



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.

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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.

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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.

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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

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/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





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_f

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:

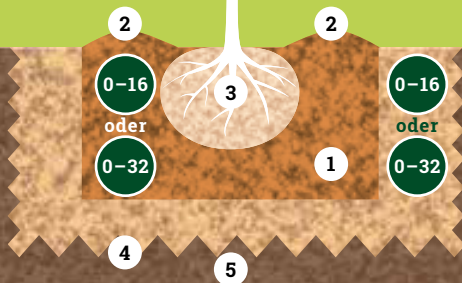
0-16 **Vulkatree® 0-16**
on page 73

0-32 **Vulkatree® 0-32**
on page 74

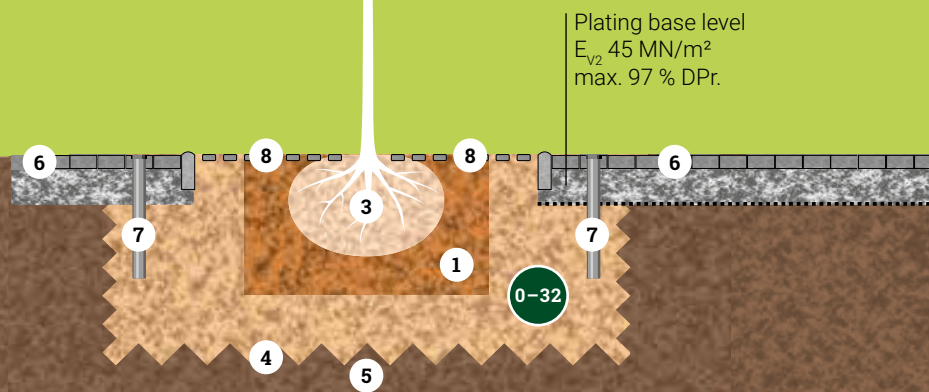
- | | | | |
|---|--------------------------------------|---|-----------------------------|
| 1 | Planting hole according to DIN 18916 | 5 | Existing soil |
| 2 | Watering rim | 6 | Superstructure/road surface |
| 3 | Root bale | 7 | Aeration tubes |
| 4 | Interlocking | 8 | Gap/drain plaster |



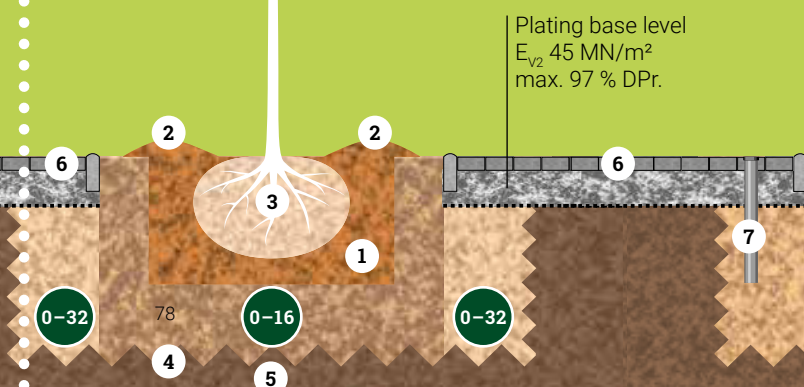
Procedure 1
can not be
overbuilt



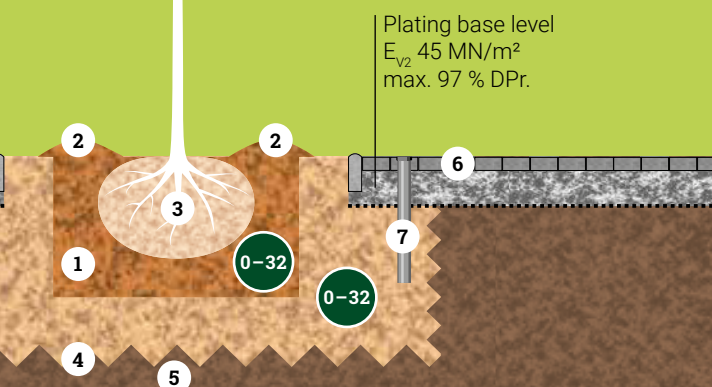
Procedure 2
can be overbuilt
with aeration
and plating



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/m ³)		
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.
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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.



Roof



Lawn



Tree



Farm



Tub



Interior



Pond



Building