25 WAYS OF

Leca®

25 Solutions with Leca® lightweight Aggregate

Leca® UK
Regus House,
Herons Way
Chester Business
Park
Chester CH4 9QR
UK

Welcome to Leca's World

"25 ways of Leca" is a book that describes the opportunities you as a customer have to strengthen your business with our innovative solutions, within traditional construction, infrastructure, rainwater management and drinking and wastewater treatment.

"This is what you use in potted plants" is a common mention of Leca® lightweight aggregate, but the product can be used in many other contexts - and with good results as a result.

The book is for inspiration, and the possibilities for use are many more than those mentioned. Limited only by imagination.

Happy reading. We look forward to hearing about your project in the future - together we build for the future.

What are Leca® lightweight aggregate (LWA)?

Leca® LWA is produced at Hingeværket south of Randers, where deposits of oily, plastic clay, which is optimal for the product, are found. The production plant is located next to the raw material to increase efficiency and to avoid heavy, expensive transportation.
The clay is dug up in the clay pit, until the finished product is packaged into bags or is loaded on the truck. To create a complete LECA LWA product the whole process required the following:

Clay extraction: The clay is picked up in the clay pit and transported to the clay barrel. Replacement Products: The clay is mixed with replacement products to preserve the natural raw material. The replacement products consist of recycled waste products from other industries.

Crushing: The stones are crushed and the clay is pressed through small holes.

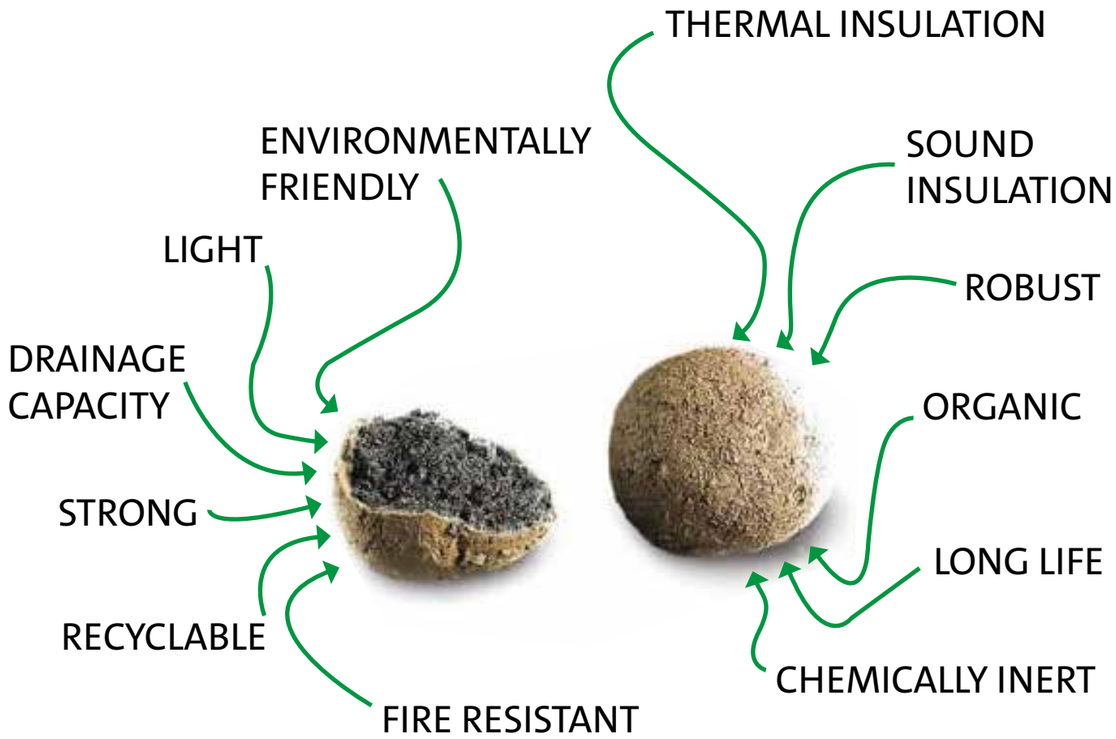
Kneading: The clay is kneaded with a little water to facilitate processing.

Drying: The clay passes through the first section of the oven, the 'drying oven', where the water evaporates and the clay is heated to 400 ° C. This is where the Leca® balls get their size, as the clay breaks into smaller grains.

Burning: In the next section of the oven, also known as the 'stove', the clay is heated to 1150 ° C.
Thus, the expansion process begins and the light, round balls of LECA LWA are formed. To fuel this process a combination of coal and waste fuel from other industries is used.

Sieving: When the LECA LWA comes out of the oven, they are placed in a sieving system which divides the material into nine different fractions based on their grain size.

Packing: Finally, the LWA is packed into sacks or loaded onto trucks directly, and then delivered to the customer.



HOUSING

- **Light leveling layer**
- **Minimal use of construction machinery**
- **Pneumatically delivered directly from the truck**

1

Slabs (execution)

By using Leca® LWA in your slab, you get a layer that is both draining, insulating and capillary breaking, and can be used for piping, radon suction and straightening.
The layer of Leca® LWA adapts to the substrate and can be applied directly onto sustainable soil. The LWA systematically adapts close to the pipes, pipe penetrations and along foundations and avoids thermal bridges.

Leca® Coated is pneumatically delivered directly from the truck to the point of application and is laid with an extra height equal to approx. 7% of the layer thickness. When Leca® LWA is applied, the entire layer is leveled to the desired thickness - for example with an asphalt scraper.
Leca® Coated can be laid and vibrated in approx. 40 cm thick layers. Larger layer thicknesses are laid out and vibrated into layers. Two crossings with a small plate compactor with 70 kg per laid-out layers can usually provide an adequate compaction.

To assist in laying out Leca® Coated, the top “kote” of the layer before and after compaction can be marked with laser and plate foot stage.
On top of this, if necessary a welded wire mesh and a geotextile can be applied to separate the concrete and the LWA. The Leca® LWA are compacted into place with a plate compactor and then you are ready to “make” you concrete floor.
If desired, you can apply the first layer of pressure-resistant insulating plates directly onto the LWA. You can then apply the plate vibrator directly on top of the insulating plates.

Product: Leca® (10-20mm)

Slab (structural element)

Slab is the term for the house's floor construction when it is built directly on the ground. Leca® Coated naturally forms part of this design as a capillary-breaking, heat-insulating, robust and pressure-relieving layer. The construction is often carried out in tandem with pressure-resistant insulation.

Leca® Coated is a specialized product that combines capillary breaking and heat insulating properties. The coating gives water-repellent properties, and in short, the result is that the suction from the soil is already stopped by the lower laying Leca® grains.

The capillary breaking layer must be at least 150 mm, cf. DS 436, "Standard for drainage of buildings, etc.". The guide text states: 'The thickness of the capillary breaking layer should be twice the capillary rise height of the layer, but no less than 150 mm'.

