Urbanscape
Green Roof System

KNAUF INSULATION
it's time to save energy

urbanscape®

Introducing...

urbanscape®

An innovative, lightweight green roof system with super high water retention capacity, designed specifically for green roofs on residential, non-residential and industrial buildings in urban areas.

Contents

Key benefits:

Lightness
8 x lighter

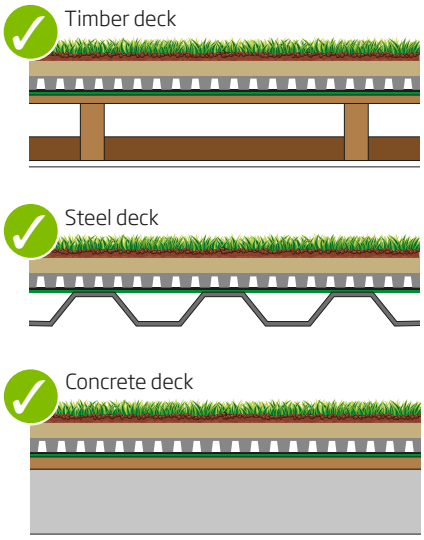
Urbanscape Green Roll being a core of the Urbanscape Green Roof System is lighter compared to the traditional soil substrate and can be used on almost any building structure without compromising the structural stability. On average Urbanscape Green Roll is 8-10 times lighter and can hold up to 3-4 times more water per its volume than other green roof substrates.

High water absorption
10x better water retention

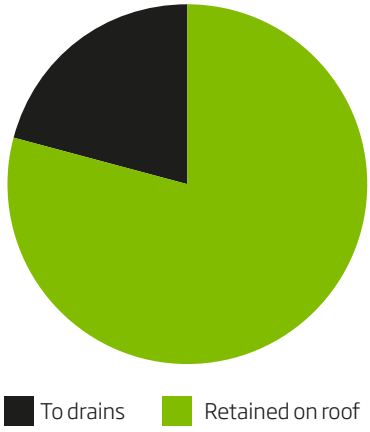
Urbanscape Green Roll provides for fast and long term stable water re-absorption and water retention performance. Depending on climate zones, different types of Urbanscape Green Roll are used.

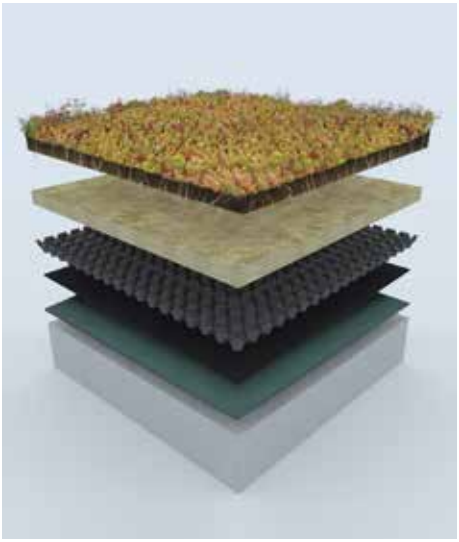
Efficient installation
2-5 tons vs 100 tons

Urbanscape Green Roll ensures significantly lower labour intensity. For sufficient water absorption capacity and appropriate growing base for vegetation of 1000 m² of green roof, 2-5 tons of Urbanscape Green Roll Substrate are needed compared to above 100 tons of traditional green roof substrates.



Stormwater retention





Other benefits:

Sustainable Solution

Urbanscape Green Roll is made from various rock mixtures which are widely available in nature. The lightweight open structure promotes extensive root distribution and plant growth.

High fire resistance

A1 Euroclass of non-combustibility is confirmed for Urbanscape Green Roll. According to EN 13501-1, Class A1 products will not contribute in any stage of the fire including the fully developed fire.

High water distribution

Urbanscape system provides for an irrigation system and the perfect water distribution between vegetation layer and the Urbanscape Green Roll. It has the advantage to save water in relation to sprinklers that irrigate on top of the vegetation.

High acoustic performance

Urbanscape Green Roof System reduces noise pollution through surface absorption and provides mitigation of unacceptable noise levels that affect health, safety and the well-being of the urban population.

Complete solution

Urbanscape Green Roof System is provided with complete, easy to install layers delivered directly to the customer. Due to the use of new innovative Urbanscape Green Roll, no special equipment is required for installation and maintenance.

Why Green Roofs?

The design of buildings has evolved but the function of buildings has remained constant:

- protection
- comfort
- warmth in winter
- coolness in summer

The environmental impact of buildings and green roof solutions are becoming increasingly important.

