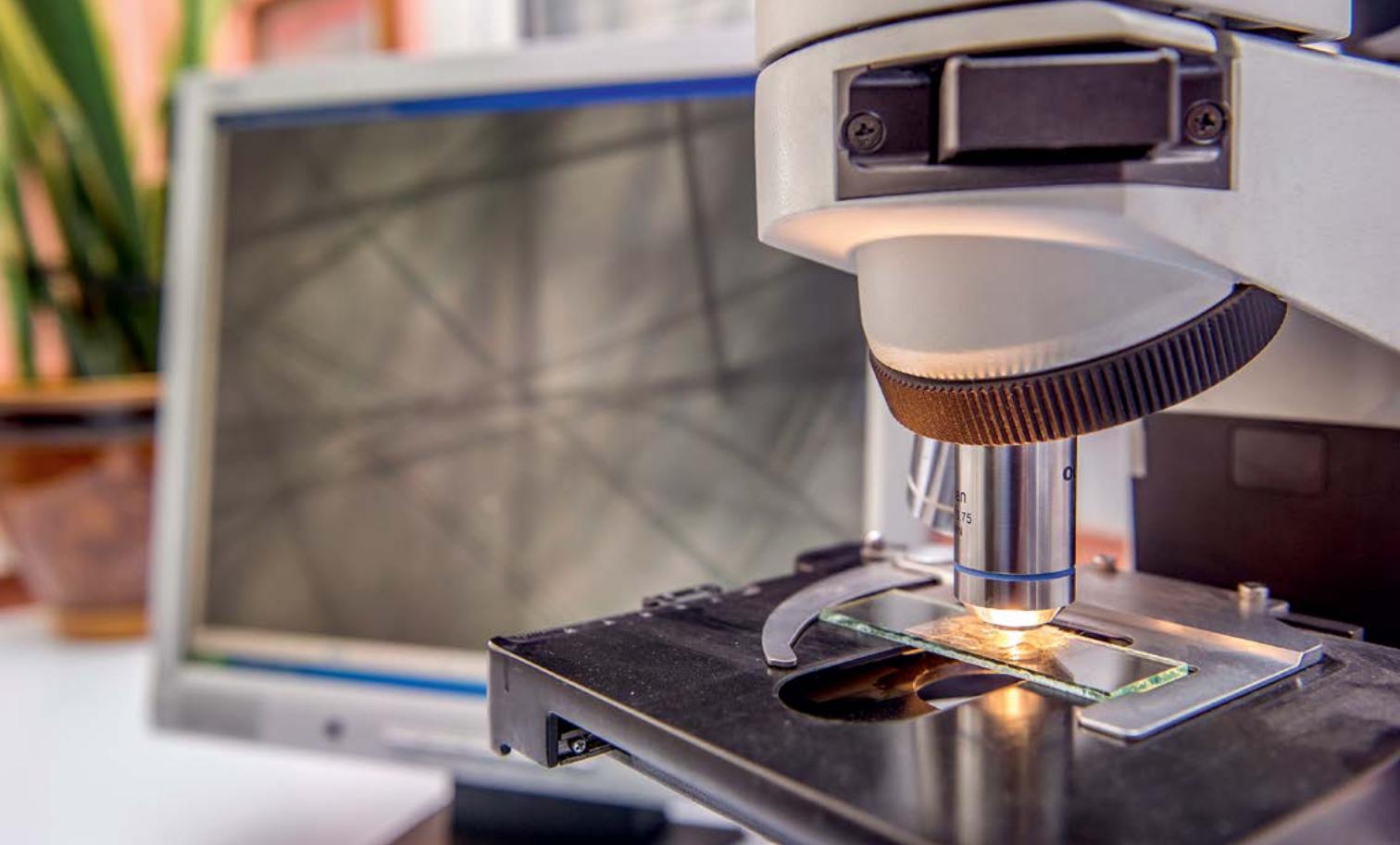
On the premises of the TECHNO plant in Ryazan, there is an organized quality control department with its own certified laboratory. The departmental specialists maintain strict quality controls on the output products, according to a four-stage system that includes the following steps: incoming inspections of the raw material components, quality control of the semi-finished products on the line and directly at the stage of the substrate cutting, and control of the products as they leave the conveyor. Special attention is paid to the performance and testing results of the final product. The last step is the selective control of the products in warehouse storage conditions.

