

Evolution of Growing Media

www.klasmann-deilmann.com





Your way to advanced solutions

Welcome to your advance
Modern substrate constitute
Propagation Substrates
Blocking Substrates
Bedding Substrates
Potting Substrates
Container Substrates
Soft Fruit Substrates
More advanced product solu
The Klasmann-Deilmann Gro



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Evolution of Growing Media

Welcome to your advance

ADVANCED Substrates set the benchmark for future-oriented horticulture. They combine the most valued raw materials to high performance blends with a low carbon footprint. Wood fibre, perlite, cocos, green compost and peat boost essential characteristics in the substrate, thus ensuring the precise crop control in your nursery and the healthy growth of your plants.

ADVANCED Substrates cover all plant and cultivation segments for any horticultural

application. The mixes are tried and tested and have proven their suitability for all internationally common applications in commercial horticulture.

Decades of experience with all major raw materials and the widest range of growing media give us a unique edge. That makes your next step easier. When you're ready to advance, we're ready to join you.

Frank Stolwijk, Satisfied ADVANCED customer and owner of Stolwijk Plants in the Netherlands

"ADVANCED Substrates by Klasmann-Deilmann..."

"... are the result of decades of research, development and experience. They guarantee the correct recipe for every crop, the best raw materials for every cultivation method, the highest quality for your nursery – and the use of highly sustainable resources for the environment and climate. We are convinced that more advanced means more success for your crops."

Dr. Sebastian Kipp

Head of Advisory Services and Quality Management at Klasmann-Deilmann





"... contain a proportion of alternative raw materials. We rely on proven constituents such as wood fibres, green compost, coir and perlite. The tried and tested recipes meet all requirements for pioneering horticulture. They combine maximum crop safety with reliable availability and a reduced carbon footprint."

Anja Fritzen Technical Advisor at Klasmann-Deilmann



"... are the next logical step on a path we have been following for more than thirty years. Modern raw materials create a wide range of options for meeting globally increasing demand for growing media. We offer more alternative constituents without compromising on quality. We are focusing on greater sustainability and consistently high crop security. The gamechanging ADVANCED Substrates ensure that you stay abreast of one of the most important horticultural developments in recent decades."

Moritz Böcking Managing Director at Klasmann-Deilmann



Find out more about ADVANCED Substrates



From coir to wood fibre: **Modern constituents for your ADVANCED Substrate**



Why GreenFibre[®]?

GreenFibre[®] ...

- ... is a wood fibre from sustainably managed forestry and manufactured by ourselves
- ... is a RHP certified raw material, specially developed for the needs of modern horticulture
- ... leads to better aeration and higher structural stability
- ... increases drainage in the root zone, thus less issues with waterlogging
- ... improves the water distribution in the substrate
- ... ensures easier rewetting of the substrate
- ... enables a healthy and fast root development
- ... ensures better drying off of the substrate surface, thus less pressure from root diseases
- ... prevents algae and moss, due to drier substrate surface
- ... provides a stable nitrogen balance to suit normal feeding regime



Why perlite?

Perlite ...

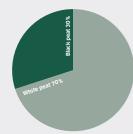
- ... increases air capacity and drainage
- ... prevents waterlogging
- ... provides excellent structural stability
- ... is pH-neutral and has an extremely low salt level
- ... is ideal for use in substrates for propagation and potting when strong drainage and structural stability is required
- ... is produced according to high quality standards in our own factory

Reduce CO₂ emissions significantly. With climate-friendly substrate blends

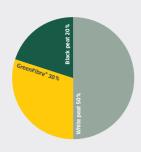


Read more

Bedding substrates

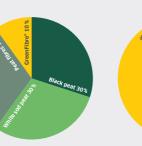


0% alternative constituents (230 kg CO₂/m³)



30% alternative constituents = 28% less CO₂ emissions

Container substrates



10% alternative constituents (204 kg CO₂/m³) 40% alternative constituents = 24% less CO₂ emissions

Why cocos products?

Coir Pith ...

- ... shows good rewettability
- ... supports a quick water uptake into the substrate
- ... provides a balanced air-water ratio and good drainage

Coco Fibre ...

- ... is characterised by a very high air capacity and low water capacity
- ... provides a high capillarity for a very fast water transport within the root zone
- ... supports the structural stability of a growing media

Coir for organic growing ...

- ... is carefully washed and not treated with mineral fertilisers
- ... carries the ecolabel IMO ensuring organic and ethical standards





Why TerrAktiv[®]?

TerrAktiv[®] green compost ...

- ... provides a high microbial activity
- ... shows suppressive effects on root diseases
- ... stimulates root development and plant growth
- ... acts as a slow-release nutrient source
- ... has a high buffering capacity
- ... improves shelf life of crops
- ... improves rewettability
- ... improves the nutrient release from organic fertiliser
- ... is certified to RHP quality standards and approved for organic cultivation



Certified to the highest standards

Quality:
Responsibility:
Sustainability:
Organic:
Climate:
Nature:
Processes:

Regelings Handels Potgronden (www.rhp.nl) Responsibly Produced Peat (www.responsiblyproducedpeat.org) Global Reporting Initiative (www.globalreporting.org) EC No. 834/2007, certified by Ecocert[®] ISO 14064 ISO 14001 ISO 9001







Sustainable growing media

We appreciate that you aim to manage your nursery responsibly also in terms of nature and climate protection. That's why ADVANCED Substrates offer you the maximum crop security while supporting your sustainable development.

By the use of alternative constituents, we optimise the characteristics of your substrate and reduce its carbon footprint at the same time. That leads to additional benefits such as ...

- ... more resource-saving cultivation through the use of more renewable raw materials
- ... lighter mixes and thus more environmentally friendly transport
- ... fewer emissions and therefore a more climate-friendly greenhouse
- ... increased microbial life and thereby stronger plants with less need for plant protection applications







Why Peat?

Peat ...

