

Vulkatec



For a green reason.

The catalogue





For a green reason

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**Brute strength turned
to stone.**

**Naturally mineral for
350,000 years.**

For a green reason.



We make the world a little bit greener every day

•
Man needs nature more than nature needs man. A lesson we have learned. Wherever many people live and work, in residential areas and metropolitan areas, green oases add quality of life.

Our volcanic, naturally pure substrates from the depths of the Earth's interior provide a perfect foundation for healthy growth. Trust Vulkatec – a thoroughly green product system from a single source.

And from a green background.

1987

FOUNDED IN



Company grounds in Kretz near Andernach

An idea that never ceases to grow

Even in the second generation we can still be fascinated by what can be created from seemingly simple volcanic rock. Entire concrete jungles, residential areas and neighbourhoods have been transformed as if undergoing metamorphosis to green parks, niches, carpets and gardens.

The base materials of lava, pumice, basalt, zeolite and tuff are practically at our doorsteps. As a result of intensive research and development, the company has succeeded in processing and refining this naturally pure raw material.

Vulkatec has gradually become the leading innovator in the industry and with its in-depth know-how, is today considered to be the leading supplier for roofing, lawns, trees, interior greening, ponds, buildings and industry. Over 500,000 m³ of raw materials are prepared annually and reach our customers through our own logistics in a resource sparing manner.

Our 75 employees are proud to be a part of this unabashedly green company – from raw materials to processing and delivery. Rightly we say: Everything happens for a green reason.



Martin Riebenschahm recognised the huge potential lying in the use of processed mineral raw materials. Today, the company from the heart of the Eifel is one of the market leaders for volcanic vegetation substrates and industrial products in Germany.

Vulkatec is a member of the following associations & organisations:



Forschungsgesellschaft
Landschaftsentwicklung
Landschaftsbau e.V.



Fachvereinigung
Betriebs- und
Regenwassernutzung e.V.



Garten & Landschaftsverband
NRW



Bundesverband GebäudeGrün e. V.
Dach-, Fassaden- und Innenraumbegrünung

extracted from the earth for the earth



Ecology and sustainability

When we talk about sustainability, we actually mean it. We cast our eyes on the entire product cycle. When we use natural resources that have already been expanded by nature, the CO₂ balance is much more advantageous than is the case with artificially expanded raw materials.

When designing the substrates, we also use secondary raw materials to the benefit of the environment. Such materials are strictly monitored in compliance with guidelines and standards (e.g. with composting through the RAL quality assurance). Our substrates are combined so that they can be recycled at the end of their product cycle (material cycle).

Vulkatec's own quality management together with our production guarantees you a consistent product quality as well as a gentle handling of the environment and resources. We rely on permanent self-control and external monitoring (RAL / BRL 9341 certification).

All Vulkatec products comply with the strictest guidelines and regulations such as the Fertilizer Ordinance, the Soil Protection Ordinance for the soil-to-soil and soil-water pathways, the Drinking Water Ordinance, the FLL Guidelines and in individual cases the LAGA M20.

Vulkatec substrates are able to accumulate cationic pollutants (e.g. heavy metals) as well as nutrients (e.g. K₂O, P₂O₅ or MgO, Fe), and to protect against leaching. Because of this, values for these measured in the eluate usually lie below the detection limit.

When it comes to environmental protection, however, logistics is a key factor. In order to minimise transport distances, we produce our tree substrates (Arbortree®), the extensive and intensive roof substrates (Regiomix® extensive and intensive) and the lawn substrates (RegioMix® Lawn) at regional locations in a wide network of local production sites. If there are long distances to the mixing plants, we use inland waterway vessels, and in so doing ensure a 90% reduction in pollutant emissions compared to transport by road.

We are proud that we have been able to combine the highest quality with environmental protection and we can rightly claim: We think about sustainability right through to the end.





The production sites are located in metropolitan areas and are therefore close to the construction sites. In Berlin, the trucks can even reach Central Berlin over a distance of less than 25 km.

Growth from qualitatively nourishing soils.

Development and quality assurance

Starting with the selection of raw materials, we develop substrates for practically all applications in gardening and landscaping based on numerous starting materials. Furthermore, we can individually design a variety of filter materials, aggregates for rendering and plastering, or other refined volcanic raw materials. This is based on the intended uses for the respective substrates, fulfilling the requirements of the FLL, ZTV VegtraMü or DIN 18035, or those specifically defined by you.

We carry out our substrate analyses and tests in our own laboratory. We also see how vegetation develops on different substrates on our own and external test fields. In addition, we also measure water drainage at one of our greened hall areas, and using this we can calculate the entire water balance for our greened roofs.

You can already see: Every Vulkatec product reflects our deep knowledge and our passion for healthy growth.

Even though our substrates are outstanding, they are still constantly evolving.



What properties does your substrate need to have?

Substantive soil analyses on the construction site or in the laboratory:

- Sieve screening and sludge analyses
- Density measurements
- Determinations of water permeability
- Determinations of load capacity (static and dynamic plate pressure test)
- pH value, conductance, nutrients

Dr. Martin Upmeier

Quality Management, Research and Development

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What RAL stands for, FLL stands for, too



Safety

Substrates bearing the RAL seal of approval ensure, through external monitoring, that the FLL guideline, the Fertilizer Ordinance and the Drinking Water Ordinance (eluate) are complied with. The following Vulkatec substrates are regularly externally monitored and certified:

Lavadrän® 8/16
Vulkamineral® 0/12
Vulkaplus® extensive 0/12
Vulkaplus® intensive 0/12
Vulkatree® 0/16
Vulkatree® 0/32

At Vulkatec's specialist seminars, buyers, users and planners learn more about our products and learn tips and tricks for professional applications.

Sowing knowledge and harvesting experience.



Vulkatec engaging in dialogue

Our technical seminars have become an institution over the years, and have provided the opportunity to exchange ideas among colleagues, professionals and scientists. Specialist lectures by well-known experts in their disciplines are complemented with experience from practice. It is extremely important for us that you already have the opportunity to bring in your ideas on these topics during the lectures. Why not join in! Only in this way can we improve as a team. As one example, intensive discussions during the tree seminars in 2016/17 have already resulted in real innovation – namely the development of our new tree substrate Vulkatree® L 0-32.

In recent years, up to eight seminars per year have been held with up to 180 participants per seminar in Berlin, Hamburg, Heidelberg, Veitshöchheim, Cologne, Mainz, Meckenheim, Nuremberg, Solingen and Basel.



Are you interested in our specialist seminars?

The current dates and seminar programmes can be found at:

www.vulkatec.de



Long-standing experience over short routes.

Well-attuned logistics

Quality is only good if it runs through to the construction site. Our customers appreciate Vulkatec's own disposition and logistics when it comes to bulk goods, big bags and bagged goods. We stand for reliable delivery - with corresponding just in time or even same day planning.

We are particularly proud of our own silo fleet. With the development of our turbolift technology, Vulkatec has been pioneering the pneumatic delivery of substrates and bulk materials to roofs and buildings since the mid-1990s.

Your benefit: A simple, rapid and cost-effective laying of substrates on the construction site, where our drivers will stand by your side as competent contacts.

In summary, we can say that the short transport routes and the intelligent combination of inland waterway navigation and HGV transport have exerted positive impacts on climate and prices.

A concept that is well received.



A fleet of specially developed turbolift vehicles

The transport to the construction site.

Ecology, sustainability and innovation are also top priorities when it comes to logistics.

The natural substrates are only a part of the Vulkatec concept. Along the entire route from the quarry to the construction site, we commit ourselves to maintaining a positive environmental impact for our products.

1. Bagged goods

Smallest quantities in the handy bag

Delivered volume

25 l bag
(individually delivered only in the online shop)

1,0 m³
(40 bags on the pallet)

2.

Big Bag

Small amount in a plastic bag with a bottom release valve

Delivered volume

1,0 m³
1,50 m³

3. Tipper

Fast and economical transport of bulk materials

Delivered volume

up to 34 m³

4.

Turbolift

Turbolift Using compressed air, the conveyed goods are blown to where they are needed. Whether it be on roofs up to 50 metres high or construction sites up to 150 metres away.

Where it is used

Construction sites with restricted space: narrow passages, interiors, roofs

Delivered volume

up to 34 m³



Locations

To ensure that bulk goods are road transported over as few kilometres as possible, we use inland waterways for the majority of the transport route. With production sites on Europe's waterways, the delivery always takes the shortest route. Only on the final spurt to the construction site does one of our trucks take over.

This production and delivery concept from a single source ensures ecological transparency and a reliable delivery just in time.



Which form of delivery is right for you?

We would be glad to advise you and calculate the most economic form of transport:

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What we are for you.

Our service involves taking care of our customers.

But this is only possible if we know what your current needs actually are. For this reason, a permanent exchange is cultivated with our customers both in theory and practice at our specialist seminars in Germany and abroad on the topics of tree, roof and lawn. This is where real innovations are created for garden landscapers, civil engineers and road builders, roofers, housing association constructors and specialist retailers.

We develop exciting solutions and greening concepts for architects, planners and municipalities. We also support universities and colleges in experimental and research projects.

Of course you have the option to buy our products as private customers. Either in our online shop or through your construction materials dealer.

No matter which way you find us, we will be there for you. And that's a promise!



Onlineshop: Do you need smaller quantities?

In our online shop you can buy our substrates in packaging sizes from a handy 5-litre bag:

www.vulkatec-onlineshop.de



Our sales strategy

Vulkatec is a family business from the Eiffel. We like slim-lined structures and are fascinated by the idea of the Green City. Your personal contact from our experienced 12 headed sales team speaks your language. This is because we want to be close to you in our sales offices in Germany, France, Belgium, the Netherlands, Switzerland and the Czech Republic.

We communicate with our customers at eye level in all areas. Whether it be when choosing the right product solution, during order processing, or if you have any complaints.

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Roof

Substrates for extensive
and intensive greening



Green habitats with a view



Roofs, roof terraces and carports are often viewed purely from a functional perspective. They seem basic, fatigued and perhaps a little unfinished compared to grandiose architectural and garden designs. Despite this, they harbour an amazing potential to host attractive, green habitats for flora, fauna and indeed humans.

This can lead to significant improvements in the cityscape and landscape. And not only that, they also offer increased sound insulation, effective filtering of dust and pollutants, flood and wind protection, and climate improvement ... all more than convincing arguments to start a roof greening project!

Product overview

Extensive greening



Lavadrän®

Mineral drainage and mulch.

on page 25



Vulkamineral®

Blowable substrate for extensive one-layer greening.

on page 26



Vulkaplus® extensive

Blowable substrate for extensive multi-layer greening.

on page 27



RegioMix® Mineral/extensive

Substrate originating from regional raw materials

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Intensive greening



Lavadrän®

Blowable, mineral drainage material and mulch.

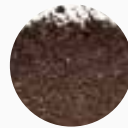
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Vulkamineral®

Blowable, mineral sub-substrate.

on page 32



Vulkaplus® intensive 0-12

Blowable substrate for a broad spectrum of plants.

on page 33



Vulkaplant®

Mineral sub-substrate.

on page 34



Vulkaplus® intensive 0-16

Substrate for a broad spectrum of plants.

on page 35



Vulkaterra® Lawn 0-4

Blowable substrate for lawn areas.

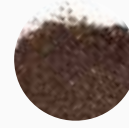
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Vulkaterra® Lawn 0-6/8

Substrate optimised for laying lawns.

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Rhododendron substrate

A reduced pH substrate.

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Alternating bloom substrate

For planting alternating annuals and blooming.

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RegioMix® intensive

Substrate originating from regional raw materials.

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All substrates easily available as types.

Base courses



Basalt, gravel, lava, porphyry

Gravelling, drainage and base courses.

on page 45

Accessories



Fleeces

Separating, filtering, protecting.

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Utility shafts

Coverings made of plastic or aluminium.

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Sedum and plug plants

Extensive greening with sedum and perennials.

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Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Extensive greening

The possibilities for green roofs

Extensively greened roofs are created so that they look close to nature and are mainly created where roof areas are unusable. Since options for nurturing plants are limited due to the inaccessibility of the extensively greened roof, plants must be selected carefully.

Due to their extreme locations, the used plant species must be undemanding, adaptable and capable of regeneration.

1.



Procedure according to FLL
Extensive mono-layer greening

An example of this structure can be found on product page 26.

2.



Procedure according to FLL
Extensive multi-layer greening

An example of this structure can be found on product page 27.



- 2-8
- 2-12
- 2-16
- 8-16*



Lavadrän®

Lavadrän is mineral-based, low in salt, stable to pressure and frost resistant. It can be blown and it's suitable for mineral drainage courses, as a mineral mulch or as a slab substructure. The rough surface ensures a good interlocking of the grains and as such a good positional resilience.

Details:

- High pressure stability; loadable up to 95 MPa/m² in the EV2 of the load plate test
- Up to 67% pore volume; therefore optimally drainable
- Up to 15% water storage
- External monitoring of grain sizes 8-16 as part of the RAL quality assurance
- Available from a silo truck, as bulk or packed in 1.0 or 1.5 m³ big bags and as a 25 l bag

Applications:

- Drainage course in the GaLaBau, especially in green roofs
- Drainable substructure for slabs in the foot trodden area
- Effectively draining and resilient filler for building spaces
- Soil additive, substrate source material
- Air and water filtration
- Mineral mulch

Procedure:

Drainage course, slab substrate, mulch layer

Composition:

Natural product (igneous stone mixture) consisting of augite, olivine, magnetite, limonite and biotite

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	<div style="display: flex; gap: 10px;"> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-8</div> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-12</div> </div> <div style="display: flex; gap: 10px; margin-top: 10px;"> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-16</div> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">8-16*</div> </div>
Particle size distribution (percentage of total mass in%) Blowable components	< 10
Volume weight (t/m ³) Delivery condition DIN EN 1097-3 At max. water capacity, compacted	0.95-1.10 1.20-1.35
Water/air ratio, compacted Maximum water capacity Water permeability mod. K _f	8-15 vol.% 250-500 mm/min
pH-value	6.8-7.5
Salinity	0.1-0.5 g/l



Vulkamineral®



Procedure according to FLL:

extensive, single-layer structure

Composition:

Natural product (igneous stone mixture) consisting of augite, olivine, magnetite, limonite and biotite

Type Lightweight: enriched with expanded clay or expanded slate

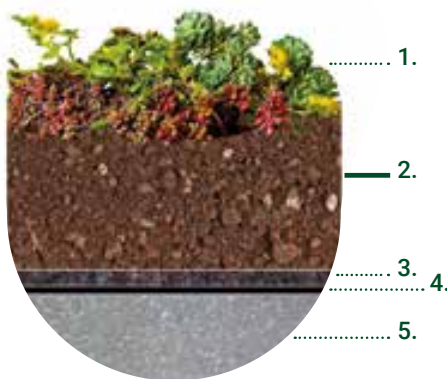
Blowable substrate for extensive mono-layer procedure. Open-pored grain mixture with continuous grain distribution, consisting of natural pumice and light lava; on request with fertilizer additive. Light variant with the addition of expanded clay or expanded slate. On request also with lower bulk densities of up to 850 kg/m³ at WK max.