The structure of the individual Leca® grains with many small air-filled cells gives Leca® Coated good thermal insulating properties and due to the coating, only the lower 75 mm must be considered moist when calculating the thermal insulation. Because Leca® LWA is a loose material, it adapts to unevenness in the soil and around pipes and installation as well as along the foundations.

By using Leca® Coated as a capillary-breaking and pressure-relieving layer, you avoid thermal bridges and can reduce the amount of overlying insulation - or get a better thermal insulation.

When Leca® LWA is incorporated, there will be voids between the grains. This cavity constitutes approx. 40% and is ideal for pressure equalization or radon suction, so radon gas can be discharged.

Leca® LWA is an inert, robust material that is resistant to rot, fungus or insects. The product cannot be degraded by water, acids or bases. By using Leca® Coated as part of the slab, you get a solution that does not change properties over time and a basis for your building.

- **Capillary layer**
- **Radon suction throughout the building**
- **A subsidy for overall insulation**

2#

Radon protection

Since 2010, it has been legal obligation to secure houses against radon, which is a naturally occurring radioactive gas that seeps into housing from the underground. A high concentration in the indoor air increases the risk of lung cancer, and radon is therefore a health risk that can and must be eliminated.

Thanks to the many voids in and between the porous Leca® LWA, it is possible to make a relatively simple radon suction in both new construction, but also in homes that already have Leca® LWA in the slab.

Through applying effective radon protection of the building in the design, it is possible to use some simple solutions that are both rational to execute and that are robust and long-lasting for the benefit for future proofing buildings.

If the home is already insulated with Leca® LWA, you can also make a radon suction. However, at a high concentration, it may be necessary to install an active suction to get enough air replacement.

Product: Leca® (10-20mm)

The solution for both new construction and renovation of older buildings:

- In the slab, Leca® Coated is added as the capillary-breaking layer, and in this layer the radon suction tube is added.
- The pipe is led up through the housing structure and out through a fall stem vent in the roof of the house.
- The difference in temperature between the LWA under the floor and in the heated house creates a chimney effect, causing the air to rise and leave through the chimney.

- **Functional requirements and freedom of method**
- **Radon suction throughout the building**
- **Passive and active suction**

Did you know...

that about 300 people die from radon-related lung cancer each year in Denmark?

3#

Building on soft sub-soil

If you build a house with soft and poor ground conditions, a pile foundation is typically recommended. But maybe there is a cheaper alternative, which also has several benefits.

The method is called “Plate foundation with load compensation” and is quite simple to perform:

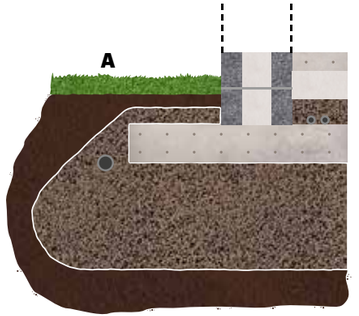
- Calculate the weight of the house and replace a similar amount of soil with Leca® Coated. Typically, it is a soil layer of 70 - 90 cm.
- Over the layer of Leca® Coated, a load-distributing double reinforced concrete slab is cast on which the house is built.

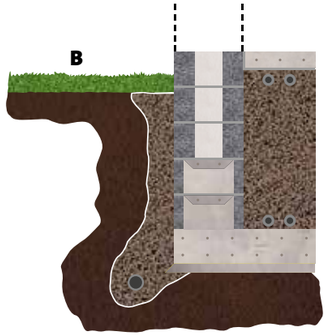
This method does not require special machines and at the same time, the Leca® layer contributes to effective insulation of the slab, furthermore, a capillary-breaking layer is established and a radon suction layer is made, so that only a radon suction must be connected.

In addition, there is also a layer which make it is easy to create a piping system under the building, without having to cut the insulation plates.

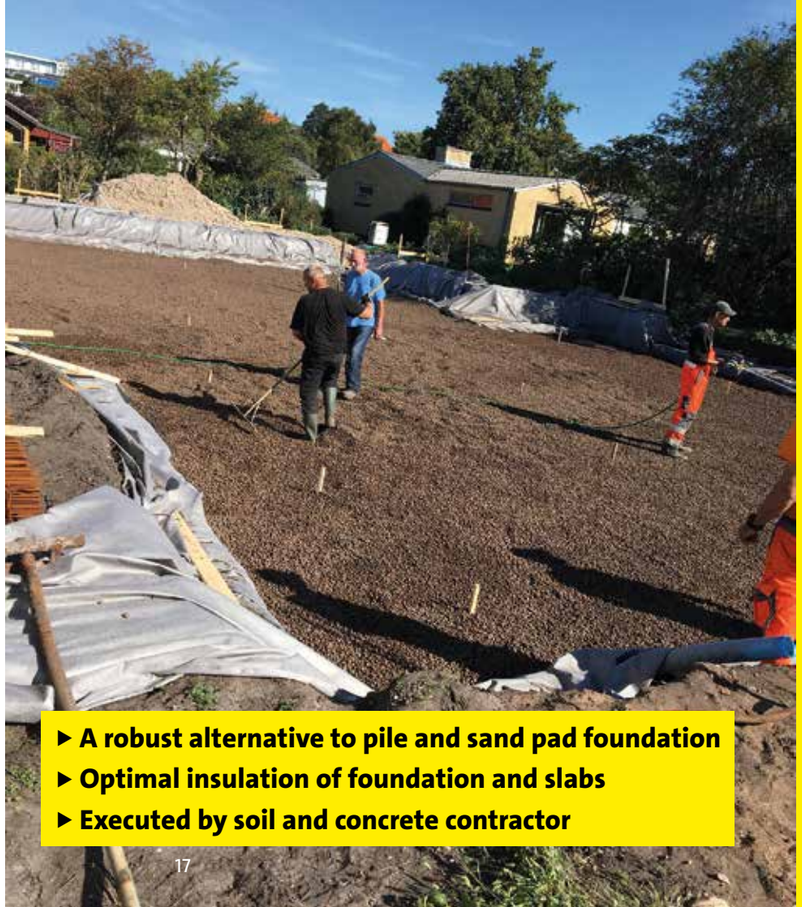
Another advantage creating load compensation with Leca® LWA rather than pile foundation is that the method does not cause nuisance to surrounding houses and, in the worst case, pile frame damage.