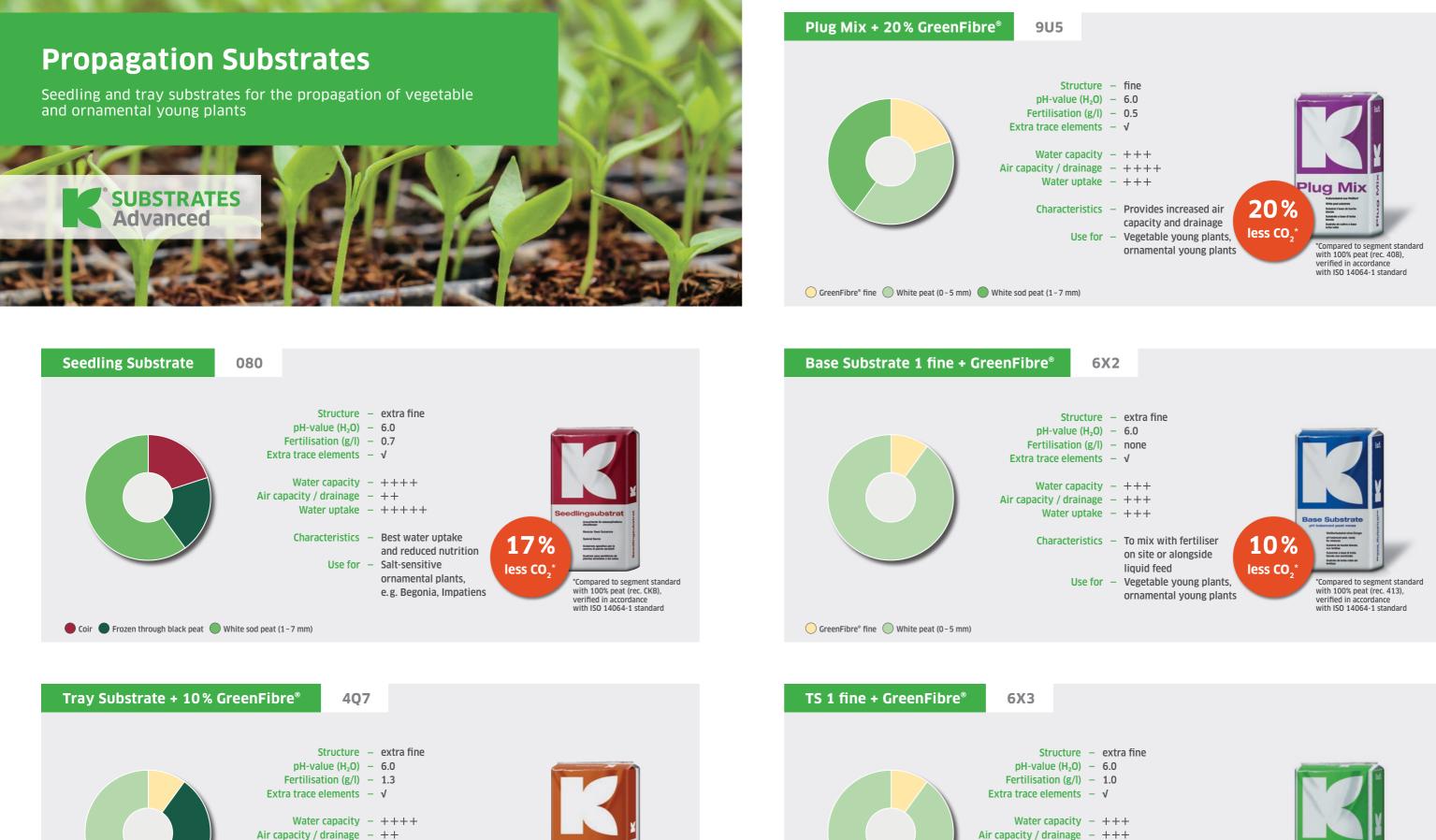
- ... remains the key constituent in substrate production
- ... enables the use of any other alternative raw material
- ... is well available long-term all year round
- ... provides uniform properties
- ... ensure a stable pH value and optimum nutrient level
- ... shows good buffering capabilities
- ... has a high structural stability and good wettability
- ... allows an optimum ratio between air and water capacity
- ... is free from pathogens or harmful substances and almost free from weed seeds

"In terms of quality and service, we have been very satisfied with Klasmann-Deilmann for decades. Alternative raw materials in the substrate do not change this. The opposite is the case. Our customers even expect it. And if the crops allow it, we would also be prepared to use 100% alternative raw materials. This simply fits the times and ties in perfectly with our company slogan: Leading Breeding!"

Markus Schmülling, Satisfied ADVANCED customer, Head of production "Geranien Endisch GmbH", a leading producer of geranium and pot plants in Germany



Find out more about our ADVANCED Potting Substrates



raysubstrat

12%

less CO₂*

Anzuchtaubstrat für Gemüse angpfangen in Kulturplatten Substrat pour journes plaques aluésilles

Substituto specifico per in produzione di giovani plante in alvenio

Compared to segment standard

GreenFibre[®] fine White peat (0 - 5 mm)

with 100% peat (rec. 060),

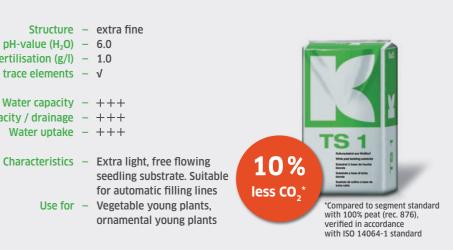
with ISO 14064-1 standard

verified in accordance

- Air capacity / drainage ++ Water uptake - ++++
 - Characteristics Universal tray substrate. Suitable for automatic filling lines

Use for - Vegetable seedlings, tobacco seedlings

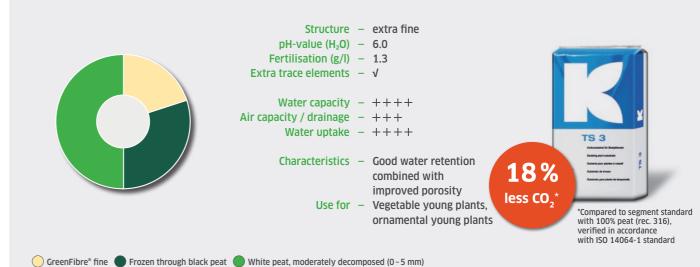
◯ GreenFibre® fine ● Frozen through black peat ◯ White peat (0 - 5 mm)