Details:

- The grit is surface-rough, open-pored, tread-resistant, stable in terms of structure and storage, and resistant to being blown away
- Good water retention capacity and high water permeability with a large air volume
- Meets the requirements of the current FLL guideline and the fertilizer ordinance
- External monitoring for Vulkamineral LB 0-12 as part of the RAL quality assurance
- Optimized for transport by silo truck; also available as bulk material, 1.0 or 1.5 m³ big bags or in a 25 l bag

Applications:

- Extensive monolayer greening
- Basic component for higher quality substrates
- Urban tree restoration and transplantation
- As 2–12 mm screening for interior greening
- Suitable as an under substrate
- Soil improvement



Extensive One-layer greening

1. Vegetation
2. 8–15 cm Vulkamineral®
3. Separating and protective layer 300 g/m²
4. Root-tight seal
5. Building structure

	LB 0-12*	Type light	NRW 0.3
Grain size (ø in mm)			
Particle size distribution (percentage of total mass in%)			
Blowable components	< 10	< 10	< 10
Proportions of components ≥ 4 mm	30–60	30–60	30–60
Volume weight (t/m ³)			
Delivery condition DIN EN 1097-3, lose	0.90–1.00	0.80–0.90	0.90–1.00
At max. water capacity, compacted	1.40–1.60	1.20–1.30	1.40–1.60
Runoff curve number C			At 6 cm: 0.25 At 8 cm: 0.16 At 10 cm: 0.13
Water/air ratio, compacted			
Maximum water capacity	20–30 vol.%	20–30 vol.%	20–30 vol.%
Water permeability mod. K _f	60–150 mm/min	60–200 mm/min	60–150 mm/min
pH-value	6.5–7.5	6.0–7.5	6.5–7.5
Salinity	0.1–0.5 g/l	0.1–1.0 g/l	0.1–0.5 g/l



Vulkaplus® extensive

Blowable substrate for the extensive multi-layered construction, unsegregatable composition from the basic components natural pumice, light lava, green compost and xylitol. Light variant with the expanded clay or expanding slate additives. On request also with lower bulk densities of up to 850 kg/m³ at WK max.

Details:

- Open-pored and with a high total pore volume
- Good nutrient buffering, pH-stable, germination and growth-promoting
- Meets the requirements of the current FLL guideline and the fertilizer ordinance
- External monitoring for Vulkaplus extensive 0–12 for RAL quality assurance
- Optimised for transport by silo truck; also available as bulk material, 1.0 or 1.5 m³ big bags or in a 25 l bag

Procedure according to FLL:

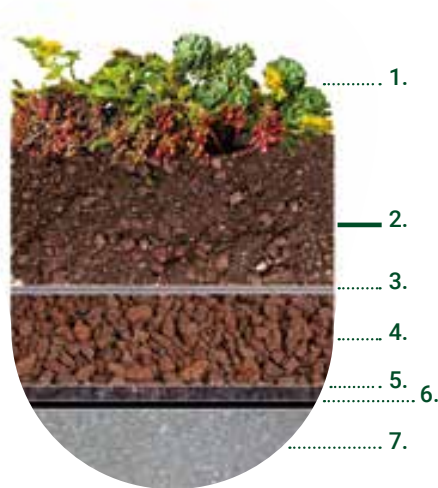
extensive, multi-layer construction

Composition:

Natural product (igneous stone mixture with organic aggregates) consisting of augite, olivine, magnetite, limonite, biotite and organic matter
 Type light: enriched with expanded clay or expanded slate

Applications:

- For nature-adapted vegetation forms under extreme site conditions
- For extensive multi-layer procedures
- Sloping roof greening



Extensive Multilayer greening

1. Vegetation
2. 6–15 cm Vulkaplus® extensive
3. Filter fleece 100 g/m²
4. 3–6 cm drainage course Lavadrän®
5. Separating and protective layer 300 g/m²
6. Root resistant seal
7. Building structure

	0–12*	Type light
Grain size (ø in mm)		
Particle size distribution (percentage of total mass in%)		
Blowable components	6–15	6–15
Fine/medium gravel	35–50	30–50
Volume weight (t/m ³)		
Delivery condition DIN EN 1097-3, lose	0.90–1.00	0.80–0.90
At max. water capacity, compacted	1.35–1.65	1.20–1.30
Water/air ratio, compacted		
Maximum water capacity	35–45 vol.%	35–45 vol.%
Water permeability mod. K _f	0.6–50 mm/min	0.6–50 mm/min
pH-value	6.5–7.5	6.5–7.5
Salinity	0.1–1.0 g/l	0.1–1.5 g/l



References



KÖ-Bogen, Düsseldorf

KÖ-Bogen Düsseldorf Large-scale project involves extensive and intensive greening as well as tubbed and tree planting



Depot Frankfurt

Depot Frankfurt Extensive greening on a barrel roof



Roof



Lawn



Tree



Farm



Tub



Interior

KÖ-Bogen, Düsseldorf

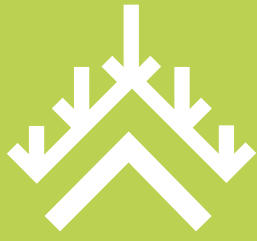
Extensive greening



Pond



Building



Intensive greening

The possibilities for green roofs

In contrast to extensive greening, intensive greening offers an almost unlimited variety of plants. Due to its variety of vegetation, there is a high care requirement for the plants where intensive greening is involved. However, because of the usual regular use of the roof surface it is also comparable with a ground-based green or garden area.



1.

Procedure according to FLL
Intensive greening

An example of this design can be found on product page 33.



2.

Procedure according to FLL
Intensive multi-layer greening

An example of this design can be found on product page 35.



- 2-8
- 2-12
- 2-16
- 8-16*



Lavadrän®

Lavadrän is mineral-based, low in salt, stable to pressure and frost resistant. It can be blown and is suitable for mineral drainage courses, as a mineral mulch or as a slab substructure. The rough surface ensures a good interlocking of the grains and as such a good positional resilience.

Details:

- high pressure stability; loadable up to 95 MPa/m² in the EV2 of the load plate test
- Up to 67% pore volume; therefore optimally drainable
- Up to 15% water storage
- External monitoring of grain sizes 8-16 as part of the RAL quality assurance
- Available from a silo truck, as bulk or packed in 1.0 or 1.5 m³ big bags and as a 25 l bag

Applications:

- Drainage course in the GaLa Bau, especially in green roofs
- Drainable substructure for slabs in the foot trodden area
- Effectively draining and resilient filler for building spaces
- Soil additive, substrate source material
- Air and water filtration
- Mineral mulch

Procedure:

Drainage course, slab substrate, mulch layer

Composition:

Natural product (igneous stone mixture) consisting of augite, olivine, magnetite, limonite and biotite

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

<p>Grain size (ø in mm)</p>	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-8</div> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-12</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-16</div> <div style="background-color: #006633; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">8-16*</div> </div>
<p>Particle size distribution (percentage of total mass in %) Blowable components</p>	<p>< 10</p>
<p>Volume weight (t/m³) Delivery condition DIN EN 1097-3 At max. water capacity, compacted</p>	<p>0.95-1.10 1.20-1.35</p>
<p>Water/air ratio, compacted Maximum water capacity Water permeability mod. K_f</p>	<p>8-15 vol.% 250-500 mm/min</p>
<p>pH-value Salinity</p>	<p>6.8-7.5 0.1-0.5 g/l</p>





**LB
0-12***

**Type
light**

**NRW
0.3**



Vulkamineral®

Blowable, mineral sub-substrate for intensive greening with high installation strength. Open-pored grain mixture with continuous grain distribution, consisting of natural pumice and light lava; on request with fertilizer additive. Light variant with the addition of expanded clay or expanded slate. On request also with lower bulk densities of up to 850 kg/m³ at WK max.

Details:

- The grit is surface-rough, open-pored, tread-resistant, stable in terms of structure and storage, and resistant to being blown away
- Good water retention capacity and high water permeability with a large air volume
- Meets the requirements of the current FLL guideline and the fertilizer ordinance
- External monitoring for Vulkamineral® LB 0-12 as part of the RAL quality assurance
- Optimised for transport by silo truck; also available as bulk material, 1.0 or 1.5 m³ big bags or in a 25 l bag

Procedure according to FLL:

intensive, single-layer construction

Under substrate, intensive, multi-layer construction

Composition:

Natural product (igneous stone mixture) consisting of augite, olivine, magnetite, limonite and biotite

Type Lightweight: enriched with expanded clay or expanded slate

Applications:

- Under substrate for multi-layer intensive greening
- Basic component for higher quality substrates
- Soil improvement
- Urban tree restoration and transplantation
- As 2-12 mm screening for interior greening

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

	LB 0-12*	Type light	NRW 0.3
Grain size (ø in mm)			
Particle size distribution (percentage of total mass in %)			
Blowable components	< 10	< 10	< 10
Proportions of components ≥ 4 mm	30-60	30-60	30-60
Volume weight (t/m ³)			
Delivery condition DIN EN 1097-3, lose	0.90-1.00	0.80-0.90	0.90-1.00
At max. water capacity, compacted	1.40-1.60	1.20-1.30	1.40-1.60
Runoff curve number C			At 6 cm: 0.25 At 8 cm: 0.16 At 10 cm: 0.13
Water/air ratio, compacted			
Maximum water capacity	20-30 vol. %	20-30 vol. %	20-30 vol. %
Water permeability mod. K _f	60-150 mm/min	60-200 mm/min	60-150 mm/min
pH-value	6.9-7.5	6.7-7.5	6.9-7.5
Salinity	0.1-0.5 g/l	0.1-1.0 g/l	0.1-0.5 g/l



Vulkaplus® intensive 0-12

Blowable substrate for intensive greening, unsegregatable composition from the basic components natural pumice, light lava, green compost and xylitol. Light variant with the expanded clay and expanding slate additives. On request also with lower bulk densities of up to 850 kg/m³ at WK max.

Details:

- Open-pored and with a high total pore volume
- Good nutrient buffering, pH-stable, germination and growth-promoting
- Meets the requirements of the current FLL guideline and the fertilizer ordinance
- External monitoring for Vulkaplus® intensive 0-12 for the RAL quality assurance
- Optimised for transport by silo truck; also available as bulk material, 1.0 or 1.5 m³ big bags or in a 25 l bag

Procedure according to FLL:

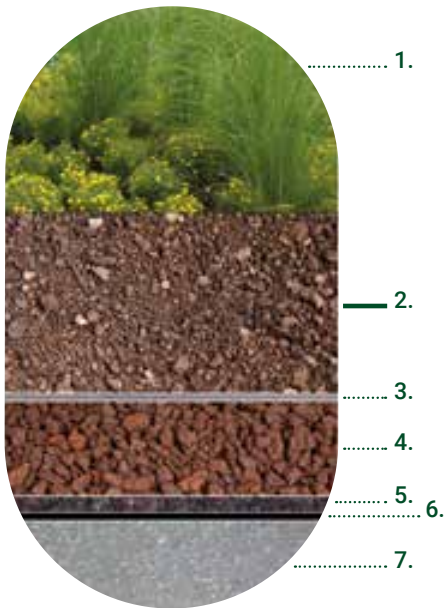
intensive, multi-layered construction

Composition:

Natural product (igneous stone mixture with organic aggregates) consisting of augite, olivine, magnetite, limonite, biotite and organic matter, type light: enriched with expanded clay or expanded slate

Applications:

- Vegetation substrate for demanding vegetation types
- Optionally with different pH values
- Adapted to the planned vegetation
- Tree planting and tree restoration on roofs
- Noise barriers, plant rings, tub planting
- Interior greening
- urban farming



Intensive greening

1. Vegetation
2. > 15 cm: Vulkaplus® intensive
3. Filter fleece 100 g/m²
4. 3-6 cm Drainage course of Lavadrän® (with waterlogging up to 15 cm)
5. Separating and protective layer 300 g/m²
6. Root resistant seal
7. Building structure

	0-12*	Type light
Grain size (ø in mm)		
Particle size distribution (percentage of total mass in %)		
Blowable components	8-15	8-15
Fine/medium gravel	25-40	30-40
Volume weight (t/m³)		
Delivery condition DIN EN 1097-3, loose	0.90-1.00	0.80-0.90
At max. water capacity, compacted	1.40-1.65	1.20-1.30
Water/air ratio, compacted		
Maximum water capacity	45-50 vol.%	35-50 vol.%
Water permeability mod. K _f	0.3-15 mm/min	0.3-25 mm/min
pH-value	6.9-7.5	6.7-7.5
Salinity	0.1-1.0 g/l	0.1-1.5 g/l





Vulkaplant®

Mineral sub-substrate for intensive multi-layer greening. Low salt, segregation-resistant composed of the basic components loess, lava, pumice and sand.

Details:

- Open-pored, with a high total pore volume, pressure-resistant
- Good nutrient buffering, pH-stable, germination and growth-promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Unlimited installation strength
- Produced in accordance with the FLL guideline and the latest version of the Fertilizer Ordinance
- Available as bulk material, in a 1.0 or 1.5 m³ big bag, or as a 25 l bag
- Not blowable

Procedure according to FLL:

Under substrate, intensive, multi-layer construction

Composition:

Natural product (igneous stone mixture, top/bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of various types

Applications:

- Greening with perennials and woody plants in wild-grown locations (e.g. prairie perennials)
- Underground parking greening
- With higher layer structure as an under substrate
- Plant tub substrate for permanent planting with woody plants
- Greening of noise barriers / walls
- Replacement for unsuitable soil

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (\varnothing in mm)	0-16
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	30-45
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	1.05-1.15
At max. water capacity, compacted	1.60-1.80
Water/air ratio, compacted	
Maximum water capacity	20-35 vol. %
Water permeability mod. K _f	0.3-15 mm/min
pH-value	6.9-7.5
Salinity	10-50 mg/100 g



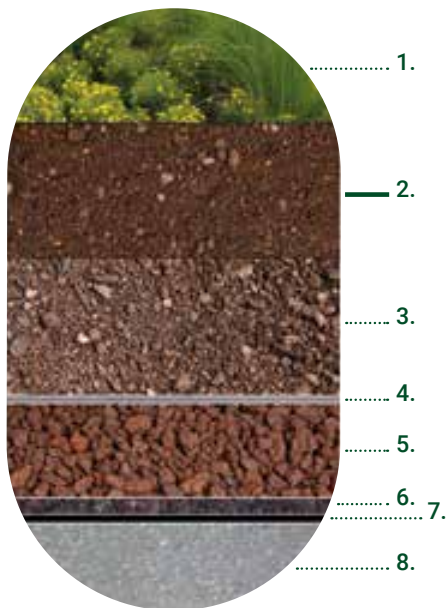
0-16

Procedure according to FLL:

Upper substrate, intensive, multi-layer construction

Composition:

Natural product (igneous stone mixture, top/bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite and clays of various types enriched with compost



Intensive greening with sub-substrate

1. Vegetation
2. Upper substrate: Vulkaplus® intensive
0-12, 60 cm, blown in the silo
0-16, 45 cm, loosely poured
3. Under substrate: Vulkaplant® 20-16
Vulkamineral® LB 0-12
4. Filter fleece 100 g/m²
5. 5.3-6 cm Drainage course Lavadrän®
6. Separating and protection layer 300 g/m²
7. Root resistant seal
8. Building structure

Vulkaplus® intensive 0-16

Mineral-organic substrate, segregation-resistant and composed of the basic components loess, lava, pumice, sand and compost. Suitable for intensive greening with a broad spectrum of plants.