Product: Leca® (10-20mm)

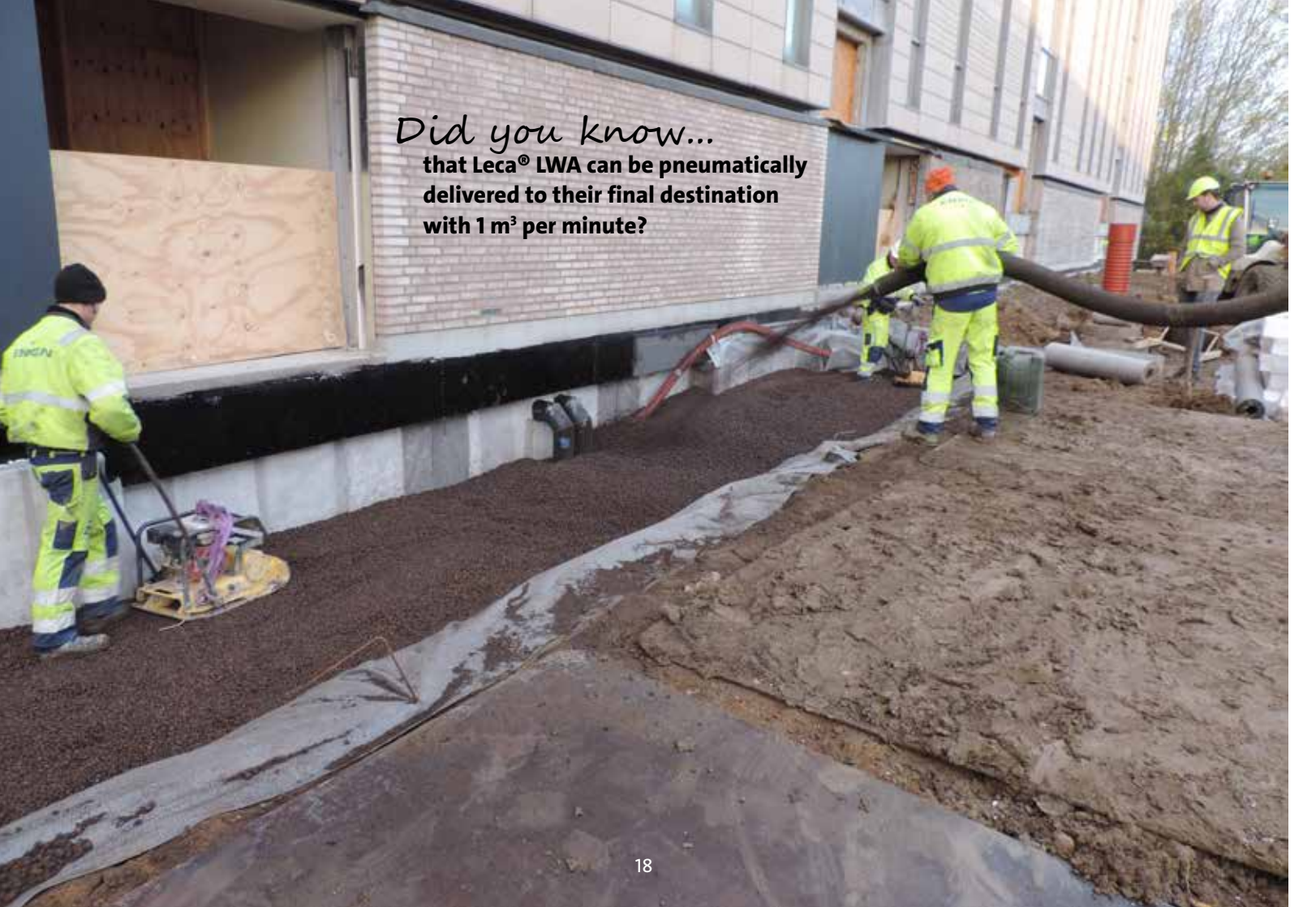




At high groundwater level, the load distributing concrete slab is typically placed as sketch A and at low groundwater level it is placed as sketch B.



- **A robust alternative to pile and sand pad foundation**
- **Optimal insulation of foundation and slabs**
- **Executed by soil and concrete contractor**



Did you know...

that Leca® LWA can be pneumatically delivered to their final destination with 1 m³ per minute?

#4

Drainage

Leca® LWA is an effective drainage material that can be used for several drainage purposes.
The high void capacity percentage of 39% is obtained when the predominantly round Leca® LWAs are sorted into grain sizes of, for example, 4-10 mm and 10-20 mm. In practice, this means that water can pass very effectively between Leca® LWA both vertically and horizontally at the same time.

In order to maintain the high void percentage, Leca® LWAs must always be kept separate from soil and sand by wrapping it in a geotextile.

Even when Leca® LWA contains moisture, it contributes to an insulating effect and, in addition, they are pressure-resistant and robust, and will not degrade over the next several years.

Last but not least, the Leca® LWA are easy to handle in both large and small quantities.

Product: Leca® (10-20mm)

- **Very effective drainage material**
- **Pressure-resistant drainage layer**
- **Frost proof high ground drain**

#5

Ventilation Drain

To be built on contaminated soil, a ventilation drain is a simple way to avoid the harmful vapors. The slab is built up with Leca® LWA, which gives the LWA contact with the polluted soil.

Pipes that are lead through the structure up to the roof are laid in the LWA layer. Through these pipes a passive suction is created, and replaces the polluted air with clean air. In addition, an air intake solution is created, which exits through the basement wall and up to fresh air.

The large air permeability in Leca® Coated means that you can simply vent large quantities of air with passive suction. If more air is needed, an active suction can be installed.

In addition to being a draining layer, the LWA layer is also both capillary breaking and heat insulating and can also be used as a plumbing layer.
Leca® Coated meets the requirements of DS 430 for lateral support / refilling of plastic sewer and drain pipes.

Ventilation drainage with Leca® LWA is a simple technique that is relatively simple to execute while being a reliable solution.

- **Use in construction on contaminated soil**
- **With passive or active suction**
- **Capillary breaking and insulating layers**

Did you know...

that with a ventilation drainage system, passive suction can divert contaminated air?

Product: Leca® Coated (10-20)

- Pneumatically delivered directly from the truck
- Multiple construction activities at the same time
- Multiple features in one material