TS 1 fine + 15% Perlite

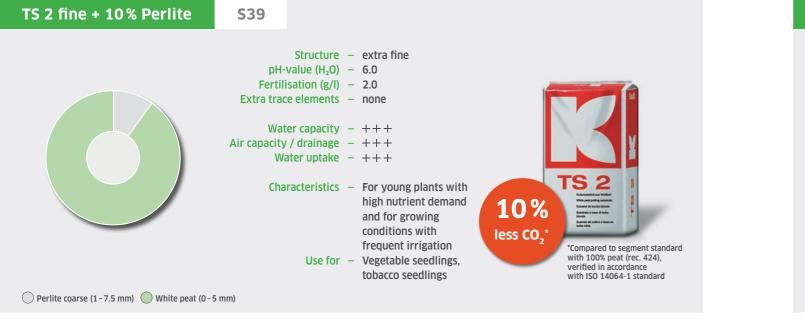
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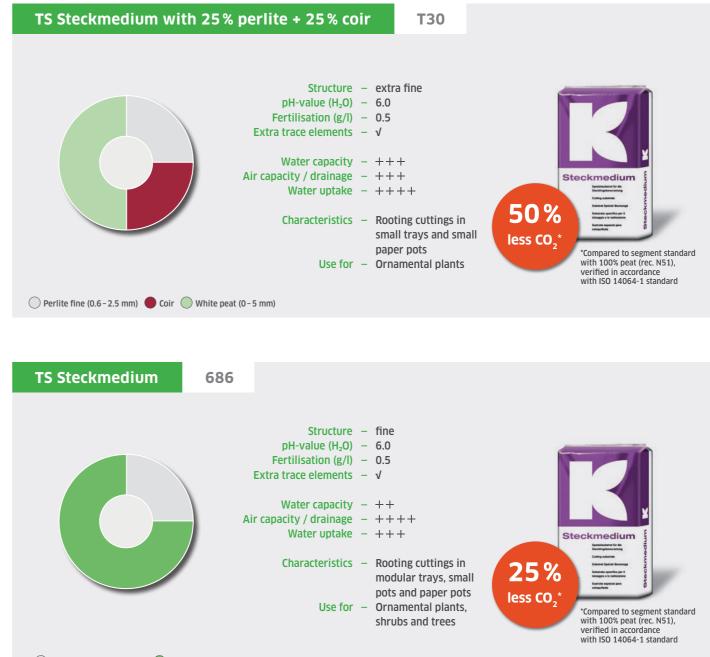


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Perlite coarse (1-7.5 mm) White peat (0-5 mm)



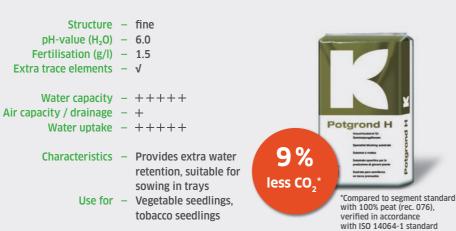




TS 3 fine + 20% GreenFibre®

Potgrond H90 SL + GreenFibre®

6X1



◯ GreenFibre® fine ● Frozen through black peat

"I immediately liked GreenFibre". The tray substrate absorbs the water better and we can water a little less. This also means we have fewer problems with dry areas in the trays. The crops develop more uniformly, which is why GreenFibre" is now consistently used by us. In addition, we should think about the use of our planet's resources. GreenFibre® can do a lot to conserve valuable peat raw materials."

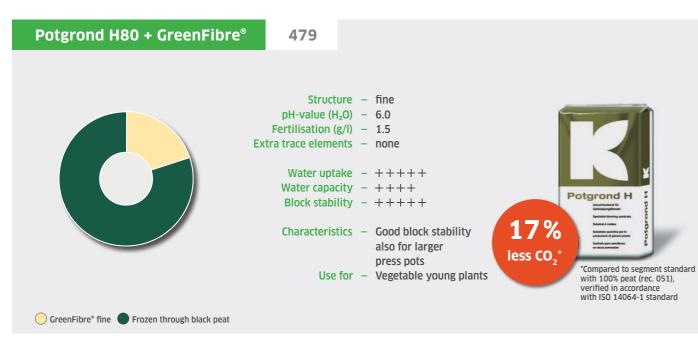
Patrick Limousin, Satisfied ADVANCED customer and owner of EARL Limousin, a leading producer of vegetable young plants in France Find out more about our DVANCED Propagation Substrates



Blocking Substrates

Substrates for the propagation of ornamental and vegetable young plants in press pots

SUBSTRATES Advanced



Potgrond H85 + GreenFibre® 078 Structure – fine pH-value (H₂O) - 6.0 Fertilisation (g/l) - 1.5 Extra trace elements - none Water uptake -+++++Water capacity -+++++Block stability - +++++ Characteristics – Produces very 14% strong blocks Use for – Vegetable young less CO₂* plants, ornamental Compared to segment standard with 100% peat (rec. 030, rec. 002), young plants verified in accordance with ISO 14064-1 standard

"GreenFibre[®] fine helps to form very stable press pots that absorb water quickly. The irrigation water uses GreenFibre® like canals and thus easily distributes within the press pots. The rapid root development is also convincing. The plants have a healthy root ball and show excellent growth properties. This results in very strong and homogeneously grown young plants."