Details:

- Open-pored, with a high total pore volume, pressure-resistant
- Good nutrient buffering, pH-stable, germination and growth-promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Useable up to 45 cm installation depth
- Produced in accordance with the requirements of the FLL guideline and the Fertilizer Ordinance in its current version
- Available as bulk material, in 1.0 or 1.5 m³ big bags, or as 25 l bag
- Not blowable

Applications:

- Optionally with different pH values
- Greening of noise barriers/walls
- Underground garage greening
- urban farming
- Plant tub substrate for permanent planting with shrubs and woody plants
- Substitute for unsuitable soil

Grain size (ø in mm)	
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	30-40
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	1.00-1.10
At max. water capacity, compacted	1.50-1.85
Water/air ratio, compacted	
Maximum water capacity	40-50 Vol.%
Water permeability mod. K _f	0.3-20 mm/min
pH-value	6.9-7.5
Salinity	0.2-1.0 g/l





Vulkaterra® Lawn 0-4 blowable

Mineral-organic substrate, low-salt, non-segregating, and composed of the basic components lava, pumice, expanded clay, compost and xylitol for intensive greening. Optimised for the creation of lawns.

Details:

- Open-pored, with a high total pore volume, pressure-resistant, long-term stable
- Good nutrient buffering, pH-stable, germination and growth-promoting
- Free from seeding and root weeds
- Due to storage under roof it can be processed in wet conditions and in light frost
- Pneumatically transportable by silo over distances of up to 150 m
- Can be used after a short time even after prolonged or heavy rainfall
- Preferably greened with turf grass and to be planned up to approx. 40 cm thickness with permanent additional irrigation

Procedure based on FLL:

Landscape lawn substrate, roof/underground parking roof substrate

Composition:

Natural product; Eruptive stone mixture, consisting of augite, olivine, magnetite, limonite, biotite, enriched with expanded clay, xylitol and compost

Applications:

- Lawn seeding on green areas, inner courtyards and roof areas
- As a substitute for topsoil, for the planting of perennials and woody plants
- Renovation and new laying of commercial and ornamental turf areas
- Permanent tub planting with shrubs and perennials

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de

Grain size

(ø in mm)

0-4

Particle size distribution

(percentage of total mass in %)

Blowable components 10-20

Fine/medium gravel 20-30

Volume weight

(t/m³)

Delivery condition DIN EN 1097-3 0.80-0.85

At max. water capacity, compacted 1.20-1.40

Water/air ratio, compacted

Maximum water capacity 45-55 vol.%

Water permeability mod. K_f 0.3-20 mm/min

pH-value

6.5-7.2

Salinity

0.5-1.0 g/l



Vulkaterra® Lawn 0-6/8

Mineral-organic substrate, low-salt, anti-segregation, composed of the basic components, lava, pumice, sand and compost. For intensive greening. Optimised for the creation of lawns.

Details:

- Open-pored, with a high total pore volume, pressure-resistant, long-term stable
- Good nutrient buffering, pH-stable, germination and growth-promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Can be used after a short time even after prolonged or heavy rainfall
- Preferably greened with turf grass and to be planned up to approx. 40 cm thickness with permanent additional irrigation
- Available as bulk material, in 1.0 or 1.5 m³ big bag, or as 25 l bag

Procedure according to FLL:

Landscape lawn substrate, roof/underground parking roof substrate

Composition:

Natural product (igneous stone mixture, top/bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of various types, enriched with compost

Applications:

- Lawn seeding on green areas, inner courtyards and roof areas
- Renovation and new laying of commercial and ornamental turf areas
- As a substitute for top-soil, for the planting of perennials and woody plants
- Permanent tub planting with shrubs and perennials

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	0-6/8
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	20-40
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	1.00-1.10
At max. water capacity, compacted	1.60-1.85
Water/air ratio, compacted	
Maximum water capacity	40-50 vol. %
Water permeability mod. K _f	0.6-20 mm/min
pH-value	6.8-7.5
Salinity	0.5-1.5 g/l





Rhododendron substrate

Mineral-organic, pH-optimized intensive substrate, with a segregation-proof composition. The basic components of the variant 0-12 are light lava, natural pumice, xylitol and peat. Variants 0-16 consist of loess, light lava, natural pumice, sand, xylitol and peat.

Details:

- Very good nutrient buffering, pH-stable, germination and growth-promoting
- Meet the requirements of the current FLL guideline and the Fertilizer Ordinance

Procedure according to FLL:

intensive multi-layer greening

Composition:

Natural product (igneous stone mix with organic aggregates) consisting of augite, olivine, magnetite, limonite, biotite and organic matter

Applications:

- Vegetation substrate for demanding greening species with a lower pH requirement
- Tree plantings and tree renovations on roof surfaces
- Optionally with different pH values
- Noise barriers, plant rings, tub planting

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

	0-12	0-16
Grain size (\varnothing in mm)		
Particle size distribution (percentage of total mass in %)		
Blowable components	8-15	10-20
Fine/medium gravel	30-40	30-40
Volume weight (t/m ³)		
Delivery condition DIN EN 1097-3, lose	0.90-1.00	1.00-1.10
At max. water capacity, compacted	1.40-1.65	1.50-1.85
Water/air ratio, compacted		
Maximum water capacity	45-50 vol. %	40-50 vol. %
Water permeability mod. K _f	0.3-25 mm/min	0.3-15 mm/min
pH-value	6.0-6.5	6.0-6.5
Salinity	0.1-1.0 g/l	0.5-1.5 g/l



Alternating annual substrate

Mineral-organic perennial substrate; especially for flowering perennials in alternate planting, low-salt, non-segregating composition. Basic components of the standard variant are loess, lava, pumice, sand, compost. In the sour variant there is also peat in the mixture. Upon request, both variants are available with long-term fertilizer enrichment.

Details:

- Open-pore, with a high total pore volume, stable
- It is therefore safe from waterlogging since it also features high water retention
- Very good nutrient buffering, pH-stable, germination and growth-promoting
- Free of root-forming weeds

Applications:

- Particularly suitable for alternating plantings with blooming plants in the area of communal flowerbeds, and "Landes- und Bundesgartenschows"
- Any kind of intensive greening, especially for demanding perennials

Procedure according to FLL:

intensive multi-layer greening

Composition:

Natural product; Eruptive stone mixture, consisting of augite, olivine, magnetite, limonite, biotite, clays of various types, enriched with compost and/or peat

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	0-6/8
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	20-30
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	0.95-1.05
At max. water capacity, compacted	1.50-1.85
Water/air ratio, compacted	
Maximum water capacity	45-55 vol.%
Water permeability mod. K _v	0.3-20 mm/min
pH-value	5.5-7.0
Salinity	0.5-1.0 g/l



Lawn



Tree



Farm



Tub



Interior



Pond



Building

References

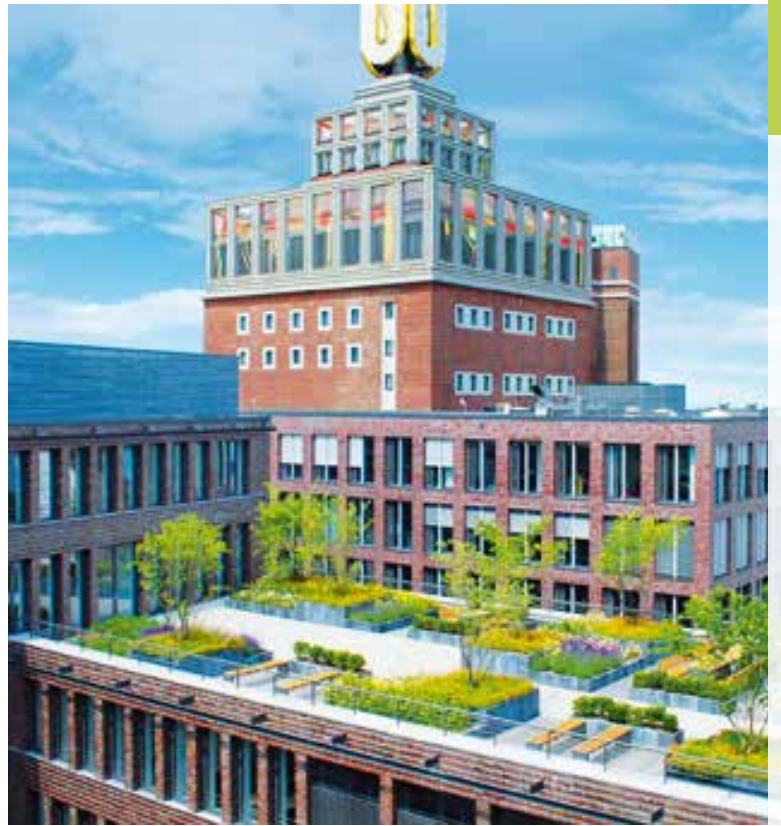


Corda Campus, Hasselt (Belgium)

Intensive roof greening with grass on a pitched roof



Source: Optigreen International AG



Dortmunder-U

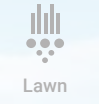
Intensive roof greening with tree and tub planting

LVM Münster

Extensive and intensive greening with trees



Source: Optigreen International AG





RegioMix®

Extracted from the region for the region

RegioMix® extensive, RegioMix® intensive and RegioMix® lawn;
three powerful, ecological products for your benefit from Vulkatec.

We are increasingly buying vegetables, potatoes, eggs and meat from the farmer around the corner, or at least from suppliers who can guarantee a regionality of the products in order to improve the ecological balance as well as the quality of our food.

Addressing this trend, we have thought about how to regionalise our substrates.

After extensive research into local raw materials and the analysis of the same in the laboratory from the perspective of environmental relevance, the requirements of the Fertilizer Ordinance and those of the relevant regulations of the GalaBau, in particular the FLL guidelines and recommendations, we have developed our novel RegioMix® substrates.

RegioMix® combines ecology, vegetation technology and economics into a single package.

RegioMix® extensive: Basis underlying the simple, easy-to-handle roofing of roofs.

RegioMix® intensive: Intensive roof greening with shrubs and woody plants. Also suitable as a substitute for stony, loamy, clayish or compacted soils in the building environment.

Available amongst other places at the locations in Aken, Berlin and Remseck.

Current status under **www.vulkatec.de**



RegioMix[®] Mineral/ RegioMix[®] extensive



Roof

Mineral (RegioMix[®] mineral) or mineral-organic (RegioMix[®] extensive) substrate for extensive greening. The fundamental components are regionally sourced brick chippings, pumice, and compost.

Details:

- Open-pored, with a high total pore volume, pressure-resistant, long-term stable
- Very effective nutrient buffering, pH-stable, germination and growth-promoting
- Free from weeds
- Good processability
- Produced in accordance with the requirements of the FLL guideline and the Fertilizer Ordinance in its current version
- Can be delivered with turbolift trucks and blown via hoses up to 150 m in length



Lawn



Tree



Farm

Applications:

- Extensive greening of building ceilings with sedum, herbs and drought tolerant grasses



Tub

	RegioMix [®] Mineral	RegioMix [®] extensive
Particle size distribution (percentage of total mass in %)		
Blowable components	5–10	5–15
Gravel > 4 mm	50–75	40–50
Volume weight (t/m ³)		
Delivery condition DIN EN 1097-3	1.05–1.15	1.00–1.10
At max. water capacity, compacted	1.40–1.55	1.45–1.55
Water/air ratio, compacted		
Maximum water capacity	30–38 vol. %	35–48 vol. %
Water permeability mod. K _r	100–200 mm/ min	3–30 mm/min
pH-value	7.0–7.8	7.2–7.8
Salinity	1.5–2.5 g/l	1.5–2.5 g/l
Organic substance	0.5–2.5	1.5–4.0



Interior



Pond



Building



RegioMix® intensive/ RegioMix® intensive (blowable)

RegioMix® intensive is a roof/underground garage substrate/ floor replacement. Mineral-organic substrate, with a non-segregating composition. The basic components are regionally sourced raw materials.

Details:

- Open-pored, with a high total pore volume, pressure-resistant, long-term stable
- Very effective nutrient buffering, pH-stable, germination and growth-promoting
- Free of root-forming weeds
- Good processability
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version

Applications:

- Planting of building ceilings with perennials and small shrubs
- As a substitute for topsoil, for the planting of perennials and woody plants
- Permanent container planting with shrubs and perennials

	RegioMix® intensive	RegioMix® intensive (blowable)
Particle size distribution (percentage of total mass in %)		
Blowable components	5-20	5-20
Gravel > 4 mm	5-15	30-50
Volume weight (t/m ³)		
Delivery condition DIN EN 1097-3	1.00-1.10	1.00-1.10
At max. water capacity, compacted	1.65-1.85	1.45-1.55
Water/air ratio, compacted		
Maximum water capacity	45-50 vol. %	45-50 vol. %
Water permeability mod. K _f	1-10 mm/min	3-30 mm/min
pH-value	7.0-7.95	7.2-7.8
Salinity	0.5-1.5 g/l	1.5- 2.5 g/l



Base courses / filling materials

In addition to the substrates, sands and gravel are also available for use on the roof, both of which can be blown by turbolift silos at distances of up to 150 m. They are used for surface gravelling, gravel edge strips, drainage courses, mineral mulch layers, base courses and bedding materials.

Basalt

Colour*:
grey (dry),
anthracite (wet)



	Sand	Grit
Grain size (ϕ in mm)	0-16	2-5 8-16
Weight, installed (t/m ³)	1.80-2.20	1.4-1.70



Lawn



Tree

Gravel

Colour*:
light grey-yellow with brown
and anthracite-coloured
components



(regionally available as
quartz gravel)

	Sand	Grit
Grain size (ϕ in mm)	0-2 0-16	2-8 8-16 16-22
Weight, installed (t/m ³)	1.80-2.20	1.5-1.80



Farm



Tub

Lava

Colour*:
varies from light reddish
brown to dark reddish brown,
to anthracite colours



	Sand	Grit	
Grain size (ϕ in mm)	0-3 0-16	1-5 2-16	2-8 8-16
Weight, installed (t/m ³)	1.65-1.90	1.2-1.40	



Interior

Porphyry

Colour*:
grey-brown to reddish brown



	Sand	Grit	
Grain size (ϕ in mm)	0-16	2-5 2-26	2-8 8-16
Weight, installed (t/m ³)	1.80-2.20	1.50-1.80	

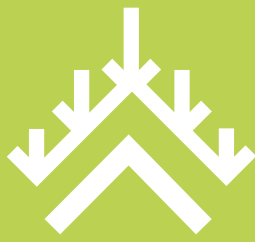


Pond



Building

* Since it is a natural product, colour deviations may occur.



Roof greening Equipment

For an optimal construction of your substrates

More than a substrate

With over 30 years of experience, Vulkatec is one of the pioneers roof greening. As the market leader for substrates in Germany, Vulkatec guarantees optimum product quality and outstanding service. We thoroughly think through the topic of green roofs. That's why we offer all the available accessories in addition to the proven plant substrates and drainage materials.

Separating, protecting and filter fleeces

For protecting the roof covering from mechanical damage and for separating materials of differing grain sizes (e.g. maintenance of the function of the drainage layer).

on page 84

Utility shaft

From the standard plastic inspection shaft for maintaining roof drains to the special aluminium utility shaft for use with marginally located roof drains on insulation wedges.

on page 48

Sedum and plug plants

Sedum and plug plants The ideal solution for cost-effective and diverse green roofs.