The primary quality indicators, such as the appearance, geometrical dimensions, holes, groove cutting, density, immersion in water, and reliability of the weld joints, are determined by the production personnel directly on the line.

In the laboratory, multiple tests and inspections of the semi-finished and samples of the finished product are conducted, which guarantee the continuous improvement and stability of the substrate quality characteristics that affect the plant growth.

The following product indicators are tested in accordance with the technical specifications: compressive strength at 10% deformation, water absorption, shrinkage at full wetting, and porosity. In addition to the basic control activities, the laboratory specialists carry out checks of the pH value, block water retention / water loss, this bio-testing for cress growth.

Thanks to this testing and the step-by-step controls, our clients always receive high quality substrates with stable performance characteristics.



SERVICE WITH CUSTOMER CARE

The key to the success and continuous development of the TechnoNICOL Company is based on our desire for continuous modernization, the expansion of our tasks and product line, as well as for the development and improvement of the services we provide to our clients and partners. Also, we insist on a high level of personnel competence, professional technical consultations, territorial proximity to our customers, sophisticated logistics, and a whole complex of product delivery services – all of which allows us to implement an individual approach to each customer. We are keen to be leaders not only in terms of our production volume, but also in the quality of our customer service and our ability to anticipate the demands and expectations of our consumers.

From the moment we receive a request, every client closely interacts with a personal manager. This specialist, the personal communications, finds out the customer's needs, stipulates the terms, draws up an order, independently coordinates the operation of all structural divisions in the company, and as a result promptly provides the optimal decision to the client.

Managers of the customer service department are ready to receive requests in any way that is convenient: by phone, by email or through a personal account on our website: <https://zakaz.tn.ru>. Our customer service website: <https://zakaz.tn.ru>, allows each customer to follow the status of their order.

Shipment of Category A products shall be made within 24 hours.

We also offer a flexible system of discounts and, if necessary, agronomic support to our customers and partners.



INTERNATIONAL STANDARDS

The TECHNO plant, located in Ryazan, is certified according to the ISO quality standard. Unique innovations from own Research and Development Center and laboratory have been introduced into our production processes. Therefore, by are choosing our products, you choose quality and reliability.

The environmental management system for the production of SPELAND and SPELAND ECO substrates is certified according to the international standard ISO 14001:2004. This certificate was issued by the German accreditation body, Deutsche Akkreditierungsstelle GmbH (DAkkS).

The presence of this certificate confirms that all stages of our management and production processes comply with the highest international requirements of environmental legislation. Our control over the organization of these processes ensures a reduction in the negative impacts on the environment, as well as in the improvement of environmental indicators, and waste and scrap disposal processes.

Our quality management system also complies with the requirements of the international standard ISO 9001:2008, which confirms the high level of the quality and stability of these products.

SPELAND and SPELAND ECO
PRODUCTS

By applying unique technologies and innovative solutions in the field of hydroponic plant cultivation, the TechnoNICOL company's specialists have released SPELAND substrates with improved characteristics onto the market.

The SPELAND products are carefully balanced, easy-to-handle substrates that meet all the requirements for the professional production of vegetable and flower crops. They are a reliable basis for plant cultivation using small-capacity technology.