Dr. Sebastian Kipp, Head of Advisory Services and Product Deve Klasmann-Deilmann (Germany)

GreenFibre® fine Frozen through black peat

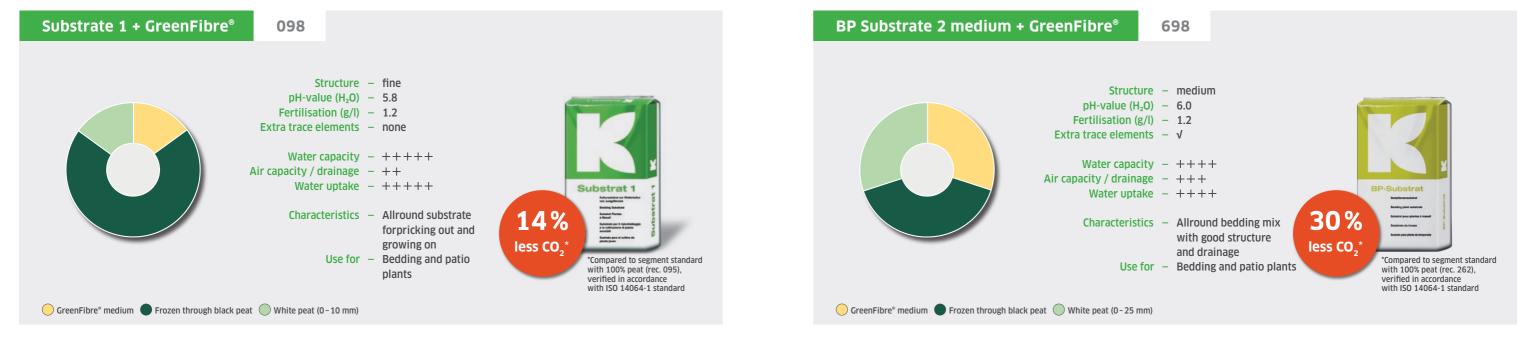
"We started with 10% GreenFibre[®] in our blocking substrates and then increased the proportion to 20%. This prevents excessive shrinkage of the press pots and simplifies drying after watering. We do not see any difference in the press pot stability. But we get much more intensive root development. With healthy, white root hairs. GreenFibre[®] is innovative and allows us to become more environmentally friendly."

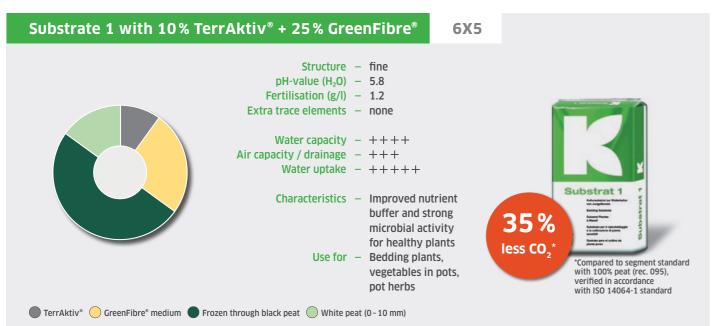
Emmanuel Cellier, Satisfied ADVANCED customer and owner of Cellier Plants, a leading producer of young plants in France