The enormous labour and cost savings are also noticeable especially with large areas.

on page 49

300
g/m²

Separating and protective fleece

Advantages:

- The carrying capacity and stability are increased
- It provides a uniform load-distributing effect
- It prevents damage to the root protecting and roof
- It eliminates rough surfaces e.g. splattered concrete
- It increases the life of the roof and maintains its sealing properties

Product information:

- Hardening method: needled + thermally solidified staple fibres
- Area weight: 300 g/m²
- Dimensions (per roll): 50 m x 2 m (100 m²)

100
g/m²

Filter fleece

Advantages:

- Separates the substrate from the drainage layer and thus prevents clogging of the drainage layer
- Prevents waterlogging by ensuring a rapid, even discharge of rainwater

Product information:

- Hardening method: mechanically solidified
- Area weight: 100 g/m²
- Dimensions (per roll): 100 m x 2 m (200 m²)



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Product information:

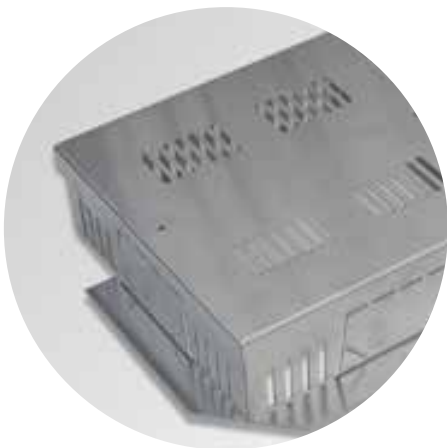
- Material: Plastic
- Dimensions:
Cross section shaft: 37.0 x 37.0 cm
Supporting surface base: 47.0 x 47.0 cm
Height: at least 11.0 cm
(can be increased in 10.0 cm increments)

Utility shaft

Consisting of bottom part, side part and lockable cover for use in green roofs for servicing roof drains.

Special features:

- UV resistant, insensitive to humic acids
- Manhole opening Ø 30 cm
- Compressive strength plastic lid approx. 150 kg
- Shaft walls and lids with inlet slots
- Can be increased in increments of 100 mm
- Suitable for freestanding drainage systems
- Also available with slotted aluminium diamond plate lids
- Special accessories:
• Base plate with a level regulator for ebb and flow irrigation



Product information:

- Material: Metal
- Dimensions:
Length/breadth: 25.0 x 25.0 cm
Support surfaces for soils: 31.0 x 28.0 cm
Height: 8.0 cm
(extension elements available in 10.0 cm)

Marginal utility shaft

Special utility shaft for use above roof drains at marginal areas in front of pitched components, especially when an insulation wedge is found in the corner.

Special features:

- Shaft cover with inlet slots, pressure resistance approx. 150 kg.
- Insensitive to humic acids.
- The insulating wedge profile can be unlatched on the back
- Drainage capacity 3.72 l/s (for three-sided connected water course profiles and 2% gradient)
- Accessories:
• Extension elements of 10.0 cm height
- Shaft walls and lids with inlet slots, rear wall can be tilted and removed in increments of 100 mm



Roof

**Integration:**

If this isn't possible, the shoots can be kept for a maximum of 24 hours in a cool, dry and sheltered place (on no account refrigerate). The shoots should not be watered during storage. Immediately before taking out, however, it's advisable to dip the bag with the sedum shoots in a bucket of water so that the shoots can then take up water properly again. On roofs exposed to high winds, it's recommended that the shoots be lightly hooked into the substrate by only a few millimetres, so that they aren't blown off the roof.

Sedum shoots

The ideal solution for cost-effective and versatile green roofs. The enormous labour and cost savings are also noticeable especially with large areas.

Sedum shoots:

- Min. 5-7 different species (depending on the season)
- Application quantity: 60–150 g/m²
- Flowering time: May-August

Care:

Immediately after spreading, the whole roof should be watered thoroughly. After this the shoots must be supplied with moisture regularly. Depending on the season, the shoots form roots after 2–4 weeks and start to grow in length. From this point on, you can start reducing the regular watering. On average, a green roof planted with sedum shoots takes half a year longer to complete than a roof planted with rooted plants.



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Plug plants

Sedum or herbal plate:

- 50 pcs in a pallet
- 10-20 plants/m²
- Deliveries are mixed (upon request they can also be sorted)



Lawn

Substrates for grassed areas



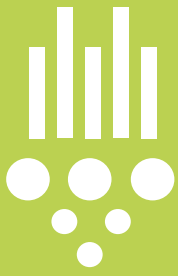
Play areas and beauty spots right before your front door

....



Green areas not only beautify the cityscape and improve the micro-climate, they also contribute to sound insulation and balancing of closed off spaces. Urban grassed areas are nevertheless heavily used: Dryness in summer, road salt in winter and the

trampling of a thousand feet everyday can spell the end even for robust grass varieties. Lawn substrates adapted to local conditions help offset these factors. For example, gravel lawn substrates for a tread-resistant lawn on fairgrounds or driveways.



Lawn greening

Green habitats

The trend towards creating green oases of well-being on roofs and around buildings is growing. A roof greened with grass is not only attractive, it also provides usable living space, increases the sound insulation, retains water on the roof, improves the microclimate, and adds to a more beautiful city and landscape.

In addition, the use of lawn substrates also offers advantages for greening buildings. Especially in cohesive, waterlogging-prone soils, substrates promote the deep rooting of grasses and increase the tread resistance of lawns especially under wet conditions.

Would you like to exploit the many benefits of substrates, advise your customers professionally, and convince them with crafted solutions? Then why not from our 30 years of experience of greening on and around buildings, so that your customers can permanently enjoy the look and functionality of their lawns.



Product overview



Lavadrän®

Blowable mineral drainage.

on page 55



Vulkaterra® Rasen DIN 18035-4

Meets the requirements of DIN 18035-4

on page 56



Vulkaterra® Lawn 0-4 blowable

Lawn substrate for roofs and soils.

on page 57



Vulkaterra® Rasen 0-6/8

Lawn substrate for roofs and soils.

on page 58



Vulkaterra® Lawn type S 0-16

Gravel lawn substrate
Usage category
N1-N3.

on page 59



Vulkaterra® Lawn type 0-32

Gravel lawn substrate
Usage category
N1-N3.

on page 60



Vulkaterra® Lawn type S/FW

Gravel lawn substrate for areas for the fire service install and move equipment
Usage category N / FW.

on page 61



RegioMix® Lawn

Lawn substrate for roofs and soils.

on page 65



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building

Lavadrän®



- 2-8
- 2-12
- 2-16
- 8-16*



Design:

Drainage course, slab substrate, mulch layer

Composition:

Natural product (igneous stone mixture) consisting of augite, olivine, magnetite, limonite and biotite

Lavadrän is suitable as a blowable mineral drainage course or as a mulch layer. The rough surface ensures a good interlocking of the grains and in this way a secure positioning.

Details:

- High pressure stability; loadable up to 95 MPa/m² in the EV2 of the load plate test
- Up to 67% pore volume; therefore optimally drained
- Up to 15% water storage
- External monitoring of Lavadrän 8-16 as part of the RAL quality assurance
- Available from a silo truck, as bulk or packed in 1.0 m³ or 1.5 m³ big bags and as a 25 l bag

Application areas:

- Drainage course for garden landscaping, especially in green roofs
- Drainable substructure for slabs in the foot trodden area
- Effectively draining and resilient filler for building spaces
- Soil additive, substrate source material
- Air and water filtration
- Mineral mulch

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

<p>Grain size (ø in mm)</p>	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #004a33; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-8</div> <div style="background-color: #004a33; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-12</div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="background-color: #004a33; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">2-16</div> <div style="background-color: #004a33; color: white; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center;">8-16*</div> </div>
<p>Particle size distribution (percentage of total mass in %) Blowable components</p>	<p>< 10</p>
<p>Volume weight (t/m³) Delivery condition DIN EN 1097-3 At max. water capacity, compacted</p>	<p>0.95-1.10 1.20-1.35</p>
<p>Water/air balance, compacted Maximum water capacity Water permeability mod. K_f</p>	<p>8-15 vol.% 250-500 mm/min</p>
<p>pH value</p>	<p>6.8-7.5</p>
<p>Salinity</p>	<p>0.1-0.5 g/l</p>



Vulkaterra® Lawn DIN 18035-4

Open-pored, mineral-organic lawn substrate based on lava, pumice and organic matter. It is low-salt, non-segregating and meets the requirements of DIN 18035-4.

Details:

- On request with fertilizer additive and peat
- The substrate shows good nutrient buffering, and is germination and growth-promoting
- Processable in the wet and in light frost

Design:

Lawn base course DIN EN 18035-4

Composition:

Natural product (igneous stone mixture) consisting of augite, olivine, magnetite, limonite, biotite and clays of various types enriched with compost

Application areas:

- Restoration and new laying of sporting field surfaces in accordance with DIN 18035

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	0-4
Particle size distribution (percentage of total mass in %)	
Blowable components	8-20
Fine/medium gravel	5-20
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	1.10-1.30
At max. water capacity, compacted	1.65-1.95
Runoff curve number C	
Water/air balance, compacted	
Maximum water capacity	25-40 vol. %
Water permeability mod. K _f	1-3 mm/min
pH value	6.8-7.5
Salinity	30-100 mg/100g



Vulkaterra® Lawn 0-4 blowable

Mineral-organic lawn substrate for roof and soil, low-salt and segregation-resistant mix of the basic components lava, pumice, expanded clay, xylitol. On request with fertilizer additive.

Details:

- Open-pored, with a high total pore volume, pressure-resistant, long-term stable
- Good nutrient buffering, pH-stable, germination and growth-promoting
- In the peat/xylitol variant it is guaranteed to be free of seeding or rooting weeds
- Processable in the wet and in light frost
- Pneumatically transportable by silo over distances of up to 150 m
- Can be used after a short time even after prolonged or heavy rainfall
- Preferably greened using turf grass and to be planned up to approx. 40 cm thickness with permanent additional irrigation

Application areas:

- Lawn seeding on green areas, inner courtyards and roof areas
- Restoration and new laying of commercial and ornamental turf areas
- As a substitute for topsoil, for the planting of perennials and woody plants
- Permanent tub planting with shrubs and perennials

Procedure compliant with FLL:

Landscape lawn substrate, roof/underground garage roof substrate

Composition:

Natural product; Eruptive stone mixture, consisting of augite, olivine, magnetite, limonite, biotite, enriched with xylitol

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	0-4
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	20-30
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	0.80-0.85
At max. water capacity, compacted	1.20-1.40
Water/air balance, compacted	
Maximum water capacity	45-55 vol. %
Water permeability mod. K _f	0.3-20 mm/min
pH value	6.5-7.2
Salinity	0.5-1.0 g/l



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Vulkaterra® Lawn 0-6/8

Mineral-organic substrate, segregation-resistant and composed of the basic components, lava, pumice, sand and compost. On request with fertilizer additive.

Details:

- Open-pored, with a high total pore volume, pressure-resistant, long-term stable
- Good nutrient buffering, pH-stable, germination and growth-promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Can be used after a short time even after prolonged or heavy rainfall
- Preferably greened with turf grass and to be planned up to approx. 40 cm thickness with permanent additional irrigation
- Available as bulk material, in a 1.0 or 1.5 m³ big bag, or as a 25 l bag

Procedure according to FLL:

Landscape lawn substrate, roof/underground garage roof substrate

Composition:

Natural product (igneous stone mixture, top / bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of various types, enriched with compost

Application areas:

- Lawn seeding on green areas, inner courtyards and roof areas
- Restoration and new laying of commercial and ornamental turf areas
- As a substitute for topsoil, for the planting of perennials and woody plants
- Permanent tub planting with shrubs and perennials

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	0-6/8
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	20-40
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	1.00-1.10
At max. water capacity, compacted	1.60-1.85
Water/air balance, compacted	
Maximum water capacity	40-50 vol. %
Water permeability mod. K _f	0.6-20 mm/min
pH value	6.8-7.5
Salinity	0.5-1.5 g/l



0-16

Procedure according to FLL:

Gravel lawn substrate FLL design
Usage category N1-N3

Composition:

Natural product (igneous stone mixture, top / bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of different types

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de

Vulkaterra® Lawn type S 0-16

Mineral gravel grass substrate with a load bearing capacity of up to 95 MN/m² in the EV2 value of the load plate pressure test (observe the laying instructions).

Details:

- Low-salt, non-segregating
- Basic components are loess, lava, pumice, sand, with peat and fertilizer on request
- The mixture has a porous structure, with a high total pore volume, and is pressure-resistant, stable over the long-term, and shear-proof
- The substrate shows good nutrient buffering, is pH-stable, and is germination and growth promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version

Application areas:

- Mono-layer and multi-layered gravel lawn structures of the designs Usage category N1-N3
- Restoration and new laying of fairgrounds, commercial roads, garage accesses, pedestrian traffic areas, mildly used parking areas and car parks, seats in parks, plant care and maintenance paths

Grain size (ø in mm)	0-16
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	35-55
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3, loose	1.05-1.15
At max. water capacity, compacted	1.65-1.90
Water/air balance, compacted	
Maximum water capacity	25-35 vol. %
Water permeability mod. K _f	0.3-3.0 mm/min
pH value	6.8-7.5
Salinity	5-80 mg/100g



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



0-32

Vulkaterra® Lawn type S 0-32

Open porous, mineral gravel grass substrate based on loess, lava, pumice and sand. On request it can also be supplied with peat and fertilizer additive.

Details:

- Low-salt, non-segregating composition
- High total pore volume, pressure-resistant, long-term stable, shear-proof
- The substrate shows good nutrient buffering, is pH-stable, and is germination and growth-promoting
- Free of root-forming weeds
- Processable in wet conditions and with light frost
- Load bearing capacity up to 95 MPa/m² in the EV2 value of the load plate pressure test (observe the notes in the installation instructions)
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version

Procedure according to FLL:

Gravel lawn substrate FLL design
Usage category N1-N3

Composition:

Natural product (igneous stone mixture, top / bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of different types

Application areas:

- Mono-layer and multi-layered gravel lawn structures of the designs Usage category N1-N3
- Planting of street shoulders
- Restoration and new laying of fairgrounds, commercial roads, garage accesses, pedestrian traffic areas, parking areas and car parks, seats in parks, plant care and maintenance paths

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	0-32
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Proportions of components ≥ 4 mm	35-55
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3, loose	1.05-1.20
At max. water capacity, compacted	1.65-1.90
Runoff curve number C	
Water/air balance, compacted	
Maximum water capacity	25-35 vol. %
Water permeability mod. K _f	0.3-20 mm/min
pH value	6.8-7.5
Salinity	5-80 mg/100g



Vulkaterra® Lawn type S/FW

Gravel lawn substrate for areas in which the fire service can install and move equipment.

Details:

- Basic components are loess, lava, pumice, sand, on request with fertilizer
- The mixture has a porous structure, with a high total pore volume, and is pressure-resistant, stable over the long-term, and shear-proof
- The substrate shows good nutrient buffering, is pH-stable, and is germination and growth promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version

Application areas:

- Multi-layered gravel lawn structures
- Restoration and new laying of areas where the fire service can access and move equipment
- Planting of street shoulders and commercial roads

Procedure according to FLL:

Gravel lawn substrate FLL design
Usage category N/Fw

Composition:

Natural product (igneous stone mixture, top / ottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite and clays of different types

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	0-32
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Proportions of components ≥ 4 mm	35-55
Volume weight (t/m³)	
Delivery condition DIN EN 1097-3, loose	1.10-1.20
At max. water capacity, compacted	1.65-1.95
Runoff curve number C	
Water/air balance, compacted	
Maximum water capacity	25-30 vol. %
Water permeability mod. K _r	0.3-3.0 mm/min
pH value	6.8-7.5
Salinity	5-80 mg/100 g



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Landscaping lawns

Laying instructions

Substrates:

Vulkaterra® Lawn 0–4 blowable
Vulkaterra® Lawn 0–6/8
Regiomix lawn

Laying thickness:

Structure greening:

From 15 cm with permanent additional irrigation, fertilization and turf.
Desirable > 40 cm to minimise the care required.

Soil bound:

10–15 cm as a layer on existing unsuitable ground.