Characteristics of SPELAND substrates

- Homogeneous elastic-flexible structure
- Regular geometrical shape
- Stable chemical and hydrophysical properties
- Compliance with all sanitary-hygienic standards
- Resistance to the impact of microorganisms and an active medium for nutrient solutions
- Stable set parameters throughout the plant growing cycle
- Homogeneous hydrophilic property
- Process parameters oriented to obtaining high crop yields, high quality and the minimization of operational risks in growing products
- Strict control of the following substrate parameters during the production process: fiber thickness, density, organic constituents, hydrophilic properties and the draining ability

SPELAND BASE PLANTLET PLUGS



Purpose

For the seed sprouting of various agricultural plants: tomatoes, cucumbers, eggplants, sweet peppers, flowers, salad greens, herbaceous crops, dwarf and ornamental plants.

Dimensions*

Diameter 22 mm, height 27 mm.

SPELAND BASE plugs are manufactured with dimensions that corresponding to the block hole size.

Production versions:

- With a cavity for seeds
- With a through hole



The SPELAND BASE plugs are placed into multiple use polystyrene foam cassettes, which facilitate plantlet supervision and handling. For some crops the "plug" step may be excluded: in such cases, the seeds are planted directly into the seedling blocks, where the plant is kept until the vegetation stage.

Characteristics

- Vertical-chaotic fiber formation, which allows for predetermined parameters to be maintained during the whole growing cycle
- Uniformity in hydrophilic properties
- Dimensional stability
- Uniform distribution of nutrient solutions and the EC
- Good germination capacity ensured due to the optimal penetration of air and nutrient solutions



SEEDLING BLOCKS SPELAND MID

Purpose

Growing seedlings of vegetable and flower crops.

Planting seeds is carried out directly into the block hole, or alternately, a plug germinated plantlet can be placed into the block.

The characteristics of the SPELAND MID blocks make them an optimum product for growing strong plants with a good balance of vegetative and generative development.



Dimensions*

Seedling blocks SPELAND MID 75 × 75 × 65 mm

Seedling blocks SPELAND MID 100 × 100 × 65 mm

Seedling blocks SPELAND MID 100 × 150 × 65 mm

Production versions

- Groupings of blocks that include multiple pieces will reduce the installation time and decrease the costs for the preparation for sowing
- Blocks are available with one or two holes for seeds or plugs
- Blocks are available with a top ring
- Blocks are available with bottom drainage grooves, which can improve the moisture distribution. The drainage grooves can be made along the length and/or the width of a block

Characteristics

- The mostly vertical-chaotic fiber formation provides constant dimensions
- An optimum air and water balance in the root system is achieved due to the presence of large and small pores in the material
- Easy nutrient solution saturation is achieved with an even distribution throughout the volume. This allows for a deep and voluminous sprouting of the roots inside, and consequently vigorous seedling growth, and as a result – a healthy, balanced plant





Purpose

Professional hydroponic cultivation of various kinds of vegetables.

Dimensions*

Vegetation mats SPELAND VEGA 500 × 240 × 100 mm

Vegetation mats SPELAND VEGA 1000 × 200 × 75 mm

Vegetation mats SPELAND VEGA 1200 × 200 × 75 mm



Variants of the film holes

- Holes can be cut as a whole or perforated for self-formation
- Holes can be of a round, square, rectangular or cruciform shape



Characteristics

- Rapid growth of the root system
- Ability to keep control of the plant's balance
- Rapid response to changes in the nutrient solution content and the EC value
- Optimal updates of the EC
- High sensitivity to growing conditions (control of the generative and vegetative growth)
- Uniform distribution of nutrient solutions and the EC over the entire volume of the material



VEGETATION MATS SPELAND FLORET



Purpose

Professional cultivation of roses.

