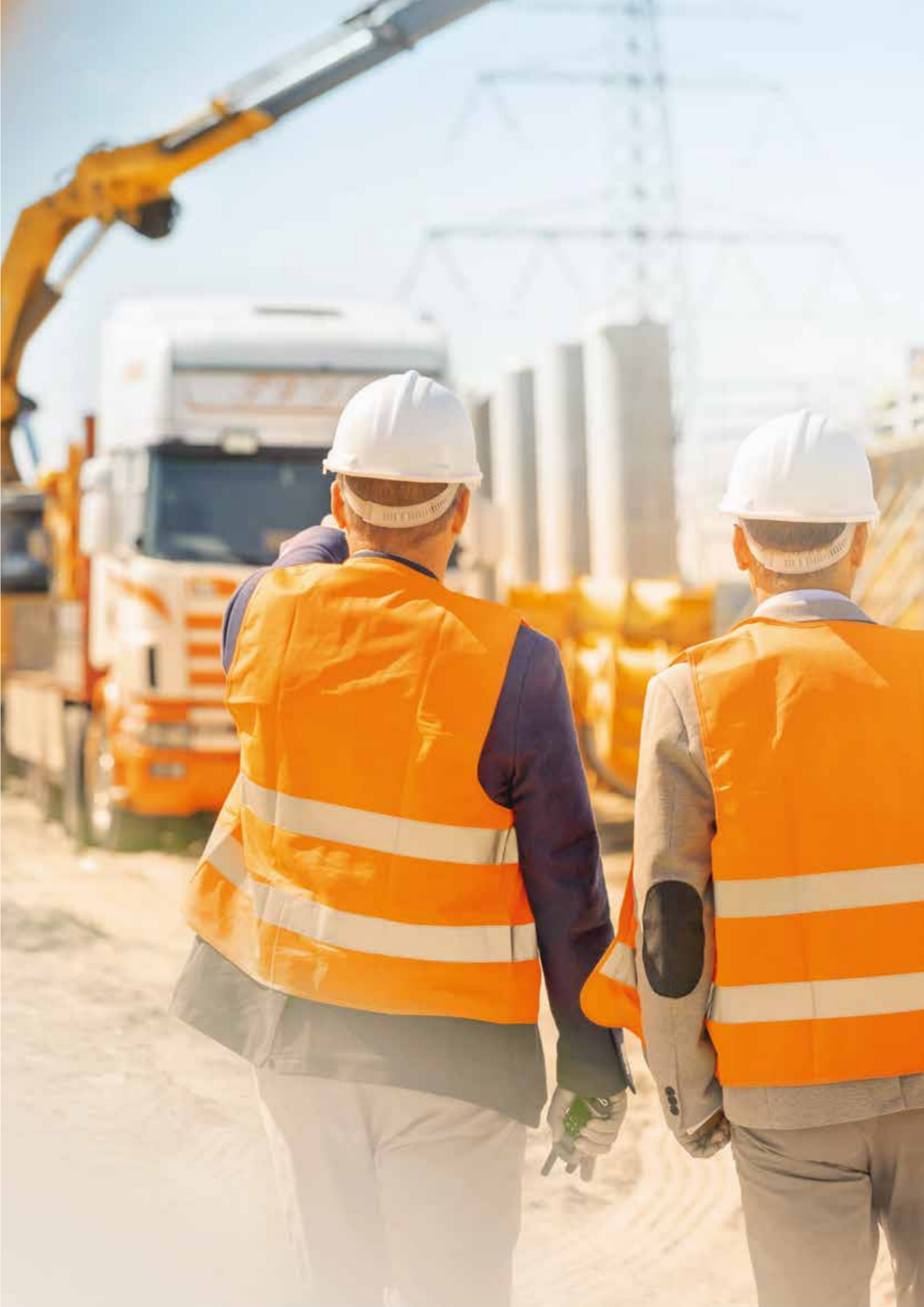
Building

Substrates and bulk materials
for structural and civil engineering



Achievable challenges with buildings

Where excavators and wheel loaders require space, 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 can be achieved. 26 tons are installed within 1–1.5 hours with a minimum of 2–3 construction workers and the support of our turbolift driver. This corresponds, for example, to a volume of up to 21 m³ with lava grain sizes of 8-16 mm. In the case of installation space fillings with lava drains, load-bearing capacities of up to 95 MN/m² are achieved at KF values of 2.7 m/s.

Basalt

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

Grain size (ø in mm)	Sand	Grit
	0–3	2–5
	0–16	8–16
Weight, installed (t/m³)	1.80–2.20	1.4–1.70

Gravel

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

Grain size (ø in mm)	Sand	Grit
	0–2	2–8
	0–16	8–16
Weight, installed (t/m³)	1.80–2.20	1.5–1.80

Lava

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

Grain size (ø in mm)	Sand	Grit	
	0–3	1–5	2–8
	0–16	2–16	8–16
Weight, installed (t/m³)	1.65–1.90	1.2–1.40	

Porphyry

Colour*:
grey brown to reddish brown

Grain size (ø in mm)	Sand	Grit	
	0–16	2–5	2–8
		2–16	8–16
Weight, installed (t/m³)	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:

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

Infiltration trenches

Vitalised soils that prevent overflooding

Severe rain events in recent years have been getting worse and worse. The sewer systems are no longer able to ensure controlled drainage of the water masses. This often leads to damage ranging from flooded cellars to flood ravaged streets.
One approach has been to retain the water in situ. 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

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 also 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

Procedure:

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:

- **Grass seeding for green areas, courtyards and roof areas**
- **Revitalised soil layer for infiltration systems**

Additional information:

- Certificates
- Product data sheets
- Installation instructions

This additional material is available for download at:

www.vulkatec.de

Grain size (ø in mm)	**0–6**
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 pollutants are removed from the water before it seeps into the ground or is led away by flowing water.