1. Laying

The laying is carried out with a compaction of 85-87% DPr by rolling with a lawn roller. Higher degrees of compaction only make sense with gravel lawn areas. In order to ensure a transfer of water from the substrate into the soil and vice versa, it is important to interlock the two layers. For this purpose, the existing soil surface is roughened before applying the substrate. Any compaction occurring while applying the substrate must be removed afterwards.

2. Greening

The greening should ideally be carried out using turf. When applying seeds, it is important to ensure an optimum water supply during the germination phase, as it is during this phase when it is decided whether all grass species in the mix will gain a foothold:

Lolium: up to 14 days

Festuca and Agrostis: up to 24 days

Poa: up to 28 days

Any sowing failures are therefore not due to any defect in the substrate.

3. Fertilization

An initial fertilization is necessary during the course of sowing, but at the latest after the first cut, using an NPK fertilizer (N stressed, 50–80g / m²). Further fertilizer applications during the growing phase are to be carried out at intervals of 4 to 8 weeks. A key factor for the spacing is the development of the lawn, which is influenced by the amount of rain and the temperature.

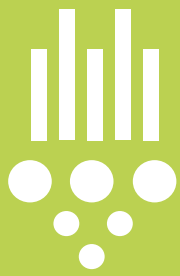
Fertilization in spring: 50–80 g/m²

Maintenance fertilization: 30–50 g/m²

In order to minimize leaching of nitrogen and to even out the turf, it is recommended to use a long-term fertilizer with a duration of action of 6-9 months.

4. Mowing

Regular mowing is essential. Here, the two-thirds-to-one-third rule should apply. This means that a max. 30–35% of the growth can be removed when cutting. And for a cutting height of 3 cm there can be a maximum growth of 4.5 cm until the next cut. At a cutting height of 4 cm, this rule results in a maximum height of 6 cm.



Landscaping lawns

Laying instructions

Substrates:

Vulkaterra® Lawn type S 0-16
Vulkaterra® Lawn type S 0-32
Vulkaterra® Lawn type S /FW

Guidelines:

Usage category N1-3 and FW of the FLL guideline for area reinforcements that can be greened

Laying thickness:

Structural greening:

From 20 cm with additional irrigation and fertilization.
Desirable > 30 cm to minimise the care required.

Soil bound:

Depending on the usage category 15–25 cm.

1. Preparation/ installation

In order to ensure a transfer of water from the substrate into the soil or the load bearing layer and vice versa, it is important to interlock the two layers. For this purpose, the surface of the soil or the load bearing layer is roughened before applying the substrate. Apply the substrate and compact it with a suitable device according to its usage category.

Usage category N1: $\geq 30 \text{ MPa/m}^2$
Usage category N2: $\geq 60 \text{ MPa/m}^2$
Usage category N3: $\geq 80 \text{ MPa/m}^2$
Usage category Fw: $\geq 100 \text{ MPa/m}^2$

2. Greening

Seeding is preferably carried out in superficially loosened gravel grass substrate. Furthermore, the use of a germination substrate (Vulkaterra® Lawn 0–4) of 1–3 cm thickness might be considered. After sowing, it is important to ensure an optimum water supply during the germination phase, as during this phase it is decided whether all grass species of the mix will be able to gain a foothold:

Lolium: up to 14 days

Festuca and Agrostis: up to 24 days

Poa: up to 28 days

Any sowing failures are therefore not due to any defect in the substrate. Can only be used for usage categories N1-N3.

3. Fertilization

An initial fertilization is necessary during the course of sowing, but at the latest after the first cut, using an NPK fertilizer (N stressed, 50–80/m²). Further fertilizer applications during the growing phase are to be carried out at intervals of 4 to 8 weeks. A key factor for the spacing is the development of the lawn, which is influenced by the amount of rain and the temperature. In order to minimise the leaching of nitrogen and even out the lawn development, it is recommended to use a long-term fertilizer with a duration of action of 6–9 months.

4. Mowing

Regular mowing is essential. Here, the two-thirds-to-one-third rule should apply. This means that a max. 30–35% of the growth can be removed when cutting. And for a cutting height of 4 cm there can be a maximum growth of 6.0 cm until the next cut.



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



RegioMix®

From the region for the region

From regional raw materials

Regionality is on everyone's lips today. We buy fruit, vegetables and meat more and more from the market or the farmer around the corner, because we feel much more responsible about our environmental footprints now. We also have thought about the regionalisation of our substrates to keep their supply routes short and reduce their environmental impact.

After extensive research into local raw materials and analysis of environmental relevance in the laboratory and as a result we developed our new Arbortree® substrates. This combines ecology, greening technology and economics into a single package.

RegioMix® Lawn:

Intensive greening of building ceilings with grassed areas, perennials and shrubs.

Planting lawns outside and on building ceilings.

Also suitable as a substitute for stony, loamy, clayish or compacted soils.

Among others locations they are available at Aken, Hamburg, Berlin and Utrecht (NL).

Current status under **www.vulkatec.de**



Procedure compliant with FLL:

Landscaping lawn substrate, roof/ underground garage roof substrate

Composition:

Regionally sourced raw materials

RegioMix® Lawn

Mineral-organic lawn substrate, low-salt, segregation-resistant and composed of regional raw materials.

Details:

- The mixture has a porous structure, with a high total pore volume, and is pressure-resistant and stable over the long-term
- The substrate shows good nutrient buffering, is pH-stable, and is germination and growth promoting
- Free of root-forming weeds
- Good processability
- Preferably greened with turf grass and to be planned up to approx. 40 cm thickness with permanent additional irrigation
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version

Application areas:

- Lawn seeding on new greened areas, inner courtyards and roof areas
- Restoration of commercial and ornamental turf areas
- Planting of building ceilings with perennials and small shrubs
- As a substitute for topsoil, for the planting of perennials and woody plants
- Permanent tub planting with shrubs and perennials

Additional information:

- Certificates
- Product Data Sheets
- Planting instructions
- Plant list

This additional material is available for download at:

www.vulkatec.de

	0-4	0-8
Grain size (ø in mm)		
Particle size distribution (percentage of total mass in %)		
Blowable components	5-20	
Gravel > 4 mm		5-15
Volume weight (t/m ³)		
Delivery condition DIN EN 1097-3	1.00-1.10	
At max. water capacity, compacted	1.65-1.85	
Water/air balance, compacted		
Maximum water capacity	45-50 vol. %	
Water permeability mod. K _r	1-10 mm/min	
pH value	7.0-7.95	
Salinity	0.5-1.5 g/l	



Roof



Lawn



Tree



Farm



Tub



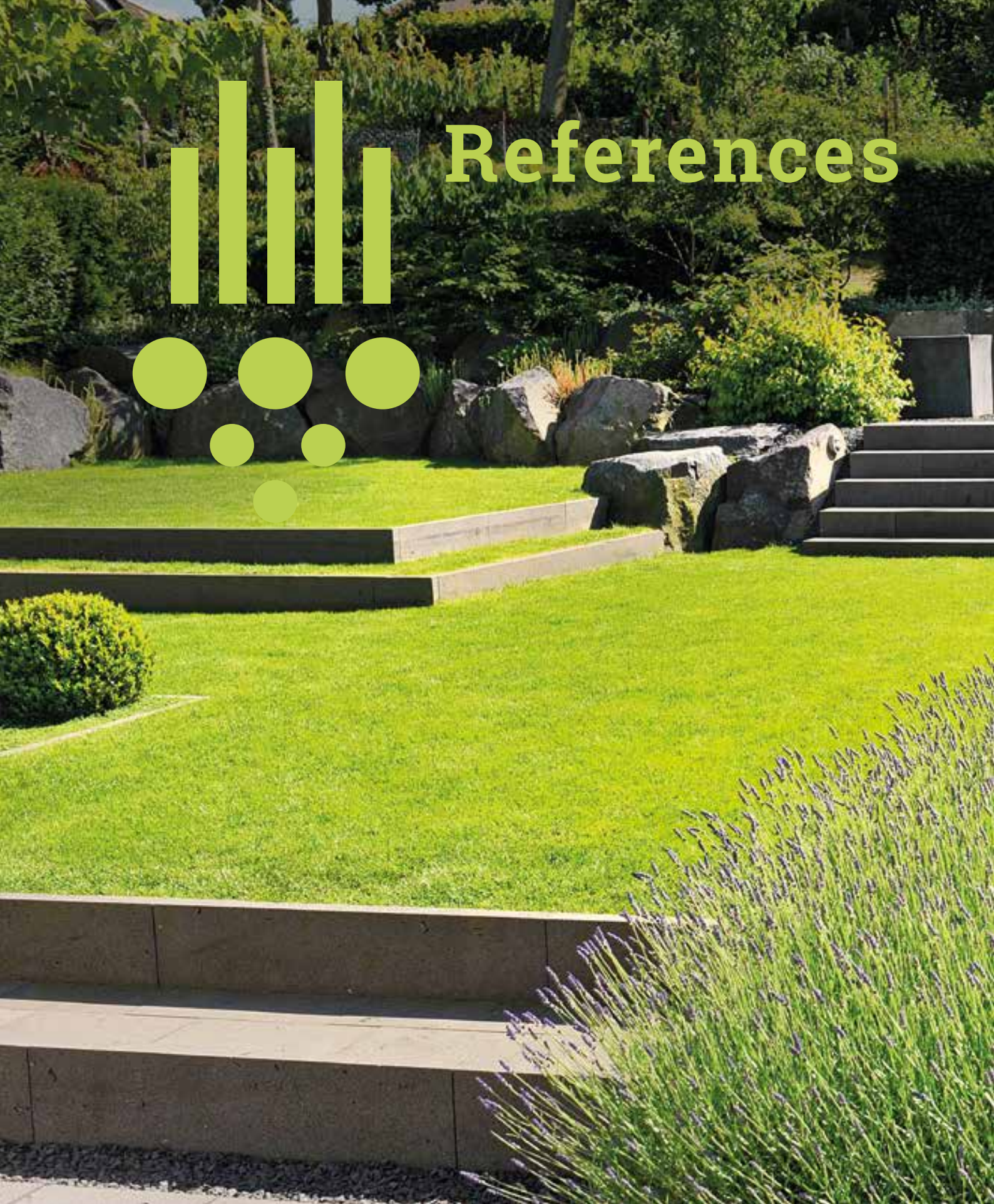
Interior



Pond



Building



References

Private garden, Bornheim

lawn as a constituent of a modern garden architecture



Source: Gartenlandschaft Berg & Co. GmbH



Lawned platform, Kassel

Rugged gravel grass areas between the tracks of the Kassel tram



Roof



Lawn



Tree



Farm



Tub



Interior

Kameha Grand Hotel, Bonn

Tree plantings and several large lawns directly on the Rhine promenade



Pond



Building



Tree

Substrates for
urban tree planting



Healthy growth under the toughest conditions



The trees on our streets are subject to great threats to their vitality. Even more important is the choice of the right tree substrate. The volcanic aggregates of all Vulkatree®

products, with their open-pored, stable grain structure promote the air to water balance of the tree location and ensure the outgrowing and sustainable growth of the tree.



Tree planting

As long as the location lies within a park or a spacious garden, a greening compliant with DIN 18916 may still be sufficient. As soon as any surfaces are driven on, construction materials are stored on them, the area is used for landfill of unknown origin, a tree is present in the pedestrian zone or, more generally, trees are planted alongside roads used for vehicular traffic, it is recommended that the FLL's recommendations for tree plantings be followed. For procedures 1 and 2 listed there we can always offer the right tree substrate for you from our Vulkatree® range.

What they all have in common are their natural volcanic aggregates, which with their open-pored, structure stable grain texture positively promote root growth and thereby the vitality of your trees.

For special cases and special tree species, we can also present substrates that provide more than the FLL demands. Such as with the products Vulkatree® humin, Vulkatree® N or Vulkatree® V/P.

With Vulkatree® Acid we are the leading manufacturer who can supply a functional substrate for *Quercus palustris*, *Acer rubrum* or *Liquidambar*.

For all those interested in trees, we offer seminars on a regular basis throughout Germany. The current dates can be found under **www.vulkatec.de**



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building

Product overview

Tree substrates



Vulkatree® 0-16 und 0-32

Tree substrate for procedure 1 + 2 of the FLL and grain size distributions A + B of the ZtV VegtraMü.

on page 73 and 74



Vulkatree® L

Substrate for FLL procedure 2 with increased load bearing capacity and compression resistance.

on page 75



Vulkatree® V/P

Tree substrate for FLL procedure 1 + 2; free of Verticillium and Phytophthora.

on page 76



Vulkatree® humin

Humic substance-enriched substrate for FLL procedure 1+2.

on page 77



Vulkatree® N

Substrate for FLL procedure 1 + 2 with humic substance and slow-release nitrogen.

on page 77



Vulkatree® Acid

Tree substrate for FLL procedures 1 + 2 with a lowered pH value.

on page 77



Vulkatree® plus

Tree top substrate; substrate for establishing underplantings.

on page 78



Arbortree®

Tree substrate for FLL procedure 1 + 2. From regional raw materials.

on page 81

Accessories



LUWA- System

Aeration and irrigation systems for trees in urban areas.

on page 84



Watering rim

Watering rim for optimum irrigation of the tree's root system.

on page 84



Treeelock®

Subsurface root bale anchorage for trees.

on page 85



Plantasafe®

Cuff to protect against damage during maintenance and lawnmowing.

on page 85



Optistart®

Portioned tree starter for adding to the tree pit.

on page 83



Vulkatree® 0-16

1 substrate for the FLL procedure 1 and grain size distribution A of the ZtV VegtraMü.

Details:

- Low-salt, non-segregating
- The substrate has a good nutrient buffering, and is germination and growth-promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Usable without any restrictions on layer thickness
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version
- External monitoring as part of the RAL quality assurance

Construction according to FLL:

Procedure 1

Composition:

Natural product (igneous stone mixture, top / bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of different types

Applications:

- New planting of trees
- Establishment of underplantings
- Tree site restoration
- Root curtain
- Plant tub substrate for permanent planting with woody plants
- Tree planting on underground garages

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de/vulkatree

Grain size (ø in mm)	0-16
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20%
Fine / medium gravel	30-45%
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3, loose	1.05-1.15 t/m ³
At max. water capacity, compacted	1.60-1.80 t/m ³
Water/air balance, compacted	
Maximum water capacity	20-35 vol. %
Water permeability mod. K _f	0.3-20 mm/min
pH value	7.0-7.5
Salinity	10-50 mg/100g



Vulkatree® 0–32



Procedure according to FLL:

Procedure 1 + 2

Composition:

Natural product (igneous stone mixture, top / bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of different types

Substrate for FLL procedure 1 + 2 and grain size distributions A + B of the ZtV VegtraMü.

Details:

- Low-salt, non-segregating, pressure-resistant
- The mixture is a porous structure, with a high total pore volume
- At 97% DPr. load bearing capacity > 45MPa/m²
- Max. load bearing capacity of Vulkatree® 0–32 at > 97 % DPr.: 70-100 MPa/m²
- The substrate shows good nutrient buffering and is germination and growth-promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Usable without any restrictions on layer thickness
- Produced in accordance with the requirements of the FLL guideline and the Fertilizer Ordinance in its current version
- External monitoring as part of the RAL quality assurance

Applications:

- New planting of trees particularly in road traffic-influenced and overbuilt designs
- Tree site restoration
- Root curtain

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de/vulkatree

Grain size (ø in mm)

0–32

Particle size distribution

(percentage of total mass in %)

Blowable components	10–20 %
Fine / medium gravel	30–40 %

Volume weight (t/m³)

Delivery condition DIN EN 1097-3, loose	1.05–1.15 t/m ³
At max. water capacity, compacted	1.60–1.90 t/m ³

Water/air balance, compacted

Maximum water capacity	20–35 vol. %
Water permeability mod. K _f	0.3-18 mm/min

pH value	7.0–7.5
Salinity	10–50 mg/100g



Vulkatree® L 0-32

Substrate for FLL procedure 2 with increased load bearing capacity and compression resistance.