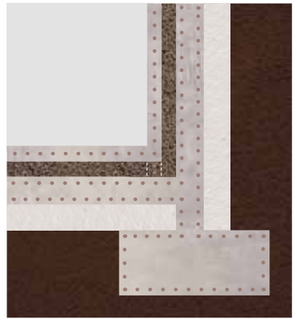
#6

Insertion Drainage

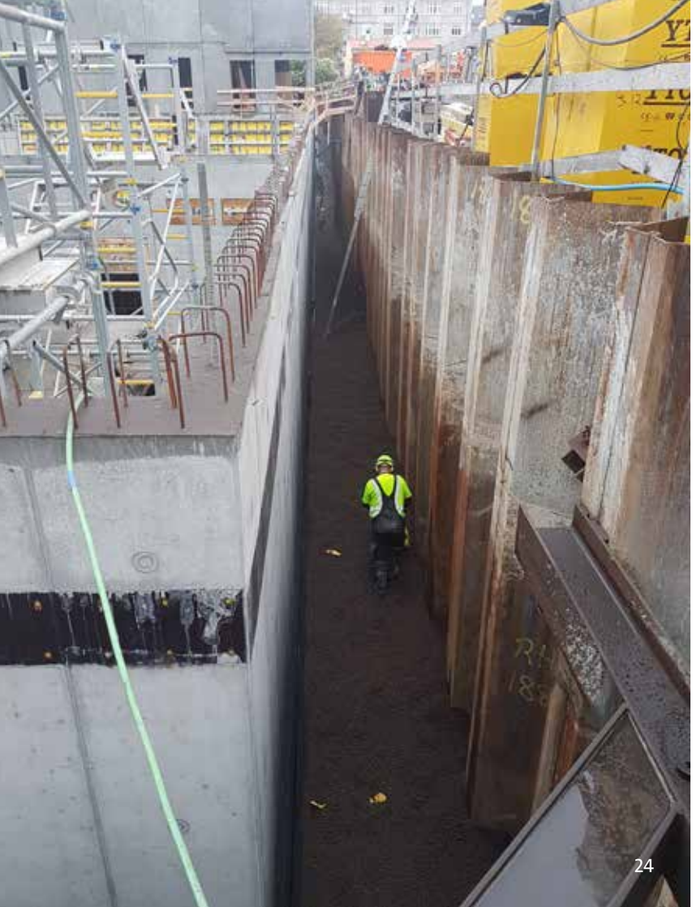
If you are going to build in an area with high groundwater level or close to water, you may risk having water running through the floor or the basement wall. This can be minimized by making an insertion drain.

Briefly, an insertion drain consists of an “extra” concrete box which is molded around the basement walls and floors, and between these two boxes Leca® LWA are laid. The water that may pass through the first wall is drained by the LWA and led down to a drain at the bottom.

The Leca® LWA can be pneumatically delivered by our blowing truck and “blown down” between the 2 layers of concrete at 1 m^3 per minute. It therefore only takes 2 people to lay out the LWA - one to hold the hose and one to move it.



Product: Leca® (10-20mm)



7#

Filling in between sheet pile wall and basement wall

In the case of building where sheet pile iron has been placed to build a basement, it must subsequently be filled up between the sheet pile wall and the basement wall. The filling can have different purposes in addition to filling the hole, and often heat insulation and drain must be built into the filling.

For this, Leca® LWAs can advantageously be used as it is heat insulating, draining and robust. As Leca® LWA is a loose fill product, it adapts to both basement wall, sheet wall and drainage pipes as well as similar installations.

Another obvious advantage of using Leca® LWA is the form of delivery, as the LWA can be pneumatically "blown down" between the walls via a hose directly from the truck. You can deliver up to 100 m^3 of Leca® LWA within 2 hours. Furthermore, you do not have to work under tight conditions.

Product: Leca® (10-20mm)

- **Multiple construction activities at the same time**
- **Pneumatically delivered directly from the truck**
- **Multiple property features in one material**

#8

Exterior insulation of basement wall

Old basement walls are often uninsulated and, as a result, can be cold and damp. By insulating the exterior of the basement wall, the heat loss from the basement is reduced, the temperature of the basement wall is increased, thus reducing the risk of internal condensation on the basement wall and moisture in the basement. All in all, a better indoor climate and lower energy consumption can be achieved. By insulating the exterior with loose Leca® LWAs, effective drainage of the basement wall is also achieved.
It is recommended to use Leca® Large for the post-insulation of basements as it provides the best heat insulation and at the same time the best drainage solution. As Leca® LWAs resistant to damage to rot, fungus or insects and cannot be degraded by water or frost, they are ideal for use in the post-insulation of basement walls. By insulating with just 30 cm Leca® Large on an uninsulated basement wall, you can reduce heat loss through the wall by 2/3!

How to:

- A trench is dug along the basement walls. This trench must not be deeper than the underside of the basement wall foundation.
- If necessary, repair the basement wall so that it is impenetrable to rainwater.
- A geotextile is placed on the ground both at the bottom of the trench and towards the side, so that Leca® Large will not be mixed with the soil later.
- Fill a minimum of 100 mm of Leca® Large at the bottom of the trench as the substrate for the drain line.
- The trench is then filled with Leca® Large, which is compressed by compacting the layer thickness to 300-400 mm at filling. Leca® Large adapts to the unevenness of the wall and the trench.
- At the top, the filling is covered with a cover which can be for example building paper. The cover has to “drop/fall” away from the house.
- Along the basement wall, the cover is bent up and sealed to the base with adhesive asphalt or a covering strip.
- Finally, a top filling with garden soil is added.

Product: Leca® (10-20mm)

- **Better use of basement**
- **Less energy consumption**
- **Multiple features in one material**

9#

Retaining wall and backfill

When building a house or a garden on a sloping terrain, retaining walls are often made to create some horizontal surfaces in the terrain to either build or reside on.

Leca® LWA can advantageously be used as filling behind the wall for several reasons.

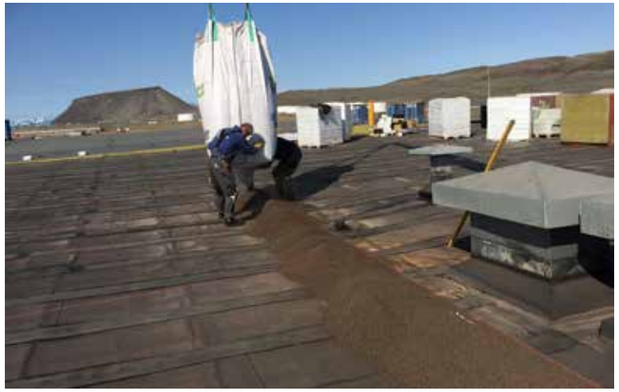
The pressure from the ground at the back of a retaining wall can be heavy and can cause cracks. Ordinary soil fill can also contain some water which can soak up the wall if it is not drained away.