We can draw on many years of experience acquired from the operation of constructed wetlands. 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:

- **Rainwater runoff in combined and separate systems**
- **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)	0–2
Particle size distribution (percentage of total mass in %)	
Blowable components	≤ 5
Fine sand	5–25
Medium sand	40–80
Coarse sand	10–45
Fine gravel	≤ 10
Loss on ignition (DIN 18128)	1.0–2.0
Content of carbonate (separation system)	≥ 10
Content of carbonate (mixed system)	≥ 25
Permeability coefficient	$1.0x10^{4}$ m/s
pH value ($CaCl^2$)	7–8

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 technical 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:

- **Precipitation runoff in the mixing system**
- **Rainwater runoff in the separation system**
- **Rainwater runoff from roads**
- **Soil filter**

Additional information:

- Certificates
- Product data sheets

This additional material is available for download at:

www.vulkatec.de

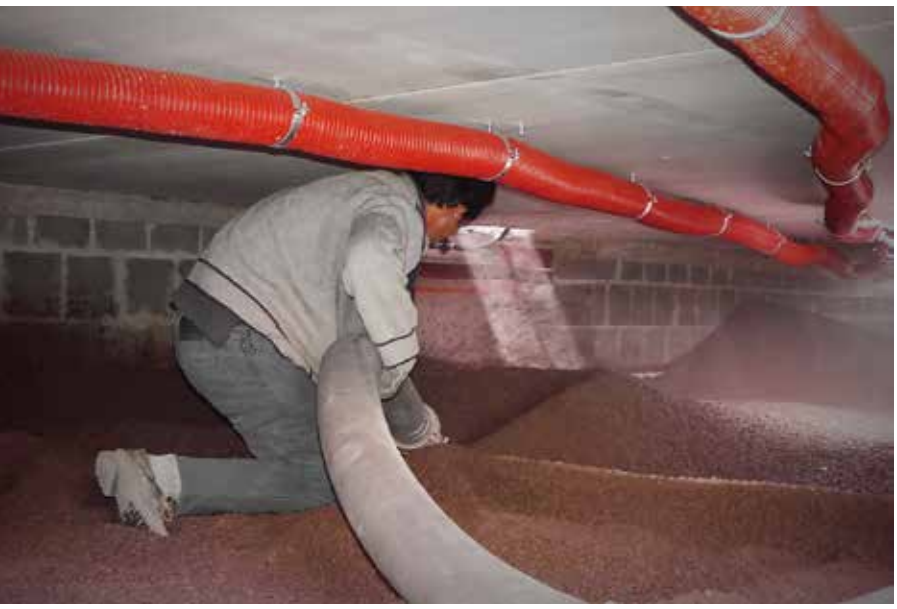
Grain size (ø in mm)	**0–5**
Particle size distribution (percentage of total mass in %)	
Blowable components	≤ 5
Fine sand	5–25
Medium sand	40–80
Coarse sand	10–45
Fine gravel	≤ 10
Loss on ignition (DIN 18128)	1.0–2.0
Content of carbonate (separation system)	≥ 10
Content of carbonate (mixed system)	≥ 25
Permeability coefficient	$1.0x10^{4}$ m/s
pH value ($CaCl^{2}$)	7–8

References

Roof
Lawn
Tree
Farm

Soil filter
Suspended particles, fats and oils are first removed from the water in the filter basin, before it is biologically purified.

Tub



Interior

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.

Pond
Building

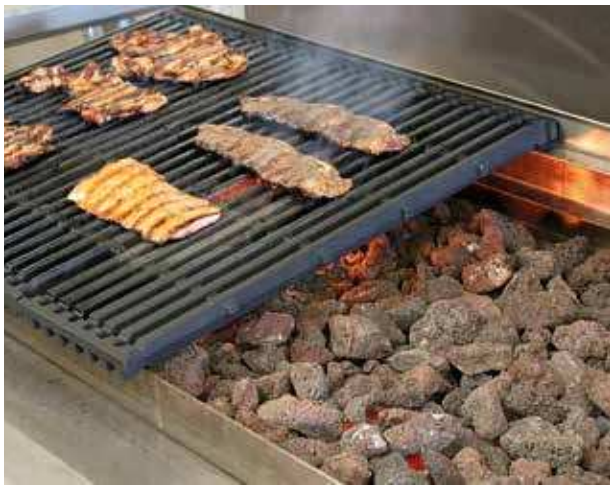
Industrial products

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

Additional chambers are attached to the casting mold to avoid the formation of shrinkage cavities in casting blanks. They first absorb the metal during the casting process and then feed it back into the actual casting as it solidifies. 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

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.

Acoustic protection gabions

A design element in private areas or public spaces – the gabion wall has become increasingly popular in recent years as a decorative and functional structure.
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 (same specifications as TL Gab-By), as well as frost/de-icing salt resistant in accordance with DIN EN 1367-6 in conjunction with the MIRO data sheet "Mineral filling materials for stone baskets", 1st edition 2011.

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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.

Information and technical data

Your contact for questions about volcanic raw materials in the industry:

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From a green background.

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Status 11/2024