Details:

- Low-salt, non-segregating, pressure-resistant
- The mixture is a porous structure, with a high total pore volume
- At 97% DPr. load bearing capacity > 45MPa/m²
- Max. load bearing capacity of Vulkatree® L 0-32 at > 97 % DPr.: 70-100MPa/m²
- Especially compression resistant (forgiving towards laying errors)
- The substrate shows good nutrient buffering, and is germination and growth-promoting
- Free of root-forming weeds
- Processable in the wet and in light frost
- Produced in accordance with the requirements of the FLL guideline and the Fertilizer Ordinance in its current version

Applications:

- New planting of trees particularly in road traffic-influenced and overbuilt designs
- Tree site restoration
- Root curtain

Procedure:

Procedure 1

Composition:

Natural product (igneous stone mixture, top / bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of different types

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de/vulkatree

	0-32
Grain size (ø in mm)	
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20 %
Fine / medium gravel	30-40 %
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3, loose	1.05-1.20 t/m ³
At max. water capacity, compacted	1.65-1.95 t/m ³
Water/air balance, compacted	
Maximum water capacity	20-35 vol. %
Water permeability mod. K _f	0.3-18 mm/min
pH value	7.0-7.5
Salinity	10-50 mg/100g



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Vulkatree® V/P

Mineral substrate that is free of tree-damaging Verticillium and Phytophthora spores and mycelium. The use of Vulkatree® V/P is recommended particularly when growing Verticillium-sensitive species such as Acer, Sorbus aucuparia, Prunus dulcis, Crobinia and Cotinus coggygria. In damp locations, the use of Vulkatree® V/P through its excellent air flow and freedom from tree-damaging Phytophthora reduces the damage caused by these fungi.

Details:

- Low-salt, non-segregating
- Basic components: Lava and pumice, on request with fertilizer additive and enriched with humic substances or peat
- Open-pored, with a high total pore volume, pressure-resistant
- Good nutrient buffering, germination and growth-promoting
- Free from seeding and root weeds
- At < 95% DPr. load bearing capacity > 45MPa/m²
- Processable in the wet and in light frost
- Usable without any restrictions on layer thickness
- Blowable = using silo trucks with an up to 150 m hose line

Procedure according to FLL:

Procedure 1 + 2

Composition:

Natural product; Eruptive stone mixture, consisting of augite, olivine, magnetite, limonite, biotite, clays of various types

Applications:

- New planting of trees particularly in traffic-influenced areas
- Tree site restoration
- Tree planting on underground garages
- Underplanting of prairie shrubs and small trees and bushes
- Permanent pot planting with perennials and woody plants

Additional information:

- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de/vulkatree

Grain size

(ø in mm)

0-12

Particle size distribution

(percentage of total mass in %)

Blowable components	5-15 %
Fine / medium gravel	30-40 %

Volume weight

(t/m³)

Delivery condition DIN EN 1097-3, loose	0.90-1.00 t/m ³
At max. water capacity, compacted	1.40-1.60 t/m ³

Water/air balance, compacted

Maximum water capacity	25-35 vol. %
Water permeability mod. K _f	1-60 mm/min

pH value	6.5-7.5
Salinity	10-50 mg/100 g

Vulkatree® Plus

0-16

Procedure according to FLL:

Tree top/covering substrate

Composition:

Natural product (igneous stone mixture, top / bottom soil of different classes) consisting of augite, olivine, magnetite, limonite, biotite, clays of various types, enriched with compost

Mineral-organic tree top/ceiling substrate:

- Low salt, non-segregating
- The substrate shows good nutrient buffering, and is germination and growth-promoting
- The mixture is porous, with a high total pore volume, pressure-resistant
- Free of root-forming weeds
- Processable in the wet and in light frost
- Useable up to 45 cm layer thickness
- Produced in accordance with the requirements of the FLL guideline and the Fertilizer Ordinance in its current version

Applications:

- New planting of trees as an upper substrate
- Establishment of underplantings
- Tree site remediation
- Root curtain
- Plant tub substrate for permanent planting with woody plants
- Tree planting on underground garages

Grain size (ø in mm)

0-16

Particle size distribution
(percentage of total mass in %)
Blowable components
Fine / medium gravel

8-15 %
40-55 %

Volume weight (t/m³)

Delivery condition DIN EN 1097-3,
loose
At max. water capacity,
compacted

0.95-1.10 t/m³
1.55-1.80 t/m³

Water/air balance, compacted

Maximum water capacity
Water permeability mod. K_r

35-50 vol. %
5-20 mm/min

pH value
Salinity

6.5-7.5
0.2-1.0 g/l

Vulkatree® humin

V/P
0-12

0-16

0-32

L
0-32

All standard substrates are also available as humin variants. Humin means that they are enriched with humic substances. Humic substances are able to buffer against the leaching of nutrients and remove pollutants from the soil solution. In addition, they reinvigorate the substrate and increase the vitality of the tree.

Vulkatree® N

V/P
0-12

0-16

0-32

L
0-32

All standard substrates are also available as an N variant. For this purpose, Vulkatree® is enriched with Novihum. Alongside the benefits that come from an enrichment with humic substances (storage of nutrients, fixing of pollutants, general improvement of vitality), Novihum also provides a slowly flowing source for the growth nutrient nitrogen. It thereby ensures an additional supply of nitrogen in the first few years without the risk of suffering leaching losses.

Vulkatree® Acid

V/P
0-12

0-16

0-32

L
0-32

All standard substrates are also available as an acidic variant with a reduced pH value. These substrates are suitable for trees inhabiting acid location, such as Quercus palustris, Acer rubrum or Liquidambar. In this way, chlorosis is avoided and the vitality of these trees is promoted.

The phytophysiological properties of Vulkatree® humin and Vulkatree® N are chemically and physically identical to the standard substrates Vulkatree®

The exception is Vulkatree® Acid, which with a pH value of < 7 is lower than the standard substrate.





Tree planting

Laying and care instructions according to FLL

Substrates:

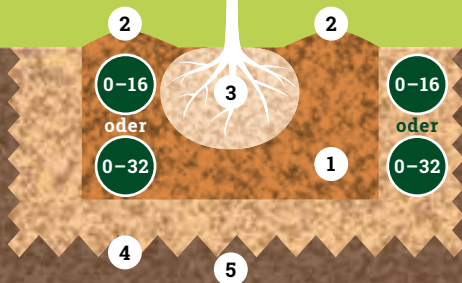
0-16 **Vulkatree® 0-16**
on page 73

0-32 **Vulkatree® 0-32**
on page 74

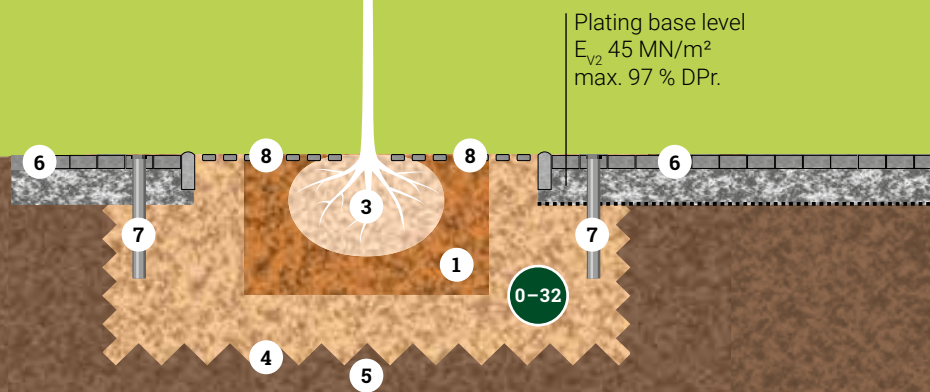
- 1 Planting hole according to DIN 18916
- 2 Watering rim
- 3 Root bale
- 4 Interlocking
- 5 Existing soil
- 6 Superstructure/road surface
- 7 Aeration tubes
- 8 Gap/drain plaster



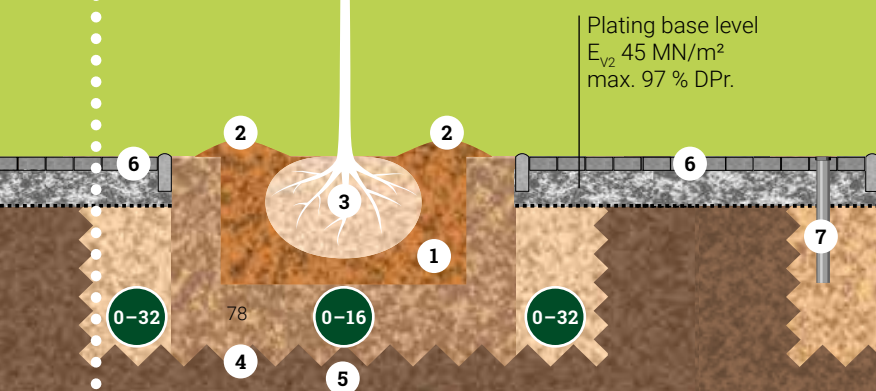
Procedure 1
can not be
overbuilt



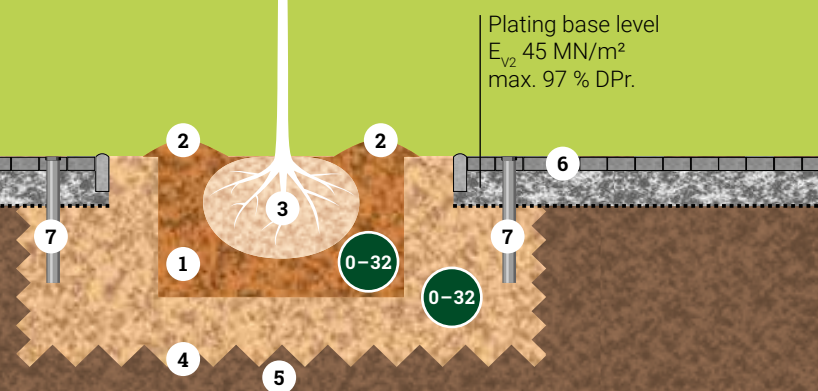
Procedure 2
can be overbuilt
with aeration
and plating



Procedure 2
in combination
with procedure 1



Procedure 2
can be overbuilt,
ventilation over
road surfaces



Procedure 1

Procedure 2

1.

Preparation

Compaction and smearing of the surface of the pit wall and base are to be loosened to ensure a good interlocking between the substrate and the existing soil.

2.

Laying and compaction

The substrate is to be installed in layers of 20–30 cm and compacted to 85–87% DPr. This corresponds to the natural density and is intended to prevent sinkholing without unnecessarily destroying pore spaces. Higher compaction levels are not necessary or are even not permitted. The substrate layers must be interlocked with each other during laying.

The substrate is to be installed in layers of 20–30 cm. In the overbuilt parts of the pit, compaction should be carried out a value of 85–97% DPr. as well as an EV2 value of 45-65 MPa/m². Dynamic compressors may be used. Higher compression levels are not necessary or are even not permitted. If for logistical reasons the soil is compacted to 88–95% DPr. in the open part as well, it must then be loosened in the follow-up to 85–87% DPr so that the trees can take then form deep roots. The substrate layers must be interlocked with each other during laying.

3.

Planting

At the time of tree planting a planting hole of > 1.5 times the diameter of the root bale should be excavated. The planting hole excavation is to be enriched with about 10% compost or blended with 50% Vulkatree® plus. In addition, the planting hole is to be fertilized and possible enriched with super absorbers (Stokosorb), Alginure and Mycorrhiza. A preferably encased depot fertilizer with a long duration of action, and positioned below the root bale, should be used. Quantity: 100–250 g/tree. For an optimal and FLL-compliant irrigation, a watering rim should be formed whose inner diameter should correspond to the outer diameter of the bale. If underplanting is planned, Vulkatree® plus can be applied in areas to promote rooting out from the root bale. The layer thickness depends on the height of the pots. When using underfloor anchors, the earth anchors must be hammered into grown soil. For this reason longer tie ropes and steering poles should be used. The alternative is to lay a construction steel mat Q335 below the root bale and to fix the tie ropes there. When using an axle stand stakes at least 50 cm longer than usual are required. Since the substrate is not over-composted, in order to keep the environmental impact of leaching is as low as possible, a nutrient analysis in the substrate or on the leaves of the trees is advisable at the latest from the third year of standing.

4.

Fertilization

A possible later fertilization as liquid or mineral fertilizer can also take place.

A possible later fertilization as liquid or mineral fertilizer in the open part of the tree window or via the aeration openings of the overbuilt structures can also take place.

In order to avoid a root conductive effect, the fertilizer should be watered.



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Arbortree®

From the region for the region

From regional raw materials

Regionality is on everyone's lips today. We buy fruit, vegetables and meat more and more from the market or the farmer around the corner, because we now feel much more responsible about our environmental footprints. We have also thought about the regionalisation of our substrates to keep their supply routes short and reduce their environmental impact.

After extensive researching of raw materials and analysis of environmental impacts in the laboratory, we have now developed the new Arbortree® substrate. This combines ecology, vegetation technology and economics into a single package.

Arbortree® is available in the variants procedure 1 and procedure 2. Available amongst other places at the locations in Aken, Berlin, Remseck and Utrecht (NL).

Current status under www.vulkatec.de



0-16

0-32

Procedure:

FLL procedure 1 + 2

Composition:

Regionally sourced raw materials

Additional information:

- Certificates
- Product data sheets
- Planting instructions
- Plant list

This additional material is available for download at:

www.vulkatec.de/vulkatree

Arbortree®

Mineral tree substrate based on regionally available raw materials.

Details:

- Non-segregating
- The mixture is porous, with a high total pore volume, pressure-resistant
- The substrate shows good nutrient buffering, and is germination and growth-promoting
- Free of root-forming weeds
- Usable to a pit depth of 2 metres
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version

Applications:

- New planting of trees particularly in road traffic-influenced areas
- Tree site restoration
- Root curtain
- As a substitute for unsuitable or highly compacted soils

	0-16 FLL procedures 1 + 2	0-32 FLL procedure 2
Grain size (ø in mm)		
Particle size distribution (percentage of total mass in %)		
Blowable components	3-15	3-15
Fine / medium gravel	45-70	40-70
Organic substance	1.0-2.0	1.0-2.0
Volume weight (t/m³)		
Delivery condition DIN EN 1097-3	1.05-1.20	1.20-1.35
At max. water capacity, compacted	1.55-1.75	1.60-1.85
Water/air balance, compacted		
Maximum water capacity	25-40 vol. %	23-35 vol. %
Water permeability mod. K _f	0.3-10 mm/min	0.3-10 mm/min
pH value	6.9-7.9	6.9-7.9
Salinity	50-125 mg/100 g	50-100 mg/100 g





Accessories

Effective aids for healthy growth

The optimum start for young trees

During its first years a young tree requires special care. In addition to providing good ventilation and regular water during the growing phase, FLL and DIN 18916 already recommend further precautionary measures, such as the addition of fertilizer and superabsorbents for water storage already during the planting phase.