Dimensions*

Vegetation mats SPELAND FLORET 500 × 240 × 100 mm

Vegetation mats SPELAND FLORET 1000 × 200 × 75 mm

Vegetation mats SPELAND FLORET 1200 × 200 × 75 mm

Variants of the film holes

- Holes can be cut as a whole or perforated for self-formation
- Holes can be of a round, square, rectangular or cruciform shape



Characteristics

- Optimal duration of the usage cycle while keeping a rigid structure
- Can be used in trays and on the greenhouse floor
- Preservation of a healthy and strong root system for a long vegetation over multiple years, due to the optimum hydrophysical properties



SPELAND ECO SUBSTRATES

The TechnoNICOL company strives to continuously improve its products and brands. This work has resulted in the emergence of an innovative product – the SPELAND ECO substrates. These substrates are manufactured according to a revolutionary technology that is based on the use of natural raw materials: high quality gabro-basaltic rocks and binder components from natural organic ingredients, including modified starch and an ecologically clean thickener. These components have been successfully used for a long time in the food and the perfume industry, including the creation of baby hygiene products (disposable diapers and cloths), which guarantees their safety for the production of various plants.





Characteristics

- Ecologically clean product based on natural ingredients
- Unique technology of hydrophilic fibers
- Constant pH value
- No need for washing the substrates due to the absence of foreign impurities
- Uniformity in thickness, strength, flexibility and elasticity
- Guarantee of a healthy and strong plant root system over the entire volume of the material
- Stability of the chemical and hydrophysical properties
- No substances belonging to any dangerous classes, which makes it easier to dispose of the worked-out substrate
- No substances that can adversely affect the plant growth and root system development
- Resistance to the impact of microorganisms and an active medium of a nutrient solution
- Compliance with all sanitary-hygienic standards
- Stability of the substrate geometric dimensions throughout its service life
- Compliance with all the requirements for the professional production of vegetables

SPELAND ECO BASE PLANTLET PLUGS



Purpose

For the seed sprouting of various agricultural plants: tomatoes, cucumbers, eggplants, sweet peppers, flowers, salad greens, herbaceous crops, dwarf and ornamental plants.

Dimensions*

Diameter 22 mm, height 27 mm

SPELAND ECO BASE plugs are manufactured with dimensions that corresponding to the block hole size.

Production versions:

- With a cavity for seeds
- With a through hole



The SPELAND ECO BASE plugs are placed into multiple use polystyrene foam cassettes, which facilitate plantlet supervision and handling. For some crops the "plug" step may be excluded: in such cases, the seeds are planted directly into the seedling blocks, where the plant is kept until the vegetation stage.

Characteristics

- Vertical-chaotic fiber formation allows for predetermined parameters to be maintained during the whole growing cycle
- Compliance with all sanitary-hygienic standards
- Easy start of the seed germination
- Optimum air and water balance
- Good absorbency and drainage



SEEDLING BLOCKS SPELAND ECO MID

Purpose

Growing seedlings of vegetable and flower crops.

The characteristics of the SPELAND ECO MID blocks make them an ideal product for growing strong plants with a good balance of vegetative and generative development.



Dimensions*

Seedling blocks SPELAND ECO MID 75 × 75 × 65 mm

Seedling blocks SPELAND ECO MID 100 × 100 × 65 mm

Seedling blocks SPELAND ECO MID 100 × 150 × 65 mm

Production versions

- Groupings of blocks that include multiple pieces will reduce the installation time and decrease the costs for the preparation for sowing
- Blocks are available with one or two holes for seeds or plug
- Blocks are available with a top ring
- Blocks are available with bottom drainage grooves, which can improve the moisture distribution. The drainage grooves can be made along the length and/or the width of a block

Characteristics

- The mostly vertical-chaotic (multidirectional) fiber formation ensures constant dimensions, rigid block structure and high strength
- An optimum ratio of air and water is achieved due to the presence of large and small pores
- Easy nutrient solution saturation is achieved with an even distribution throughout the volume. This allows for a deep and voluminous sprouting of the roots inside, and consequently vigorous seedling growth, and as a result – a healthy, balanced plant



VEGETATION MATS SPELAND ECO VEGA

Purpose

Professional hydroponic cultivation of various kinds of vegetables.