Find out more about our ADVANCED Blocking Substrates



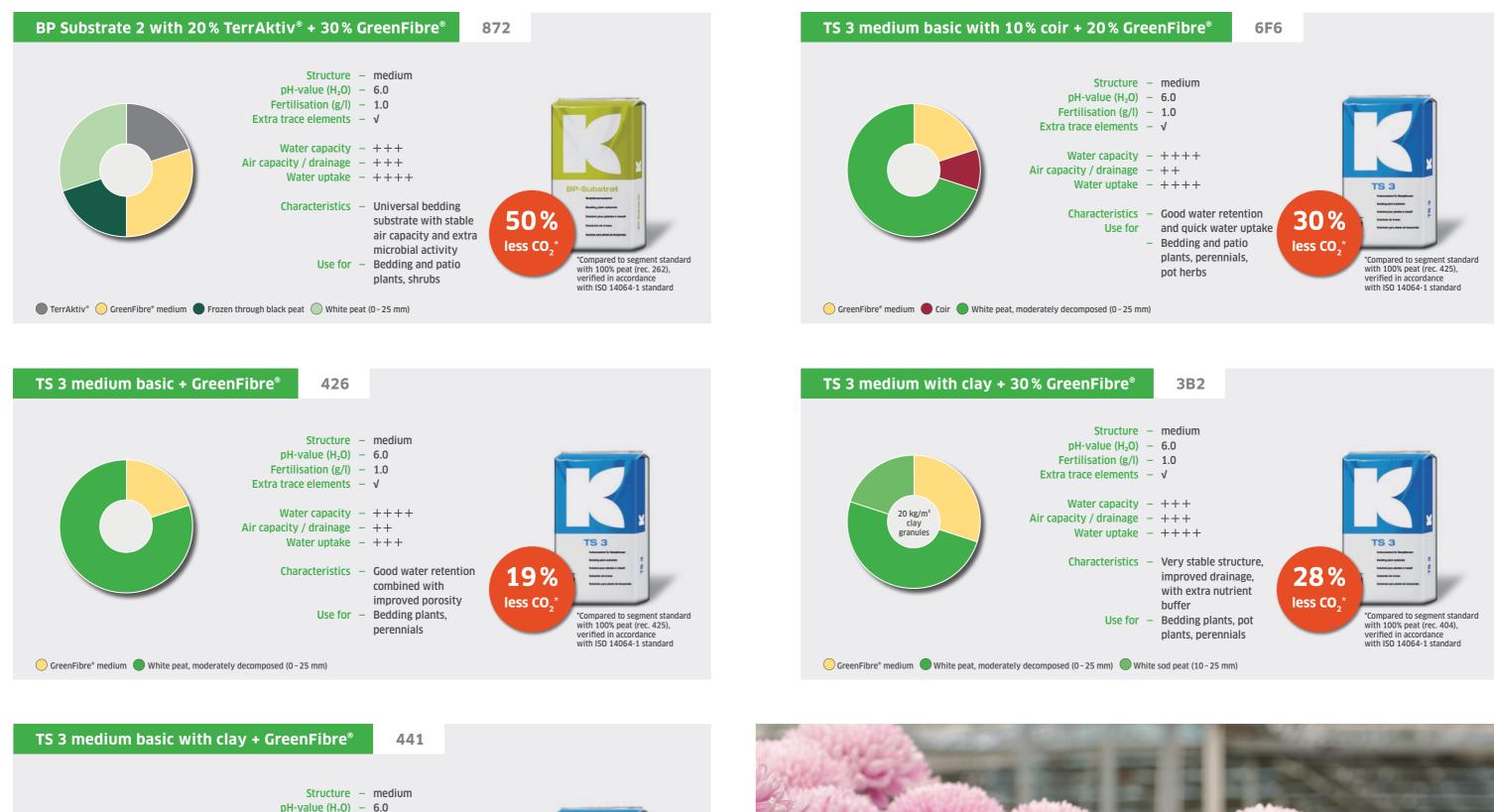


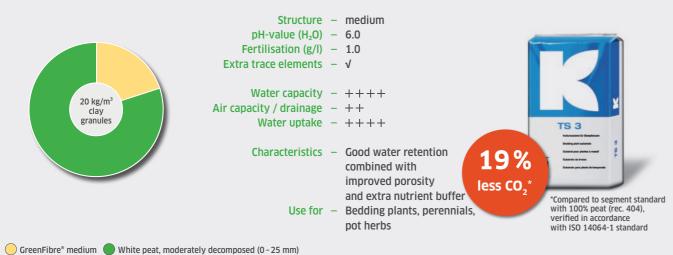














rowing Media | Bedding S

"GreenFibre® allows the substrate surface to dry off faster. Algae formation is no longer an issue and crops are less susceptible to diseases. Especially in ebb and flow systems, the substrate draws water very quickly and distributes it well throughout the root ball."

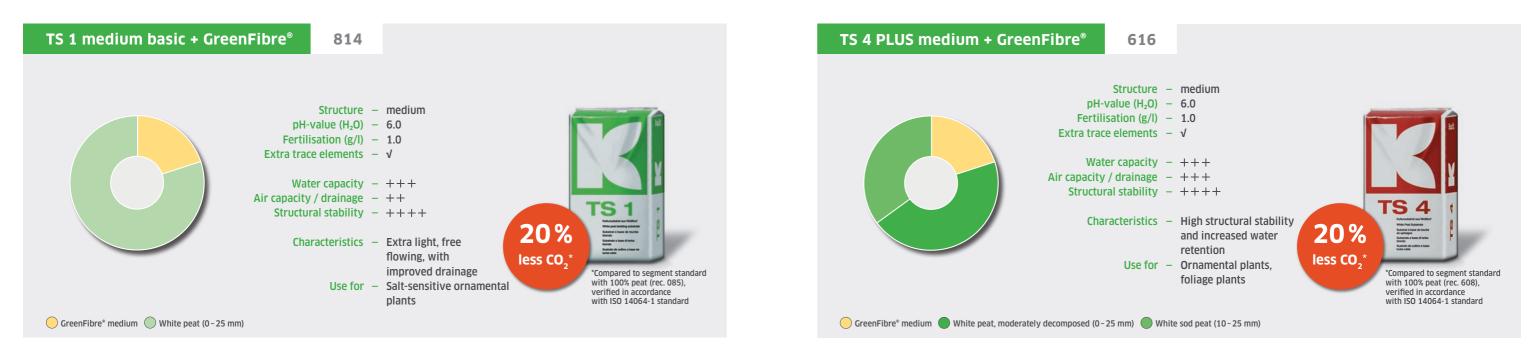
Anja Fritzen, Technical Advisor, Klasmann-Deilmann (Germany)