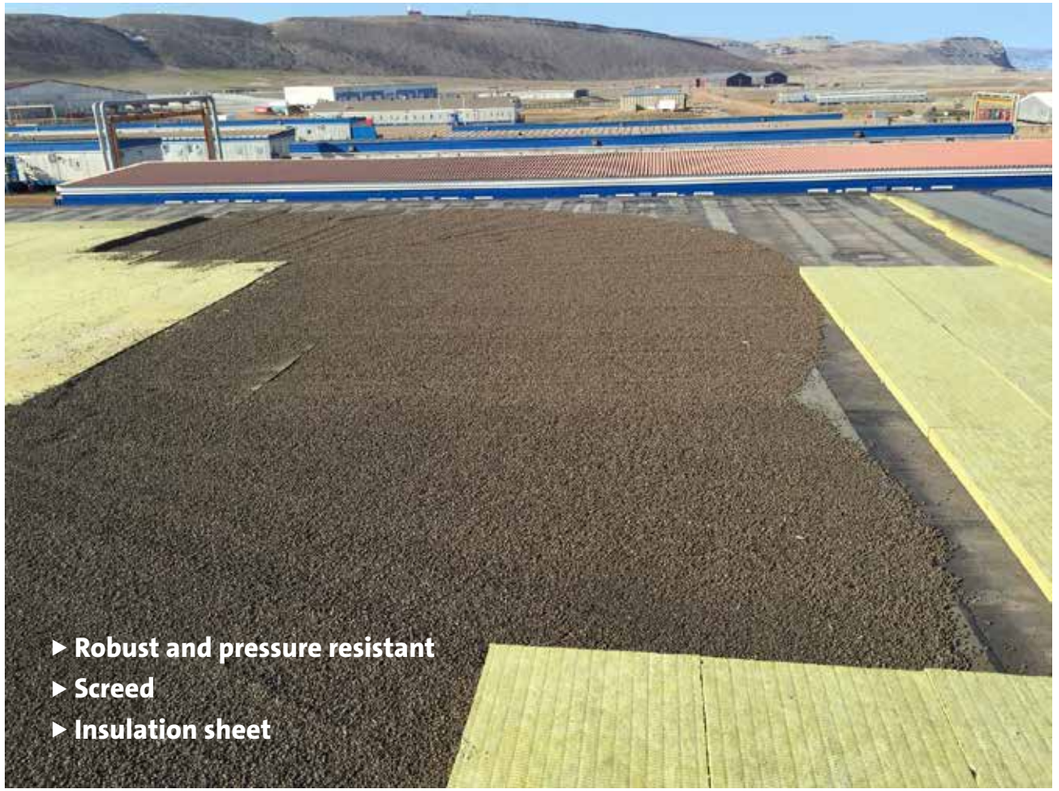
By filling Leca® LWA behind the wall, the pressure on the wall is reduced considerably due to the low weight of the light tiles compared to soil. This can mean that the wall can be built higher or with a reduced thickness. The LWAs also ensure a good drainage of the retaining wall, thus reducing the risk of wetting the wall and at the same time freezing the soil behind the filling.

The low weight makes it easy to incorporate the Leca® LWA. A non-woven fabric is laid up against the excavation and the back of the retaining wall, and when the LWA is built in, the cloth is folded over the top of the backfill so that it is fully wrapped. This is done so there is no mixing with the fine particles from the soil.

Product: Leca® (10-20mm)

- **Reduces the soil pressure on the retaining wall**
- **Effectively drains water to the drain**
- **Enables you to build higher retaining walls**





10#

Flat Roofing

Unevenness on flat roofs can be remedied with Leca® LWA.
For the smoothing out of large as well as small joints and other bumps on roofs, you can advantageously use Leca® Small either as loose material or mixed with bitumen.

On flat roofs where the insulation has settled or where there is water for other reasons, the roof can be leveled by laying out a layer of Leca® Small as a substrate for roofing paper. If desired, a decrease in the Leca® LWA can also be built up. To get a stable backing, the Leca® LWA is compacted before the roofing felt is mechanically fastened.

The product is easy to work with because it is a lightweight material and therefore is also easy to lift up on the roof. By using Leca® Small you can achieve a robust, heat-insulating and fire-proof substrate for the further roof construction.

The advantages of using Leca® Small are:

- Lightweight material
- Easy for the contractor to handle
- 50 liter sacks
- Fire resistant

Product: Leca® (10-20mm)

INFRASTRUCTURE

- Is easy to perform
- Long lasting durability
- Minimum maintenance

11#

Roads on a soft sub-soil

When building roads in areas with soft sub-soil, it is important to ensure that the road does not settle when it is loaded with traffic. A proven solution to this is to compensate for loads.

Leca® LWA has a low density compared to traditional fillers. This gives less pressure on the sub-soil and allows for slimmer or more stable structures and systems.

Load reduction with Leca® LWA is a well-known technique and is a proven solution. As very difficult soil conditions are often encountered in the construction of roads when using Leca® LWA, the designs require soil investigations.

Based on traffic load calculations, a layer of the underlying soil is removed and can be filled up with Leca® LWA, which is then subsequently compressed – creating a road which can be made on top of that.

Product: Leca® (10-20mm)

#12

Bike paths on soft sub-soil

When making bike paths through meadow and marsh areas or other weak soft-bottomed areas, Leca® LWA is a solution that eases the work.

You can simply place a piece of geotextile directly on the ground, fill in Leca® LWA, compress with a small plate compactor or belt vehicle and seal the geotextile at the top.

Then you are ready to build a bike path in the traditional way without the risk of problems with settlements.

At first glance, this may seem like a costly solution, but in return you do not have to continuously repair damage, which is often the case over a period of 10-15 years when using traditional aggregates. At the same time, you do not have to excavate as much soil within the ground when applying Leca® LWA.
Load compensation with Leca® LWA is a proven technique, which of course requires a thorough preliminary study of soil conditions.

Product: Leca® (10-20mm)

- ▶ **Simple technology**
- ▶ **Easy to perform for the contractor**
- ▶ **Does not require special machines**

Did you know...

that 1 m³ of soil weighs 1800 kg while 1 m³ of Leca® LWA weighs only 400 kg. So you ease load pressure by 1400 kg for every m³ you replace?

13#

Subsidence damage - roads that sink

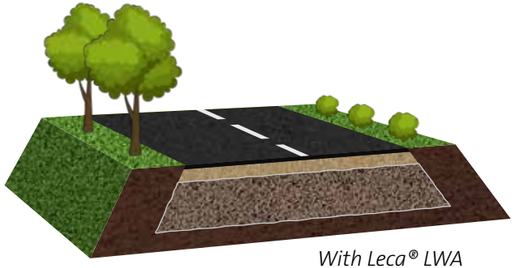
Local subsidence damages to roads, parking lots, cycle paths and paths is a problem because the underlying and load-bearing soil layers cannot support the load increase that was formerly applied in the form of crate (stable gravel) and asphalt.

Subsidence damages develop continuously as they can reach as much as 1.5 meters when allowed to develop over many years. Large subsidence damages can eventually mean that, for example, a road must be closed for safety reasons or because water is present on the roadway.

The annual setback damage can be completely or partially eliminated by relieving or replacing the heavy soil under the road construction with Leca® light fill, while raising the roadway.

In the same work process, the drainage system for road water can be restored with the desired construction design.

Without Leca® LWA



With Leca® LWA

- **Robust solution that does not fail**
- **Cost effective alternative to other solutions**
- **Does not require annual maintenance**

Product: Leca® (10-20mm)

14#

Remedying difference settlement

When you compensate for load under a house before you have build it, it is important that you can achieve load compensation before you build an outbuilding, garage and the like. Otherwise, you may find that the buildings will settle differently and that assembled parts, such as sewer pipes and the like will be destroyed.