Dimensions*

SPELAND ECO VEGA 500 × 200 × 100 mm
SPELAND ECO VEGA 1000 × 200 × 75 mm
SPELAND ECO VEGA 1000 × 200 × 100 mm
SPELAND ECO VEGA 1200 × 200 × 100 mm
SPELAND ECO VEGA 2000 × 200 × 75 mm
SPELAND ECO VEGA 2400 × 200 × 75 mm

Variants of the film holes

- Holes can be cut as a whole or perforated for self-formation
- Holes can be of a round, square, rectangular or cruciform shape



Characteristics

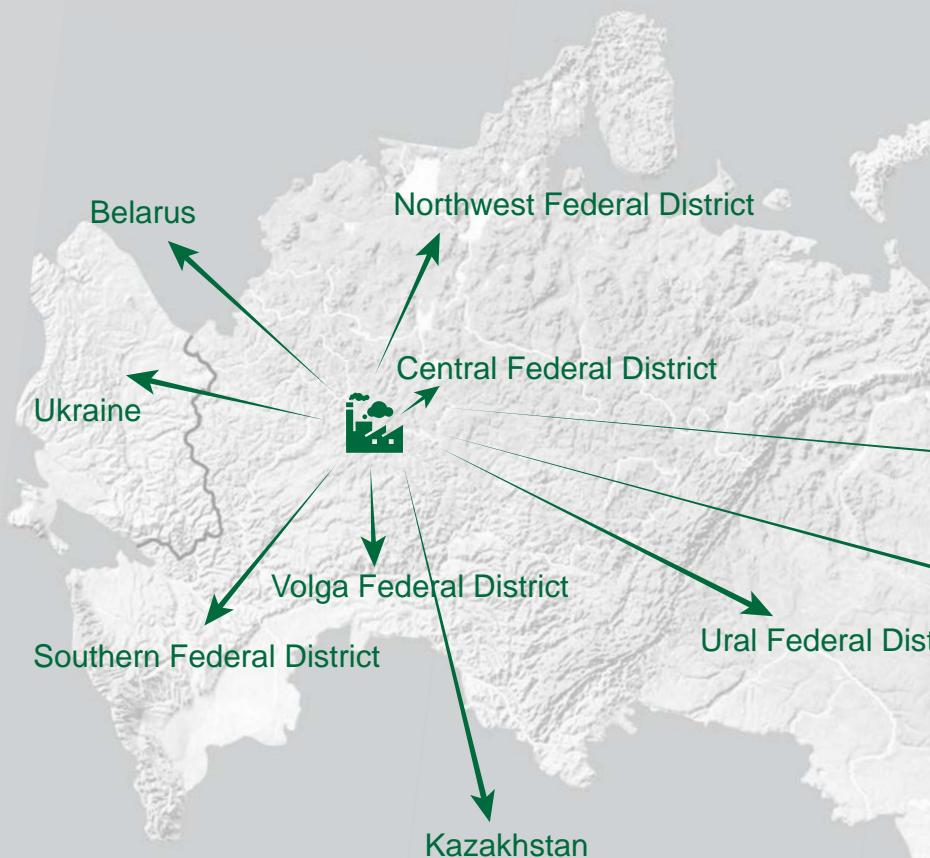
- High-quality multilayer package film with protection against UV rays
- Good formation and sprouting all over the root system mat, due to the horizontal fiber orientation
- A rational distribution of the nutrient solution
- Rapid response to changes in the nutrient solution content and the EC value
- Sensitivity to growing conditions (control of the generative and vegetative growth)
- Maintenance of a uniform distribution of nutrient solutions and the EC over the entire volume of the mat



PRODUCTION

located at the address:
Russia, Ryazan,
Vostochny promuzel,
21, bld. 58,
OOO "Zavod TECHNO"

PARTNERSHIP GEOGRAPHY





Russia

Far East Federal District

Siberian Federal District

istrict



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