Vulkatec Optistart represents a balanced blend of a long-term fertilizer, a superabsorbent and lava. The compound is supplied in 750g portioned bags and spares any need to mix it on site. This prevents the overdosing of overflowing superabsorbents and prevents any sealing of the air conducting soil pores. Even unskilled staff are able to carry out the blending. Unused bags can also still be used after longer periods and can be stored without any risk of clumping.

LUWA-System

An efficient aeration is especially vital for trees in urban areas, particularly in the case of tree pit procedure 2. The LUWA system allows aeration and irrigation in already overbuilt areas.
on page 84

Watering rim

The watering rim is a durable and also growing variant of the usual watering rim and is used to irrigate the root bale.
on page 84

Treelock®

The treelock® supports the tree during the growth phase and with object greening enables the planting of large trees at locations such as tubs, roofs, underground garages, on raised ground or in the vicinity of pipes and ducts.
on page 85

Plantasafe®

Plantasafe® is a preformed trunk protection cuff for protecting the tree bark against mechanical damage during maintenance and lawn mowing.
on page 85



Optistart

Combination of long-term fertilizer, superabsorbent and lava in a 750 g bag.

Details:

- Dosage bags: no overdosing of superabsorbents
- Long term storage without clumping

Applications:

- New planting of trees

Additional information:

- Certificates
- Product data sheets
- Planting instructions
- Plant list

This additional material is available for download at:

www.vulkatec.de/vulkatree

Packaging Unit	
Composition (percentage of total mass in %)	
Long-term fertilizer	3-15
Superabsorbent	45-70
Lava	1.0-2.0
Dosage:	
12-16 cm in circumference	1 bag (750 g)
16-25 cm in circumference	1½ bags (1125 g)
16-25 cm in circumference	2 bags (1500 g)

4500 g
(6 portioning bags
of 750 g each)





LUWA System

for irrigation and ventilation

An effective aeration is especially vital for trees in urban areas, particularly in the case of tree pit procedure 2. The LUWA system allows aeration and irrigation in already overbuilt areas.

Installation:

The lateral branch for irrigation (DN 80) using the T-piece (optional) of polypropylene of 80 x 80 x 80 mm connected via a click connection with the ring line (commercially available drainage pipe) and installed in circular form near the surface for irrigating the root bale. Lower pipe outlet for aeration (DN 100) either for connection to a ring-shaped aeration system below the root bale or for connection to a deeper aeration system.

Advantages:

- Simultaneous aeration and irrigation
- Replaceable filter for trapping dirt
- Very low to even no chimney effect

Material	Polypropylene
Accessories	
Pre-assembled sleeve for drainage pipe DN80	•
Extension piece	•
Filter	•
Siphon	(optional)
Humberg HUNO water/air cap	(optional)
Humberg HUNO water/air cap (height adjustable)	(optional)



Watering rim

Irrigation aid

The watering rim is a durable and also growing variant of the usual watering rim and is used to irrigate the root bale.

Establishment:

The watering rim is dug around the trunk about 10 cm deep. The watering rim height should be visible on the surface for about 20 cm. An overlap should be created using double-sided adhesive tape or with a clip connection (optional).

Advantages:

- Protection against road salt use
- Adaptation to root growth possible
- Re-usable
- Recyclable
- UV and ageing resistant
- Tree planting on underground garages

Dimensions	
Diameter	Ø 95 cm
Thickness	3 mm
Filling capacity	140 l
Role dimension	25 x 30 cm
Material	LDF



Treelock®

Root bale anchoring system

The Treelock® supports the tree during the growth phase and with object greening enables the planting of large trees at locations such as tubs, roofs, underground garages, on raised ground or in the vicinity of pipes and ducts.

Installation:

After hard knotting to reduce the assembly height, the clamping lever must be removed from the lower part of the ratchet. In order to protect the root bale surface, a slow-degrading coconut fibre disk is placed underneath.

Advantages:

- Root bale protecting
- Dismantling is not necessary
- Can also be used for trees with more than 90 cm StU
- Physiologically beneficial for the root system
- Alignment uncomplicated

Tractive force per anchor

light, overgrown soil, 40 cm penetration depth 277 kg

Larger penetration deep increases the tractive force of the anchor.

Material

Coconut fibre, steel, polyester

Equipment*:

Mulch disc	1 pcs.
Steel anchor (untreated, 3 locked anchor loops, 50 mm wide)	3 pcs.
Strapping belt (polyester fabric with ratchet bottom)	1 pcs.
Ratchet lever (removable)	1 pcs.

*can vary between models



Plantasafe®

Mow protection

Plantasafe® is a preformed trunk protection cuff for protecting the tree bark against mechanical damage during maintenance and lawn mowing.

Advantages:

- UV-resistant
- Flexible
- Re-usable
- Easy mounting
- With holes for optimal aeration of the trunk

Dimensions

Height x Width	24 cm x 25 cm
Trunk circumference (measured at 1m height)	up to 20 cm

Scope of delivery

50 pcs.





References

Kameha Grand Bonn Hotel

tree plantings, lawn greening and heaped hill for plantations surrounding the Bonner Bogen.



Roof



Lawn



Tree



Farm

PDE, Luxembourg

Grown over plant pits



Tub

Bell foundry, Heidelberg

Tree planting and lawn greening of the roof of an underground garage.



Interior



Pond



Building



Farm

Substrates for the inner-city
farmed garden



Crops in the city

••••



Strawberries from the roof terrace or lettuce from the backyard. Growing food locally, exactly where its needed – that's the promise of urban farming. In the morning it might still be in the earth, but maybe in the afternoon it will already be on the table?

Vulkafarm® Plant substrates make it possible to produce healthy food in the city that will still comply with the strict rules of the Fertilisers Ordinance, the Soil Protection Ordinance and the Drinking Water Ordinance.

Because of their lava, pumice, peat and organic aggregate composition, substrates also prevent waterlogging and retain large quantities of water for the growing plants. Rapid rooting and strong growth are the result.

Product overview



Vulkafarm mineral

Mineral sub-substrate for farmed garden areas.

on page 92



Vulkafarm organic

Mineral-organic universal substrate for farmed garden areas.

on page 93



Vulkafarm plus

Mineral-organic universal substrate with an enriched organic content.

on page 94



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Vulkafarm mineral

Mineral sub-substrate for farmed garden areas.

Details:

- Lava and pumice as base components
- No layer thickness restrictions
- Very well suited for permanent plantings
- Vulkafarm mineral is not fertilized, but can on request be mixed with fertilizer
- Deliverable in sacks, big bags, bulk materials or from a silo truck

Composition:

Natural product (igneous stone mixture) consisting of augite, olivine, magnetite, limonite and biotite

Application areas:

- Roof greening
- Tubs
- High beds
- Balcony boxes
- urban farming
- Soil replacement in the event of poor soil conditions
- Mixing component with poor soil conditions

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (ϕ in mm)

0-12

Particle size distribution

(percentage of total mass in %)

Blowable components	≤10
Fine/medium gravel	30-60

Volume weight (t/m³)

Delivery condition DIN EN 1097-3	0.95-1.00
At max. water capacity, compacted	1.40-1.60

Water/air balance, compacted

Maximum water capacity	20-30 vol. %
Water permeability mod. K _f	0.60-150 mm/min

pH value

6.8-7.5

Salinity

0.1-1.5 g/l



Vulkafarm[®] organic

Mineral-organic universal substrate for farmed garden areas.

Details:

- Basic components: lava, pumice, sand and compost, on request also with peat
- Suitable for permanent plantings
- Vulkafarm 0-4 can be lain up to 45 cm thick Vulkafarm 0-8 can be lain up to 35 cm thick
For greater laying thicknesses, Vulkafarm mineral can also be used as a mineral sub-substrate
- Vulkafarm 0-4 and 0-6/8 are not fertilized, but can on request be mixed with fertilizer
- Deliverable in sacks, big bags or as bulk
- Vulkafarm 0-4 can also be delivered from silo trucks

Composition:

Natural product; Eruptive stone mixture, consisting of augite, olivine, magnetite, limonite, biotite, clays of various types, enriched with compost

Application areas:

- Roof greening
- Tubs
- High beds
- Balcony boxes
- Soil replacement in the event of poor soil conditions
- urban farming

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

	0-4	0-6/8
Grain size (ø in mm)		
Particle size distribution (percentage of total mass in %)		
Blowable components	10-20	10-20
Fine/medium gravel	20-40	20-40
Volume weight (t/m ³)		
Delivery condition DIN EN 1097-3	0.80-0.90	1.00-1.10
At max. water capacity, compacted	1.25-1.40	1.60-1.85
Water/air balance, compacted		
Maximum water capacity	45-55 vol. %	40-50 vol. %
Water permeability mod. K _f	0.3-20 mm/min	0.6-20 mm/min
pH value	6.5-7.2	6.8-7.5
Salinity	0.5-1.0 g/l	0.5-1.0 g/l





Vulkafarm® Plus

Mineral-organic universal substrate for kitchen garden areas with enriched organic content.

Details:

- Lava, pumice, sand and compost as base components.
On request also with peat
- Can be laid up to 35 cm thick.
In the case of larger laying thicknesses, Vulkafarm mineral can be used as a sub-substrate
- Not suitable for permanent plantings
- Compared to Vulkafarm 0-8 it has a higher water retention capacity and an improved nutrient buffering = reduced maintenance requirements + faster growth for many crops
- Vulkafarm 0-8 Plus is not fertilized, but can upon request be mixed with fertilizer
- Deliverable in sacks, big bags or as bulk

Composition:

Natural product; Eruptive stone mixture, consisting of augite, olivine, magnetite, limonite, biotite, clays of various types, enriched with compost and/or peat

Application areas:

- Roof greening
- Tubs
- High beds
- Balcony boxes
- Soil replacement in the event of poor soil conditions

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)

0-6/8

Particle size distribution

(percentage of total mass in %)

Blowable components	10-20
Fine/medium gravel	20-40

Volume weight

(t/m³)

Delivery condition DIN EN 1097-3	0.95-1.10
At max. water capacity, compacted	1.60-1.85
Runoff curve number C	

Water/air balance, compacted

Maximum water capacity	45-60 vol. %
Water permeability mod. K _f	0.3-15 mm/min

pH value

6.0-7.5

Salinity

0.5-1.0 g/l



Farm



Roof



Lawn



Tree



Farm



Tub



Interior

Source: Optigreen International AG

Experimental fruit and vegetable farm on a roof.



Pond



Building



Tub

Substrates for
tub planting outdoors



Optimal growth in the smallest of spaces

....



It doesn't necessarily have to be the big green roof: Each plant, whether in the flower box on the balcony or in a tub in the yard, contributes to the city being a much greener place to live.

Conventional potting soil in a tub, however, bacterially decomposes and compacts over the course of time. This has a negative impact on the surrounding air and reduces the available root space.

Because of their high mineral content, Vulka Kubo substrates prevent this and ensure a permanently stable and well-aerated root space. The admixture of RAL quality assured compost and xylitol ensures the long-term availability of a nutrient supply.

Product overview



Vulka Kubo mineral 0-12

Mineral outdoor potted plant substrate

on page 100



Vulka Kubo organic 0-12

Mineral-organic outdoor potted plant substrate.

on page 100



Vulka Kubo 0-4 and 0-8

Fine-grained, mineral and organic potted plant substrate.

on page 101



Vulkaflor®

Fine-grained potted plants substrate consisting of lava, pumice and zeolite.

on page 102



Cactus soil

Mineral or mineral-organic soil for succulent plants.

on page 102



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



0-12

Mineralisches Outdoor-Kübelpflanzensubstrat:

- Lava, pumice and sand as base components
- For systems with water storage and free drainage
- Offers stability for high growing plants due to the effective interlocking of the components
- No layer thickness restrictions
- Suitable for permanent plantings
- Not fertilized, but can be blended with fertilizer on request
- Delivery in sacks, big bags, as bulk or per silo truck

Vulka Kubo mineral 0-12

Grain size
(ø in mm)

0-12

Particle size distribution
(percentage of total mass in %)
Blowable components 1-15
Fine/medium gravel 30-60

Volume weight
(t/m³)
Delivery condition DIN EN 1097-3 0.90-1.00
At max. water capacity, compacted 1.35-1.60
Runoff curve number C

Water/air balance, compacted
Maximum water capacity 20-35 vol.%
Water permeability mod. K_f 60-150 mm/min

pH value 6.5-7.5
value 0.1-0.5 g/l



0-12

Mineral-organic outdoor potted plant substrate:

- Lava, pumice, Sand, xylitol and compost as base components
On request with peat
- For systems with water storage and free drainage
- Offers stability for high growing plants due to the effective interlocking of the components
- For thicknesses of up to 70 cm
- Well suited for permanent plantings due to the high mineral content
- Not fertilized, but can be blended with fertilizer on request
- Delivery in sacks, big bags, as bulk or per silo truck

Vulka Kubo organic 0-12

Grain size
(ø in mm)

0-12

Particle size distribution
(percentage of total mass in %)
Blowable components 8-15
Blowable components 30-40

Volume weight
(t/m³)
Delivery condition DIN EN 1097-3 0.95-1.10
At max. water capacity, compacted 1.40-1.70
Runoff curve number C

Water/air balance, compacted
Maximum water capacity 45-50 vol.%
Water permeability mod. K_f 0.3-15 mm/min

pH value 6.5-7.5
Salinity 0.1-1.0 g/l



0-4

Mineral-organic outdoor potted plant substrate:

- For systems with water storage and free drainage
- Stability of high growing plants due to excellent interlocking of the components
- For laying thicknesses of up to 45 cm.
In the case of higher thicknesses Vulka Kubo 0-12 mineral can also be used as a sub-substrate
- Suitable for permanent plantings due to its high mineral content
- Not fertilized, but can be blended with fertilizer on request
- Deliverable in sacks, big bags or as bulk

Vulka Kubo 0-4

Grain size (ø in mm)	0-4
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	20-40
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	0.80-0.90
At max. water capacity, compacted	1.25-1.40
Runoff curve number C	
Water/air balance, compacted	
Maximum water capacity	45-55 vol. %
Water permeability mod. K _r	0.3-20 mm/min
pH value	6.5-7.2
Salinity	0.5-1.0 g/l



0-6/8

Mineral-organic outdoor potted plant substrate:

- For systems with water storage and free drainage
- Stability of high growing plants due to excellent interlocking of the components
- For laying thicknesses of up to 45 cm.
In the case of higher thicknesses Vulka Kubo 0-12 mineral can also be used as a sub-substrate
- Suitable for permanent plantings due to its high mineral content
- Not fertilized, but can be blended with fertilizer on request
- Deliverable in sacks, big bags or as bulk

Vulka Kubo 0-6/8

Grain size (ø in mm)	0-6/8
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine/medium gravel	20-40
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	1.00-1.10
At max. water capacity, compacted	1.60-1.85
Runoff curve number C	
Water/air balance, compacted	
Maximum water capacity	40-50 vol. %
Water permeability mod. K _r	0.3-15 mm/min
pH value	6.8-7.5
Salinity	0.5-1.0 g/l





2-5

Outdoor potted plants mineral substrate

- Lava, pumice and zeolite as base components
- For tub systems with water storage
- Offers stability for high growing plants due to the effective interlocking of the components
- Without any limits on laying thickness
- Suitable for permanent plantings due to its high mineral content
- Not fertilized, but can be blended with fertilizer on request
- Delivery in sacks, big bags, as bulk or per silo truck

Vulkaflor®

Grain size (ø in mm)

2-5

Particle size distribution (percentage of total mass in %)

Blowable components	≤ 10
Fine/medium gravel	30-60

Volume weight (t/m³)

Delivery condition DIN EN 1097-3	0.70-0.80
At max. water capacity, compacted	1.00-1.10
Runoff curve number C	

Water/air balance, compacted

Maximum water capacity	20-35 vol. %
Water permeability mod. K _f	200-400 mm/min

pH value

6.5-7.5

Salinity

0.1-1.0 g/l



0-12

Mineral or mineral-organic soil for succulent plants:

- Mineral blend:
Lava and pumice as base components.
On request also with peat
- Mineral-organic blend:
Lava, pumice and compost as base components.
On request also with peat
- Suitable for permanent plantings
- Not fertilized, but can be blended with fertilizer on request
- Delivery in sacks, big bags or as bulk

Cactus soil

Grain size (ø in mm)

0-12

Particle size distribution (percentage of total mass in %)

Blowable components	10-20
Fine/medium gravel	20-40

Volume weight (t/m³)

Delivery condition DIN EN 1097-3	0.80-0.90
At max. water capacity, compacted	1.20-1.30
Runoff curve number C	

Water/air balance, compacted

Maximum water capacity	20-35 vol. %
Water permeability mod. K _f	0.3-20 mm/min

pH value

6.5-7.5

Salinity

0.5-1.0 g/l



References



KÖ-Bogen, Düsseldorf

Planting boxes in the courtyard of the fourth floor.