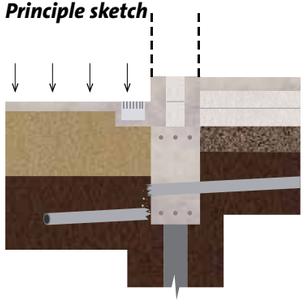
In the transition between pile-based buildings and access roads, problems with differential settlement can easily arise if this was not taken into account when the building was raised.

Especially in recent years, there have been several problems with differential settlements where level-free access has been established.

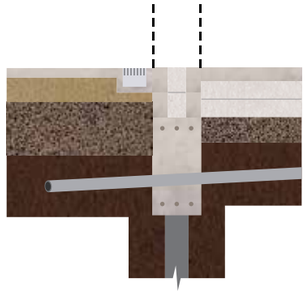
With the use of Leca® light fill, problems with differential settlement can easily be avoided so that they do not occur. The builder also saves many costs for the reorganization of sewage systems, rainwater pipes, cables and coatings.

- **Between pile foundation and direct foundation**
- **No settlement damage to sewer lines**
- **No cable damage**

Principle sketch

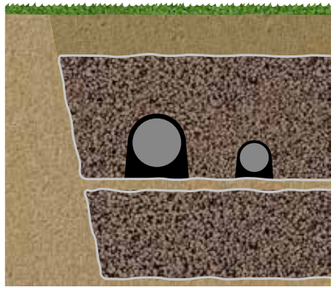


Without Leca® LWA



With Leca® LWA

Product: Leca® (10-20mm)



Did you know...

that Leca® light fill should always be kept separate from sand and earth with a geotextile?

15#

Sewage in soft sub-soil

To compensate for load over sewer pipes in areas with soft sub-soil conditions, it is advantageous to replace the heavy wet soil with a layer of Leca® LWA.

Around and above the sewer pipes, Leca® LWA can be in-filled, which compensate for load and furthermore meets the requirements of DS 430 for lateral support and refilling of sewer and drain pipes in plastic.

In addition, the solution has the advantages of keeping it frost-proof, keeping rats at a distance and being a pressure-resistant and robust solution.

Leca® LWA should always be wrapped in geotextile to avoid mixing with the surrounding soil.

Product: Leca® (10-20mm)

- **No settlement damage to sewer pipes**
- **Approved side support and backfill**
- **Easy for the contractor to perform**

#16

Light rail track

In the construction of multiple kilometers of light rail tracks, it is almost impossible not to hit an area with soft sub-soil. Fortunately, there is a relatively simple solution to this challenge: Load compensation with Leca® LWA.

Load compensation is a proven solution for many different infrastructure solutions. The Leca solution is used at both Aarhus Letbane and Odense Letbane. Here, in areas of soft sub-soil, a layer of heavy soil has been removed and replaced with Leca® LWA. This makes it possible to build the light rail on top of the LWA without adding additional load to the underground.

The lightweight layer is wrapped in geotextile to keep it in place and avoid being mixed with soil, sand and other impurities.

The principle of construction is the same as the rebuilding of roads on a soft ground.

- **Proven solution**
- **Reduced the amount of excavation work**
- **Lasts for many years**

Product: Leca® (10-20mm)

Did you know...

that just 70 cm of soil replaced with Leca® LWA significantly reduces overload to the soil?

- Less load on sheet piling
- Smaller settlements of quay areas
- Easy to incorporate

17#

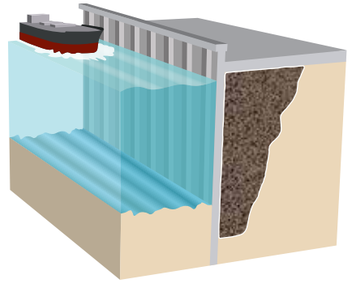
Ports

Several consultants and contractors have over the years chosen to use Leca® LWA for harbor construction. Leca® light fill is an alternative to the more traditional materials that are normally included in this type of construction. An application that can ultimately contribute to a surprisingly cost effective project when the opportunities and conditions in each port project are present.

The most traditional filling product used in harbor construction is of course sand filling. But this filler has the property that it weighs quite a bit, and then it has a high capillary pitch. Properties that contribute to relatively large tensile and compressive forces as well as large moments in the structures characterized by quay structures.

For port building where Leca® light fill is used, we typically see that Leca® Large has been used for installation above wa-ter level (built-in effective room weight here is 4.25 kN / m^3). For installation under water level, Leca® Trans 2 is particular-ly suitable. This product has a slightly larger effective room weight than water, which means that it is lowered, for the most part, immediately to the bottom (built-in effective room weight under water is 3.60 kN / m^3).

Leca light fill gives less pressure on the sheet pile and thereby can save on anchor rods, anchor plates, sheet pile and the like.



WATER MANAGEMENT

- Drainage layer under grass roof and sedum roof
- Can be inflated on the roof directly from the truck
- Easy to install and handle

18#

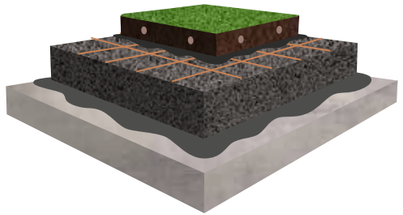
Green roofs

Green roof gardens with an underlay of Leca® LWA are an effective weapon in the fight against heavy amounts of rain. Leca® LWA can be used in the mixture for the growth medium, as well as for storing and draining rainwater, thus effectively delaying the discharge to the sewer systems. Rainwater drainage or retention can be optimized using different types of Leca® LWA.

The LWA can be pneumatically delivered directly onto the roof and used to create the garden design. It only takes two men to place the LWA in the right place with the blower hose.
In addition, the Leca® LWA can be used for alignment of fall, insulation against heat and cold as well as a plumbing pipe layer.

The advantages of using Leca® LWA in the roof gardens are:
- Natural, lightweight product
- Neutral and inert
- Supports root growth
- High conductivity
- High water capacity
- Frost-proof
- Structurally stable
- Stable quality
- Good heat and sound insulating properties
- Fire resistant
- Easy to install and handle

Product: Leca® (10-20mm)



Product: Leca® (10-20mm)

19#

Roof gardens and roof terraces

Leca® LWA is the ideal material choice for building roof gardens and terraces. The low weight does not require the extensive support on the underlying deck as other fillers do.

The LWA can be pneumatically blown directly onto the roof and used to create the garden design. It only takes two men to put the LWA in place with the pneumatic blowing hose. At the same time, the LWA layer can be used as a piping layer.
When green roofs are used as recreational and more flexible areas, there will often be a need to build slopes and variations in terrain. Low weight solutions are preferable to avoid the extra load that puts limitations to the underlying construction.