Find out more about our ADVANCED Bedding Substrates



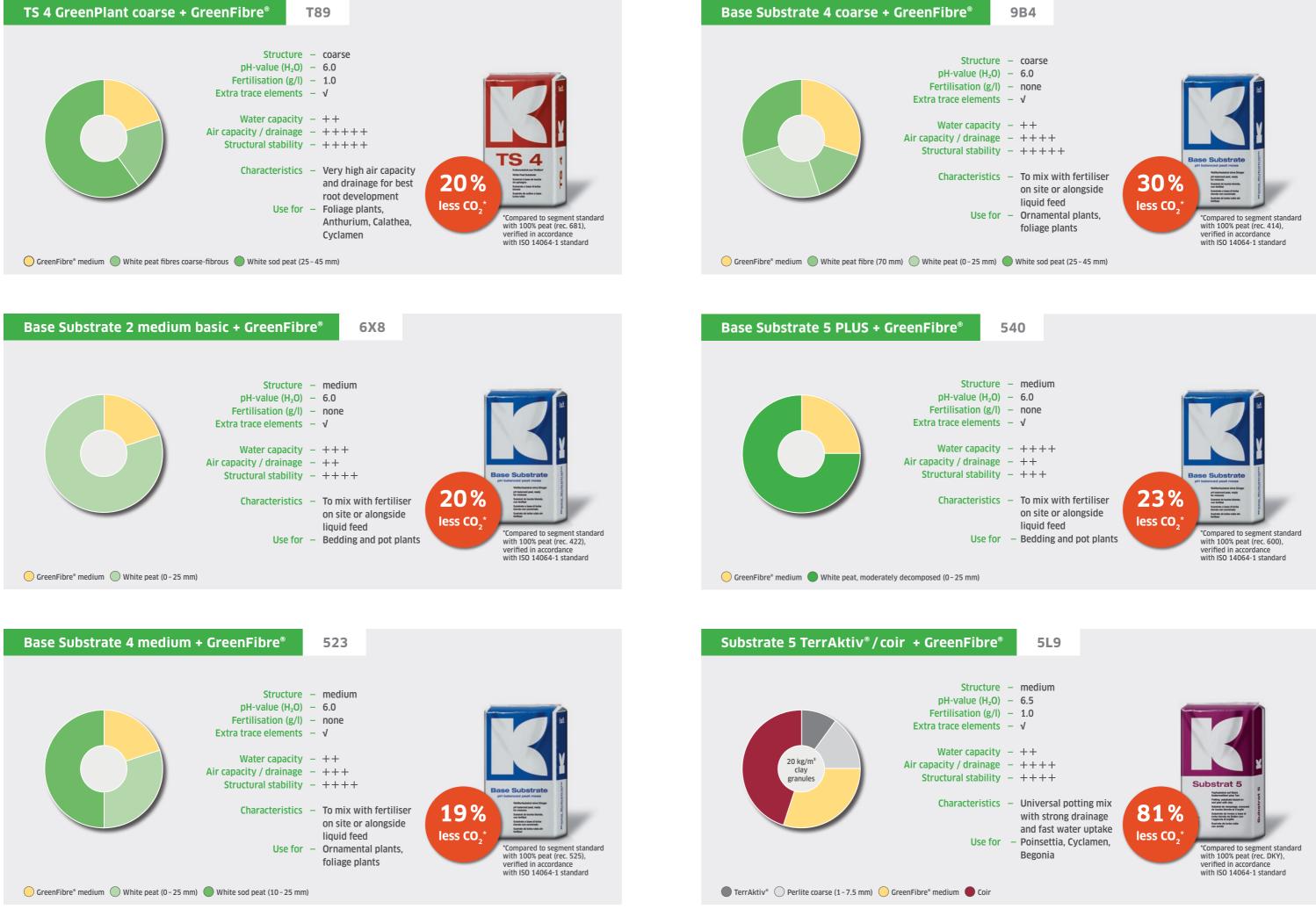






TS 2 medium basic + GreenFibre® 6X7 Structure – medium $pH-value (H_2O) - 6.0$ Fertilisation (g/l) - 2.0 Extra trace elements $- \sqrt{}$ Water capacity - +++ Air capacity / drainage - ++ Structural stability - ++++ Characteristics – Extra light, good 20% drainage, for pot plants with higher less CO₂* nutrient demand *Compared to segment standard with 100% peat (rec. 420), Use for - Geranium, Fuchsia, verified in accordance Chrysanthemum with ISO 14064-1 standard GreenFibre® medium White peat (0 - 25 mm) White sod peat (5 - 15 mm)





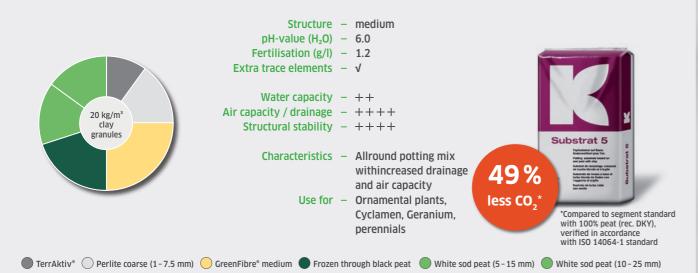
Substrate 5 with clay + GreenFibre[®]



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GreenFibre[®] medium Frozen through black peat Peat fibres White peat (0 - 25 mm)

Substrate 5 TerrAktiv[®]/perlite + GreenFibre[®] 6L7



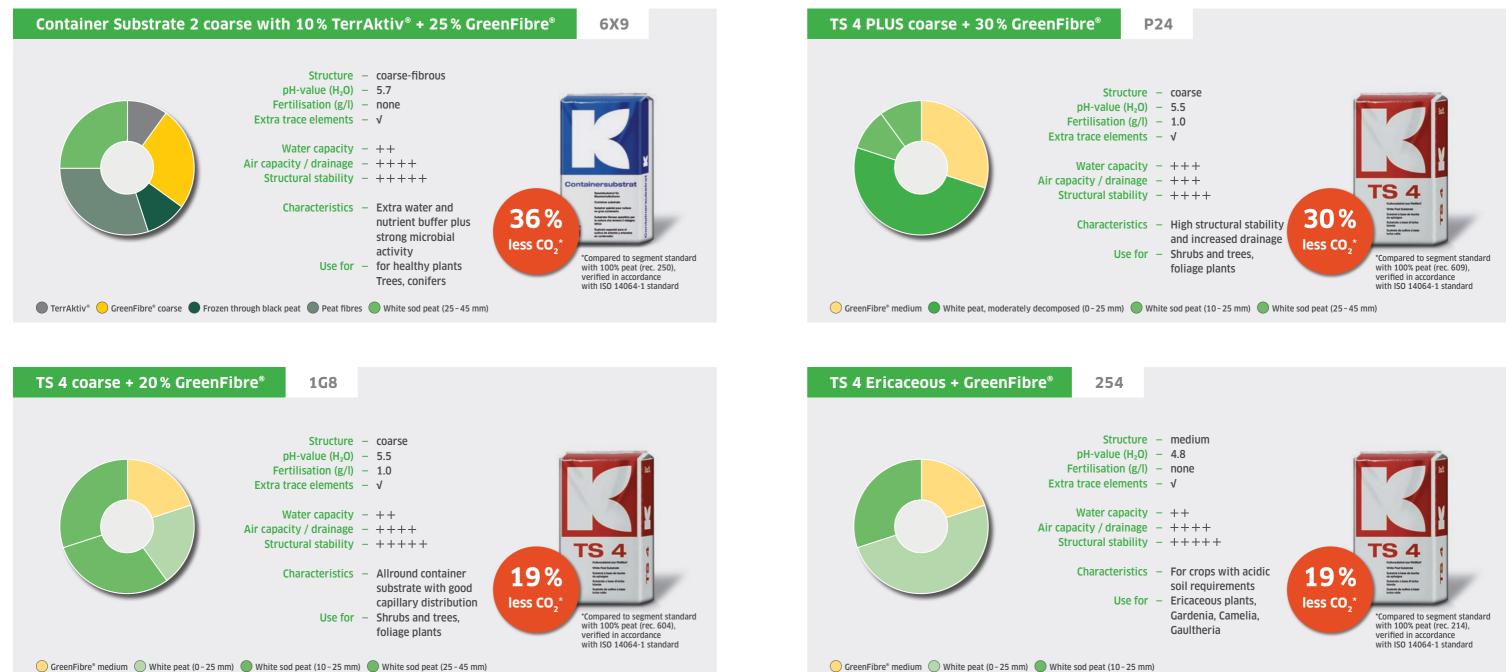
"Helleborus is a niche product. This is where the right substrate recipe is essential. We see great success with TerrAktiv[®] and GreenFibre[®] in our mixture. The plants are stronger, more compact and resistant. We are very grateful to have such a reliable partner in Klasmann-Deilmann."