Kameha Grand Hotel in Bonn

Planting of trees in over four metre high tubs.





Interior

Interior substrates from Zeobon



Aesthetics and wellbeing under a single roof

....



In modern working environments and many office furnishing concepts, interior greening is playing an increasingly important role – comparable with the ergonomic optimisation of offices or the professional fitting of lighting architectures. It has now been scientifically proven that both our

individual well-being and performance can be increased significantly by appealing greening so that the provision of a relaxing atmosphere in the office as well as in presentation and living areas can be sustainably optimised.



Interior greening

by our partner Zeobon

Interior greening places special demands on cultivation techniques. Diverse form of damage can arise due to excessive moisture building up in the soil or substrate with interior greening. As such, substrate, irrigation, drainage and nutrient supply all have to be finely tuned. Depending on how the water is to be guided, different system configurations can be used.

With the Zeobon-developed single-layer system, you can universally plan and easily manage plantings in both tubs and beds. This is because the Zeobon one-layer system® – as the name suggests – consists of only a single layer. The entire layered structure can therefore be used for supporting the vegetation. The high content of organic substances within the zeolite is therefore rendered unnecessary. Special demands on substrates are made by interior greenings in zoos or tropical biomes in which greened landscapes need to be created. Here we can support architects and builders already during the planning phase.

Additional information and reference projects can be found at www.zeobon.de

Substrates:

Zeostrat 2/8

Zeoponic 3/8

Zeoponic 2/5

Zeoplant 0/10

Zeoplant plus 0/10



Red Bull Hangar 7, Salzburg airport

Palm plantations between the technical exhibits



Questions and requests for technical data:

If you have any questions about interior greening, please contact Zeobon directly:

Dr. Martin Upmeier

Sales and application consulting

Phone: +49 2644-60376-50

martin.upmeier@zeobon.com

Zeobon GmbH | Auf der Lay 15 | 53547 Dattenberg | www.zeobon.com



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



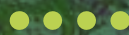
Pond

Pond and filter substrates from Zeobon





Sources of inspiration and havens for peace



Water is life - no other raw material on our planet is so important for humanity to survive. Water areas, whether they be private swimming pools or a large pond in a public park, not only contribute to aesthetics. They also promote well-being. However, in order to keep such bodies of water permanently clean, considerable effort and high costs often need to be expended. Any planting on a base of natural zeolites, however, will

offer a surface structure optimised to ensure that micro-organisms can naturally clean the water quickly, ridding the water of toxic pollutants or rendering them completely harmless. The substrates were also specially designed for use in water treatment plants and plant filters.



Pond greening

by our partner Zeobon

Substrates for cleaning water in ponds and swimming pools utilise various natural cleansing processes. Our Zeobon substrate filter is actively perfused. A biofilm forms on the substrate surface which ensures that germs and cloudings are reduced and nutrients are fixed. Adsorption processes can also be promoted through the use of zeolites.

The Zeobon plant filter ST serves mainly to provide space for underwater plants to take root. It is not perfused. Water is cleaned by the plants and the biotope they form.

Additional information and reference projects can be found at www.zeobon.de

Substrates:

Zeoclear ST 5/8

Zeoclear STZ 4/8

Zeoclear water plant substrate 0/4

Zeoclear clay pellets 10 mm



Pond in a private garden, Dattenberg

Ecological pond greening with Zeoclear



Questions and requests for technical data:

If you have any questions about pond greening, please contact Zeobon:

Dr. Martin Upmeier

Sales and application consulting

Phone: +49 2644-60376-50

martin.upmeier@zeobon.com

Zeobon GmbH | Auf der Lay 15 | 53547 Dattenberg | www.zeobon.com



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Building

Substrates and bulk materials
for structural and civil engineering



Achievable challenges with buildings



Where excavators and wheel loaders reach their limits, with turbo lift power you can achieve high blow counts for backfills of all kinds. With our turbo lift you can use a 150 meters long hose line to transport materials to the most inaccessible places, whether they be noise protection walls, building hollows, tanks, basements or cavities. The maximum bridgeable distance using the turbo lift vehicles depends on the raw material, the grain, and the moisture content. Available backfill materials include lava, basalt, limestone grit, gravel, pumice, porphyry or expanded clay in grain sizes of up to 25 mm.

The use of a 8–16 mm grain size ensures good drainage of seepage and layer water. EV2 values of 85-100 MPa/m² must be achieved for this. With a minimum use of personnel (2–3 construction assistants) and added assistance from our turbo lift driver, 26 t can be filled within 1–1.5 hours. This corresponds, for example, to a volume of up to 21 m³ with lava grain sizes of 8–16 mm. With backfills consisting of Lavadrän and KF-values of 2.7 m/s, load capacities of up to 95 MN/m² can be achieved.

Basalt

Colour*:
grey (dry),
anthracite (wet)



	Sand	Grit
Grain size (ø in mm)	0-3	2-5
	0-16	8-16
Weight, installed (t/m ³)	1.80-2.20	1.4-1.70

Gravel

Colour*:
light grey-yellow with brown
and anthracite-coloured
components



	Sand	Grit
Grain size (ø in mm)	0-2	2-8
	0-16	8-16
Weight, installed (t/m ³)	1.80-2.20	1.5-1.80

Lava

Colour*:
from light-reddish brown
through dark-reddish brown
to anthracite colours



	Sand	Grit	
Grain size (ø in mm)	0-3	1-5	2-8
	0-16	2-16	8-16
Weight, installed (t/m ³)	1.65-1.90	1.2-1.40	

Porphyry

Colour*:
grey brown to reddish brown



	Sand	Grit	
Grain size (ø in mm)	0-16	2-5	2-8
		2-26	8-16
Weight, installed (t/m ³)	1.80-2.20	1.50-1.80	

* Since it is a natural product, colour deviations may occur.



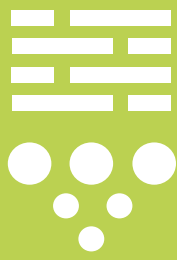
Regional raw materials

Certain raw materials and grains are only regionally available. We will be happy to inform of the backfill materials that can be supplied in your region.

**You can find your local contact directly on page 18,
or allow us to advise you under:**

+49 2632 9548-0 | info@vulkatec.de | www.vulkatec.de





Infiltration trenches

Vitalised soils that prevent overflowing

Severe rain events in recent years have been getting worse and worse. Channels are no longer able to dissipate the water masses in a controlled way. This often leads to damage ranging from flooded cellars to flood ravaged streets.

One approach has been to retain the water in site. For this purpose, in addition to roof greening, that completely retains the water or dissipates it over time to the channel, other options are cisterns or infiltration trenches.

Infiltration trenches usually constitute a coarse-grained rock-filled cavity for receiving the water and a covering layer consisting of a vitalised soil zone. This is laid as a pit so that the water can be absorbed temporarily. As a result of the settling of a biofilm, in addition to a purely mechanical cleaning, a biological cleaning also takes place as the water flows through the vitalised soil zone. The lava and pumice materials used are ideal for this.

In combination with loess-soil and RAL quality assured compost, a good cultivation base is established for greening with grass, reeds and sedges.



Vulkaterra® lawn 0-6/8

Mineral-organic substrate for grassed areas and infiltration systems.

Details:

- The base components are loess, lava, pumice, sand, compost, with additives of peat and fertilizer if requested
- The mixture has a porous structure, with a high total pore volume, and is pressure-resistant and stable over the long-term
- The substrate has good nutrient buffering, is pH-stable, and is germination and growth promoting
- Free of root-forming weeds
- Can be used after a short time even after prolonged or heavy rainfall
- A KF value of at least 10-4 m/s is ideal for the greening of infiltration systems
- Produced in accordance with the stipulations of the FLL guideline and the Fertilizer Ordinance in its current version

Design:

Drainable substrate for infiltration systems, landscaping grass, substrate

Composition:

Natural product; Eruptive stone mixture, consisting of augite, olivine, magnetite, limonite, biotite, clays of various types, enriched with compost

Application areas:

- Lawn seeding on green areas, inner courtyards and roof areas
- Vitalised soil layer for use with infiltration systems

Additional information:

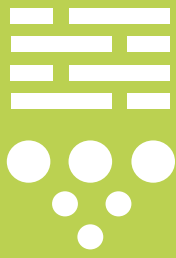
- Certificates
- Product data sheets
- installation introduction

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	
Particle size distribution (percentage of total mass in %)	
Blowable components	10-20
Fine / medium gravel	20-40
Volume weight (t/m ³)	
Delivery condition DIN EN 1097-3	1.00-1.10
At max. water capacity, compacted	1.60-1.85
Water/air balance, compacted	
Maximum water capacity	40-50 vol. %
Water permeability mod. K _f	1.0-10 mm/min
pH value	6.8-7.5
Salinity	0.5-1.5 g/l





Soil filter

Clean water through natural filtration

A soil filter for the cleaning of surface wastewater typically consists of a sedimentation basin and a vegetated filter tank. In the filter tanks, the water previously cleaned of floating particles, fats and oils is then biologically clarified. During this process the water is deprived of pollutants before it seeps into the ground or is led away by flowing water.

Many years of experience acquired from the operation of sewage plants can be resorted to. Vulkatec relies on the tried-and-tested raw materials lava and pumice, since they are ideal for establishing the important biofilms that are needed.



Vulkasoil® 0-2

Bulk material mixture for retention soil filters.

Details:

- Good permeability also when compacted
- High potential to absorb pollutants
- Mineral buffer system
- High biological activity
- Excellent structural stability
- Segregation-resistant composition
- Simple technical handling
- Corresponds to the requirements of the planning guidebook NRW-retention soil filter

Application areas:

- Precipitation drainage in the mixing and separation system
- Retention soil filter

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	
Particle size distribution (percentage of total mass in %)	
Blowable components	0.5
Fine sand	25
Medium sand	50
Coarse sand	0.5
Fine gravel	0.0
Content of organic matter	0.0
Content of carbonate (separation system)	10
Content of carbonate (mixed system)	25
Bulk weight according to DIN 4226	1.10 g/cm ³
Permeability coefficient	1.5x10 ⁻⁴ m/s
pH value (CaCl₂)	7.7
Adsorption capacity	20 mmol eq/l





Vulkasoil® 0-5

Bulk material mixture for soil filter.

Details:

- Excellent structural stability
- Segregation-resistant composition
- Good permeability even when strongly compacted
- Good adsorption potential for pollutants
- Carbonate based buffer system
- High biological activity
- Simple handling
- Fixes inorganic pollutants
- Binds and degrades organic pollutants
- Has the potential to regenerate due to the degradation of pollutants
- Consistent composition
- No on-site mixing necessary

Application areas:

- Rainfall runoff drains in the mixing system
- Rainfall runoff drains on roads
- Rainfall runoff drains in the separation system
- Soil filter

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

Grain size (\varnothing in mm)

0-5

Particle size distribution

(percentage of total mass in %)

Blowable components	6
Medium/Fine Gravel	50
Medium/Fine Gravel	0.0

Proctor density

2.01 g/cm³

Water content at proctor density

(percentage of total mass in %)

26

Bulk weight according to DIN 4226

1.10 g/cm³

Permeability coefficient

3×10^{-4} m/s

pH value (CaCl₂)

7.7

Adsorption capacity

20 mmol eq/l



References



Soil filter

The water previously cleaned of floating particles, fats and oils is biologically clarified in the filter basin.



Space and cavity backfills

even at the most inaccessible places such as a building hollow due to the up to 150 metre long hose line from our turbo lift vehicle.





Industrial products



Grinding and polishing medium

Powder and filler based purely on minerals can be found in many areas of everyday life. They affect the coating and flow behaviour of paints and promote the effect of cleaning agents. Using various grades of pumice, Vulkatec produces customer-specific grain distributions from eco-friendly and natural raw materials for detergents, cosmetics and the dental industry.



Foundry

To prevent the formation of voids in cast blanks, additional chambers are attached to the mould, which initially serve to accommodate the liquid metal during the casting process before it is fed back to the actual mould at the onset of solidification. The feeders consist of a versatile material mixture. Dried and mineralised pumice material from Vulkatec is one component in this material blend.



Lava grill stones

A uniform heat distribution, absorption of excess fat and gravy - these are the benefits that barbecue lovers from all over the world enjoy with their LAVA grill. Vulkatec has been producing and distributing volcanic rocks for original equipment or replacement material for over 30 years now. In a special procedure, the lava is gently heated to approx. 180°C at which it is kept for a certain period of time. This causes the water trapped in the pores to escape, thereby preventing the stones from breaking when they finally reach the end customer. Depending on the customer's wishes, the lava can be delivered in sales-ready PE bags or in custom printed cardboard boxes.

Source: DynaSand filter from Nordic Water/Water



Filling material for environmental technology

With precisely-tuned grain distributions and basalt, lava and pumice grains freed of impurities, Vulkatec produces and delivers filling materials for filters, exhaust scrubbers, as well as support materials for catalytic converters and trickling water treatment plants. Depending on how it is used, the material can be time- and cost-effectively injected directly into the container from our own silo trucks.



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building



Acoustic protection gabions

The gabion wall has been growing in acceptance over the last few years as a decorative and functional structural element both in residential areas and public spaces. Layered basalt lava Vulkapor® in wire baskets provides supportive, cladding and sound-absorbing functions. The construction and design of the wire baskets varies depending on the application. Vulkapor® is frost and weathering resistant in accordance with TL Gab-Stb 16 (requirements, such as TL Gab-By), as well as frost and road salt resistant in accordance with DIN EN 1367-6 in conjunction with the MIRO leaflet "mineral filler materials for stone baskets", 1st Edition 2011.



Lightweight stone aggregate

The lightweight stone aggregates from Vulkatec are used in facade renders, lightweight and fire-resistant mortars, tile adhesives and as a certified lightweight stone aggregate in concrete. The cantilevered roof construction of the tram-stop at Berlin Central Station was only made possible through the use of our Vulkamix F0/3 aggregate. As a purely mineral aggregate, Vulkamix also presents no problems with any subsequent recycling.

© JOOSTEN



Information and Technical Data

Your contact person for questions about volcanic raw materials for use in industry:

Dipl.-Ing. Bernd Mutke

Product Management for Industrial Products

Phone: +49 2632 9548 13 | bernd.mutke@vulkatec.de



For a green reason.

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