The materials can be simply pneumatically delivered with blowing equipment and then covered with geotextile and reinforced wired mesh to stabilize the entire construction. The remaining layers can be shaped like normal green roofs. During pedestrian paths and other areas of traffic, it may be necessary to compact with a small plate compactor. The final paving of the footpath can be, for example, paving stones or gravel.

Leca® LWA can be used on all flat or slightly sloping roofs of buildings, over parking garages, etc. There are many reasons to choose Leca® LWA for roof gardens and terraces:

- Natural, lightweight product
- Neutral and inert
- High water capacity
- Frost resistance
- Structurally stable
- Stable quality
- Good heat and sound insulating properties
- Fire resistant

- **Slope building and alignment**
- **Can be inflated on the roof**
- **An effective drainage material**

20#

Urban spaces

Leca® LWA is an excellent material for building urban spaces. Whether it is a green roof on top of a parking garage, a skate park or something completely different, Leca® LWA can be used to shape the terrain and create the urban space.

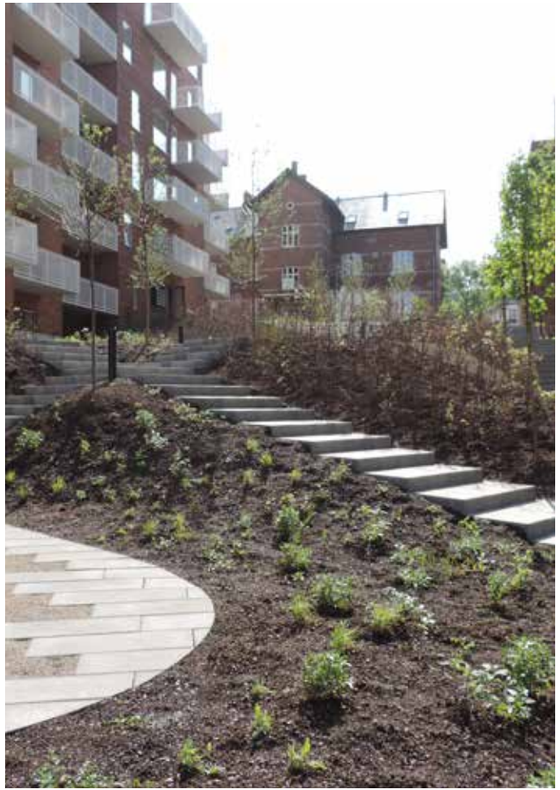
A parking lot does not need not be a gray and dull space on the cityscape. It is designed to accommodate vehicles underground but the surface above can create a green space for the benefit of the citizens of the city.

For this area it is ideal to use Leca® LWA to build an urban and green space, as the product is much lighter than soil and therefore does not overload the concrete deck as other materials might.

At the same time, the LWA layer is excellent for storing large amounts of rainwater which can prevent flooding.

Product: Leca® (10-20mm)

- **Design of urban space**
- **Water retention**
- **Lightweight**



21#

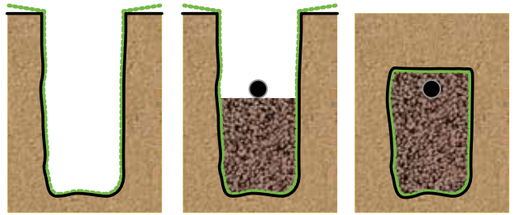
Fascines

A fascine leads rainwater around the sewer system and lets it seep directly into the ground. If you are building an extension, a garage or building a place that is far from the sewer network, it may be an advantage to make a machine.

A Leca® fascine is made - in short - by digging a hole, lining it with geotextile and filling it with Leca® LWA with 40 cm of soil laid on the top.
The size of the fascine depends, among other things, of the type of soil and amount of rainwater being added.

Fascines can be both connected to roof drains and used for draining rainwater from, for example, paving.

In many areas you can get support from a subsidy from the municipality when you install a fascine because it reduces the pressure on the sewer system.
Leca Denmark produces 2.5 m3 big bags with Leca® LWA. The bag itself is made of a water-permeable material that does not dissolve in soil. Therefore, Leca® big bags can be used as a fascine, just needing a hole for the pipe.



Product: Leca® (10-20mm)

- Longer run time between return rinses
- Reduced operating costs
- Cleans 20 m³ / hour

22#

Purification of drinking water

Drinking water is made from groundwater that is pumped up from the underground. After that, the water is usually treated at a water plant before being pumped out to the consumers taps.

The filter material Filtralite® Pure is Leca's product for drinking water systems, as it is ideal for filtering raw water or coagulated water in mono- and dual-media filters.
The material has a high porosity and provides the perfect conditions for the flow of water through the filter basin without compromising the ability to bind foreign matter.

Compared to traditional filter materials such as sand and anthracite, Filtralite® Pure provides high porosity:
- a lower initial back pressure
- a slower build-up of back pressure
- a greater ability to bind particles
- fewer return rinses

These advantages result in a much longer production time between the return rinses, which means reduced energy and water consumption as well as higher water production and thus reduced operating costs.

Product: Filtralite® Pure

There is no need to rebuild or expand when replacing traditional filtration materials with Filtralite® Pure. The material can be implemented in filters with both mono and dual configurations, combining two types of Filtralite Pure filter materials with different densities and sizes. This increases return rinse intervals and production capacity.

Filters with Filtralite® can filter within a wide speed range. The filtration rate will always depend on the configuration of the filter and the purification process. Existing Filtralite® filters handle up to approx. 20 m³ / hour.

23#

Wastewater treatment

Wastewater comes from homes and industries and are led through our drains to sewage treatment plants where the pollutants are decomposed and removed to such an extent that they cannot harm the environment. The purified wastewater is either discharged into streams, lakes, the sea or immersed into the soil.

Filtralite® Clean is Leca's product designed for wastewater treatment plants and is suitable for biological treatment.

The filtration material Filtralite® Clean has a high porosity, which provides perfect conditions for biological growth and for the flow of water through the filter basin. Thus, larger amounts of water can be filtered through a given filter volume as the contact surface becomes larger.

In biological filters, the growth of biomass on the Filtralite® material occurs.

Existing Filtralite® filters handle up to approx. 15-20 m^3 / hour.

Filtralite® Clean provides:

- a large filter surface for biological growth combined with high porosity
- a large number of macropores
- a very efficient process per year/ unit volume
- lower density than traditional filter materials
- high abrasion resistance

Product: Filtralite® Clean

- Works as a mechanical filter
- High porosity
- Lower operating costs

- Effective on-site cleaning
- Removes more phosphorus than conventional filter media
- Can be recycled within agriculture

24#

Phosphorus purification

As our knowledge of rainwater and its effects on pollution improves, our requirements for the purification of among other things, oil, phosphorus and heavy metals increases.