Thierry van Paemel, Satisfied ADVANCED customer Co-owner of BVBA Helleborus, a leading producer of Helleborus in Belgium

Find out more about our ADVANCED Potting Substrates











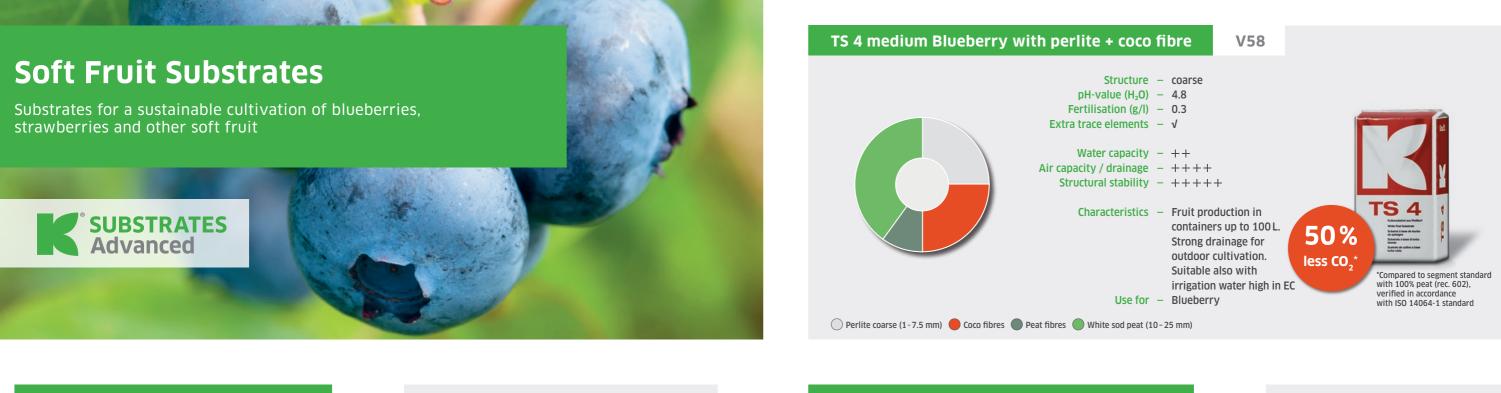
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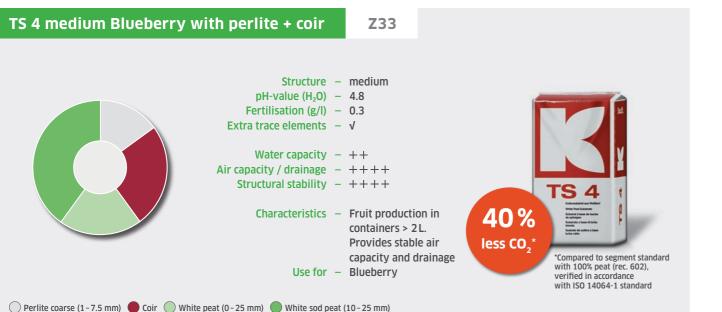
"In recent years we have been confronted with customers asking for more ecologically responsible substrates. Supported by Klasmann-Deilmann we have achieved to use 20% GreenFibre® in our crops. I feel this has a positive contribution to our crop management, as we get a better water balance and the substrate is easier to rewet."

Lode De Waele, Satisfied ADVANCED customer, Owner "De Waele Handelskwekerij BVBA", a leading producer of Container plants in Belgium Find out more about our ADVANCED Container Substrates

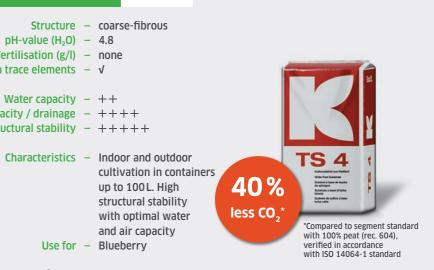












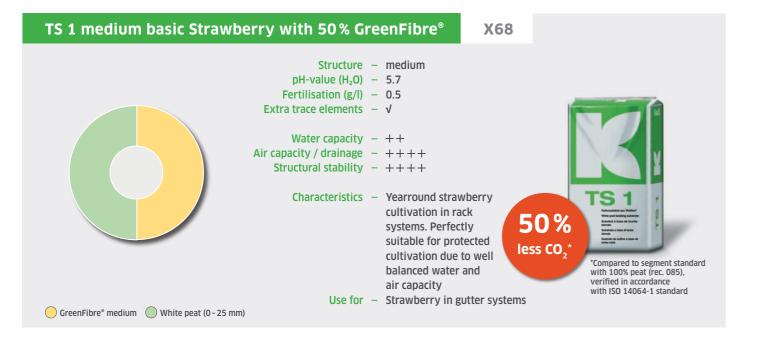
"The use of GreenFibre", perlite and coco fibre in our blueberry substrates leads to a very porous and open structure in the root zone. As a result, plants develop more roots due to better drainage even with heavy rainfall. Also in the long term there is no shrinkage, the root ball remains drier and does not tend to get muddy."

Michel Lopez, Technical Advisor, Klasmann-Deilmann France

Find out more about our ADVANCED Blueberry Substrates



CANUM GRAUE APPAREL • 01823 • DILLAUS 1222 MUNICAUST • NIGH GRAUE GOUDS







"Our substrates with GreenFibre® for strawberries in gutters have proven to be a great alternative to coir. GreenFibre® ensures structural stability and drainage also for perennial cultivation. Moreover, GreenFibre® leads to a lower substrate weight and less CO₂ emissions. As a renewable raw material, it is locally sourced from sustainably managed forestry and well available all year."

Frank Lenkens, Soft Fruit Specialist, Klasmann-Deilmann Benelux (Netherlands)



Find out more about our DVANCED Strawberry Substrates



Klasmann-Deilmann | Evolution of Growing Media | Soft Fruit Substrates

ADVANCED Substrates -The forms of supply

Our substrates are available in following standard forms



For all growing media manufactured by Klasmann-Deilmann, the volume is measured in accordance with European Standard EN 12580. The standard lays down the procedure to be used for measuring the volume of growing media and other peat products which are supplied in bulk or as packaged products. The quantity indication generally relates to the quantity at the time of production.