Filtralite® Nature is a fine-grained filter material designed specifically for on-site cleaning. It is particularly suitable for the removal of phosphorus, which occurs both by precipitation at a high pH and by physico-chemical sorption.

Filtralite® Nature products are designed to provide a high P sorption ability and can achieve a high level of phosphorus removal.

When the ability to remove phosphorus is exhausted, the filter material can be replaced. The used material at this stage can still be applied as a fertilizer or soil improver.

Product: Filtralite® Nature

25#

Biological odor cleansing

LWA is an obvious choice for use in biological odor cleansing. Leca's LWA for air purification is sold under the name Filtralite® Air.

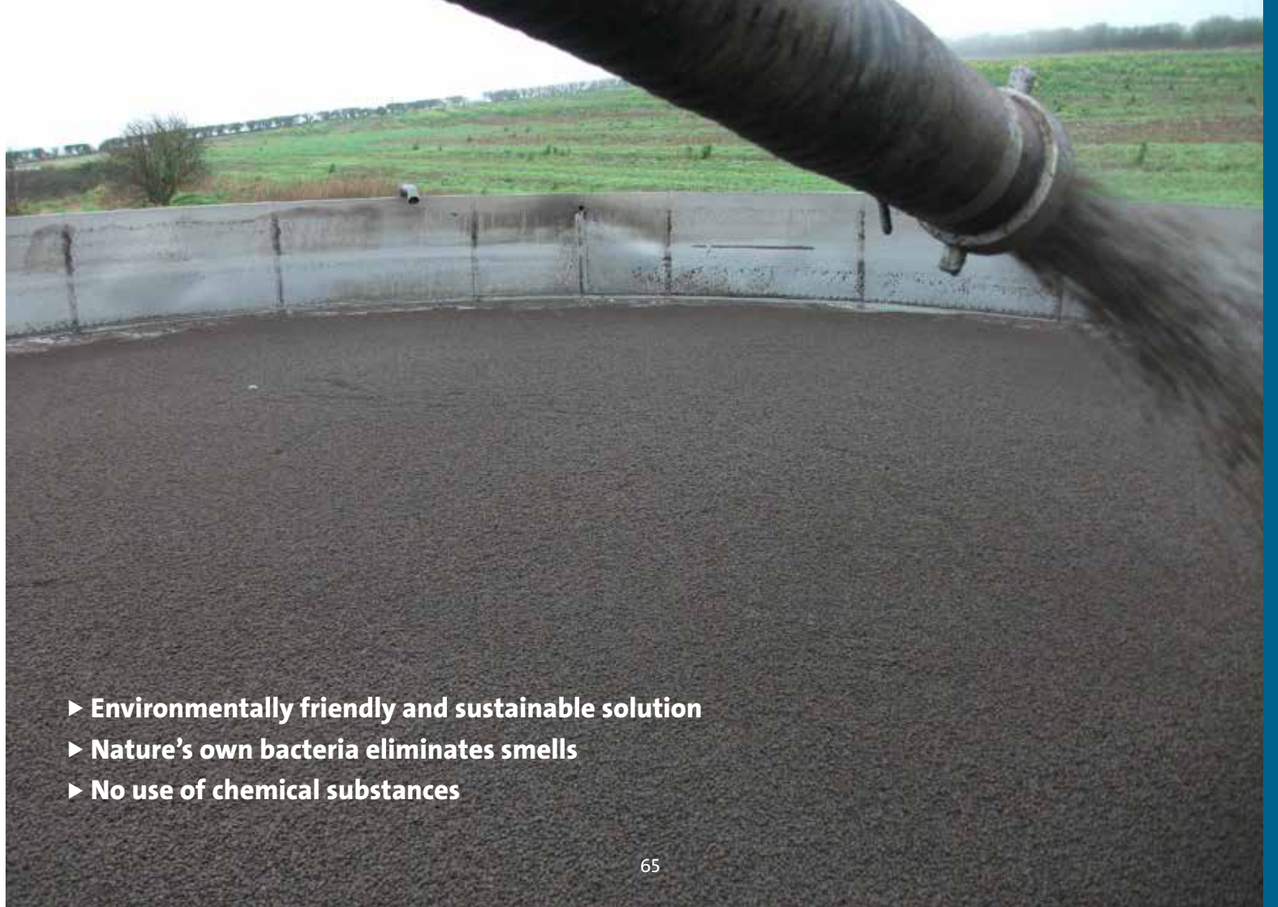
By placing a membrane on top of a slurry tank and then installing a layer of water and Filtralite® Air, you can create an air purification filter. In a short time, bacteria will grow on the LWA and the bacteria will in turn feed on the nutrients in the odor – eliminating odor in the process.

The Filtralite® grains have a large surface and a network of air-filled passages in which the bacteria can live.

This method of odor cleansing is reliable and lasts for many years. In addition, the filter material can be regenerated after use.

- Filter size is customized to the job
- Reduced pressure drop across the filter

Product: Filtralite® Air



- **Environmentally friendly and sustainable solution**
- **Nature's own bacteria eliminates smells**
- **No use of chemical substances**

THERE IS MORE...

Delivery methods

Depending on the type and quantity, there are several different delivery methods for Leca® LWA.

Leca® Flora and **Leca® Flower** can be purchased in builder's merchants, DIY and plant centers in 10 or 25 liter bags.

Leca® 10-20mm and **Leca® Coated** can be pneumatically delivered, with a tipper or delivered in big bags with 1 or 2.5 m^3.
For the smaller projects you can buy 50 liter bags in builder merchants and DIY stores.

Leca® LWA pneumatically delivered

Leca® LWA benefits from its ability to be pneumatically delivered. The LWA is blown out through a 5 ”hose at a rate of 1 m³ per minute.
The hose can gain access to almost anywhere; whether it is down in the basement, up on the roof, into a narrow backyard or on a busy construction site.
The vehicle has a 30-meter hose attached as standard, but the hose can be extended up to 90 meters.
If the availability of space is an issue on site, the truck can simply be parked outside the construction site and the hose can be passed through a 30 cm hole in the fence.
The LWA can be blown 20 m vertically - for example up on a roof or down into a basement.
The biggest advantage of pneumatic delivery is the time saving, as the LWA can be delivered specifically in place where required.
In addition, further resource can be saved for an accelerated delivery of huge amounts of material, as only 2 people are required to position, hold and move the hose.
Another advantage of this form of delivery is that several construction activities can be continued, as the pneumatic delivery truck can simply park outside the building site and reduce the amount of space required for delivery, as only the hose is required for the delivery of the material inside.

- **No reloading or storage space needed**
- **No expensive transport and delivery machines**

Did you know...

that we blow out 1 m³ of LWA per minute? And at a distance up to 90 meters from the blowing vehicle!


Leca®
A Saint-Gobain brand