Average substrate consumption for different pot sizes

Pot size ø in cm	Substrate requirement in I for 1,000 p
6	130-160
8	230-280
9	330-380
9 x 9 x 9,5	600-650
10	460-510
10 x 10 x 11,5	920-970
11	670-720
12	880-930
13	1,100-1,200
1.5 l cont.	1,700-2,000
2.0 l cont.	2,300-2,600

* Average figures only, based on the volume as per EN 12580. Variations may arise in particular through different pot types, varying substrate moisture levels and the compression during potting. The size of the seedling root ball also has a significant impact.

oots**	Number of pots per m ³ substrate*
	6900
Kat	3,920
	2,820
	1,600
1 500	2,060
	1,050
	1,440
	1,150
	870
	540
	410

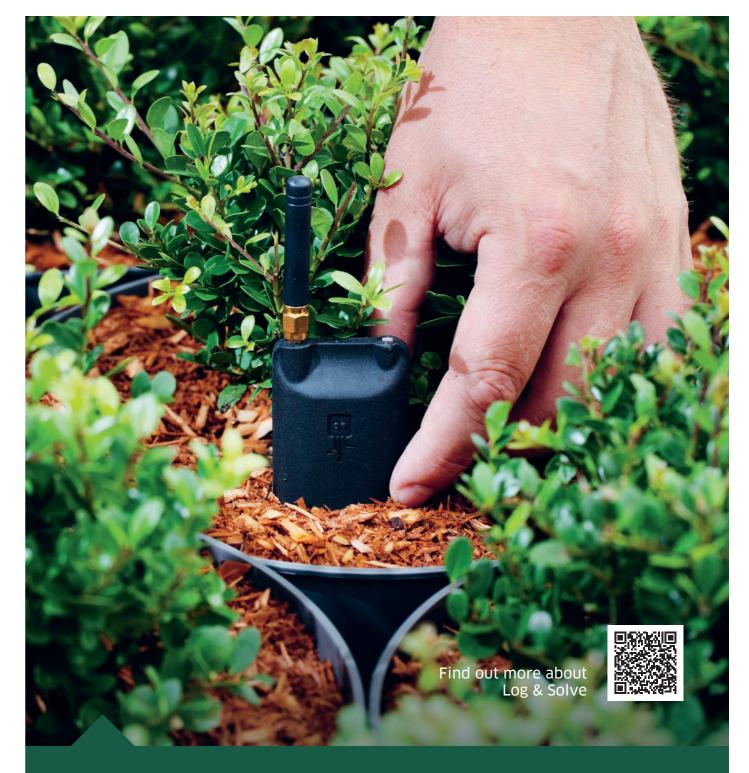
More advanced product solutions

Containermulch

Containermulch is an environmentally friendly top dressing for pots and containers to prevent the growth of algae and weeds. It is made of softwood from sustainably managed forests (PEFC-certified). The wood has been thermally treated to avoid phytosanitary risks.

It is fast drying, permeable to water and breaks up water drops, so the top layer does not become air-tight. This makes it more difficult for algae, mosses and weeds to grow. By using Containermulch, the substrate moisture remains more homogeneous and the plants also look visually appealing for marketing. Containermulch can be processed mechanically with all automatic spreaders and is also very suitable for mulching planting beds.





Log & Solve

Log & Solve is a digital tool for growers to collect relevant cultivation data in a central webbased platform. The new Log & Solve dashboard allows better insight in your crop to increase the efficiency of cultivation.

Log & Solve supports growers in their crop management by using analytical data and sensor data. It organises all crop-related information which is then automatically bundled, evaluated and graphically visualised. On this basis, undesirable developments in crops can be identified and averted more quickly.

Growcoon

Growcoon is a biodegradable propagation plug with a stable but flexible open net structure. The Growcoon forms a stable root ball when used in combination with a high-quality seedling substrate. It is the optimal system for all types of propagation methods. It proves to be particularly effective in sowing, rooting of cuttings, grafting and growing-on of young plants from tissue culture as well as in vertical farming and hydroponic systems. It is available in many different standard sizes and suitable for all common tray sizes. In addition, there is a special Growcoon range for hydroponics.



Find out more about Growcoon

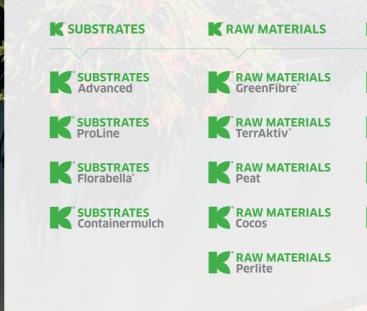
The Klasmann-Deilmann Group

Klasmann-Deilmann is the leading group of companies in the international substrate industry with numerous sales and production companies in Europe, Asia and America, as well as a network of sales and production partners on all continents. Our growing media provide a vital basis for the growth of vegetables, fruit, edible mushrooms, herbs, ornamental plants, trees and shrubs. They ensure the success of our partners and customers in commercial horticulture and are an essential part of the value chain in the food industry.

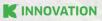
Our product portfolio includes growing media and substrate constituents such as peat, wood fibre, green compost, cocos and perlite amongst others. We also market the Growcoon propagation system and are establishing ourselves as a provider of digital solutions for nurseries with the Log & Solve online platform.



Overview of our business fields







BIOENERGY



INNOVATION Log & Solve

INNOVATION Peat Bog Restoration



BIOENERGY Wood Chips





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DISCLAIMER

The information in this brochure is based on our current knowledge and does not claim to be complete or correct. We reserve the right to make changes. We do not assume any guarantee or liability for successful cultivation, as the use of our products must be adapted to the individual site, storage and cultivation conditions of the respective nursery, which is beyond our knowledge and influence. The information in this brochure cannot replace individual advice. They are neither binding nor part of a consulting or information contract.



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