With the development of a wider view of sustainability, it is critical to remember that from a building lifecycle perspective the environmental impact of any building comes from its energy consumption during the time it is used, the use of renewable energy and the use of sustainable materials.

Green roofs go beyond the meaning of contemporary architecture and give a new value to the role of buildings within urban planning. They are designed not only to bring back the natural element in the urban environment but also to provide solutions for important issues such as stormwater management.

Types of Green Roofs

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There are two main types of green roofs

Extensive green roofs

Extensive green roofs have shallow (typically 7-10cm) soil layers. They support sedums, moss, herbs and grasses and other vegetation where low or no maintenance is required. They are the lightest type of green roof. Extensive green roofs provide attractive protection to the waterproof membrane and significantly reduce water run-off. When the green roof is completed, inspection once or twice per year is usually sufficient. Regular fertilisation (typically once per year in winter or early spring) is required to ensure proper growth and success.

Irrigation systems are not typically needed, unless there are extremely long periods of dry weather. Regular access to extensive green roofs is not normally required.

Intensive green roofs

Intensive green roofs have a deeper soil layer (15cm upwards) and a wider variety of plant types can be grown, from lawns to ornamental bushes and semi mature trees. The type of planting will determine the depth of soil required, the need for an irrigation system and the level of maintenance. Regular roof access is normally provided on this type of green roof. As a result, paved areas, walls and even water features are often incorporated in the design.

Variables	Extensive	Intensive
Vegetation	Sedum, grass, herbs	Grass, ornamental bushes, trees
Height	<15cm	25 - 100cm
Irrigation	Mostly not	Always necessary
Weight	50 - 150kg/m²	250 - 1,000 kg/m²
Walking possibility	No/Limited	Yes
Water buffer	4 - 12mm	18 - 39mm
Load capacity roof	Most normally sufficient	Requires extra strong roof structure
Maintenance	Very low	Comparable with a normal garden
Roof pitch	Up to 45°	Flat or in terraces

Green Roof Benefits

Extended roof life

Green roofs have been shown to **triple the life expectancy of the roof.** The underlying roof materials are protected from mechanical damage, ultraviolet radiation and extreme temperatures, which results in reduced maintenance and renovation costs.

Rainwater retention

A major advantage of green roofs is the reduction of storm water run-off, which leads to **a decrease of the burden on sewer systems by 70-95% in summer.** Green roofs have influence on cost reduction due to low or no need for rain-catching cisterns and similar equipment which is usually used for storm water management. Rainwater retention capability helps to limit accidents caused by heavy rainfalls.

Rainwater purification

Through natural bio-filtration, green roofs prevent contaminants and toxins from reaching streams and waterways. According to Kohler & Schmidt research (1990) **95% of the lead, copper and cadmium sulphide and 19% of the zinc coming from the rainwater remains in the substrate,** which helps to improve local water quality.

CO_2 reduction

Green roofs help to reduce the amount of CO_2 in the air, which is considered one of the most important causes of global warming. **1m² of a green roof can absorb 5 kg of CO_2 yearly.** Additionally, due to reduced energy consumption there is a further impact on carbon dioxide reduction by 3.2kg yearly.* As a perspective, 1m² of green roof can absorb the same quantity of CO_2 as a regular car would emit during a 80km drive.

Cleaner air

The plants on green roofs can also capture airborne particles such as smog, heavy metals and volatile organic compounds from the local atmosphere which has a positive effect on air quality and health of inhabitants. **Researchers estimate that 1m² of a green roof can help to absorb 0.2kg of airborne particles from the air every year**.**

Noise reduction

A green roof system provides good sound insulation, **keeps the living space quieter** and creates more pleasant surroundings in urban areas. It contributes to noise reduction in large cities, near industrial areas and airports.

Natural look

The natural character of green roofs **provides relief from the concrete construction in urban areas** and introduces substantial changes to modern architecture. According to several studies the presence of green areas has a relaxing psychological effect, helps to reduce blood pressure and lowers the heartbeat. Due to multiple benefits, green roofs substantially enhance residential and commercial property values.

Natural habitat

As urbanisation increases, ensuring biodiversity is one of the key requirements for local councils. **Green roofs can provide a habitat for various species and restore the ecological cycle** disrupted by urban infrastructure.

Usable green space

Green roofs help to provide additional green space in urban areas with limited open space and **add value to buildings.** Accessible roofs can be designed as community gardens, commercial or recreational space allowing numerous use opportunities.

Urban agriculture

Green roofs can additionally **create opportunities for urban agriculture**. They can reduce a community's urban footprint thanks to local food system creation and ensure self-reliance on food resources.

Benefit Icons Key

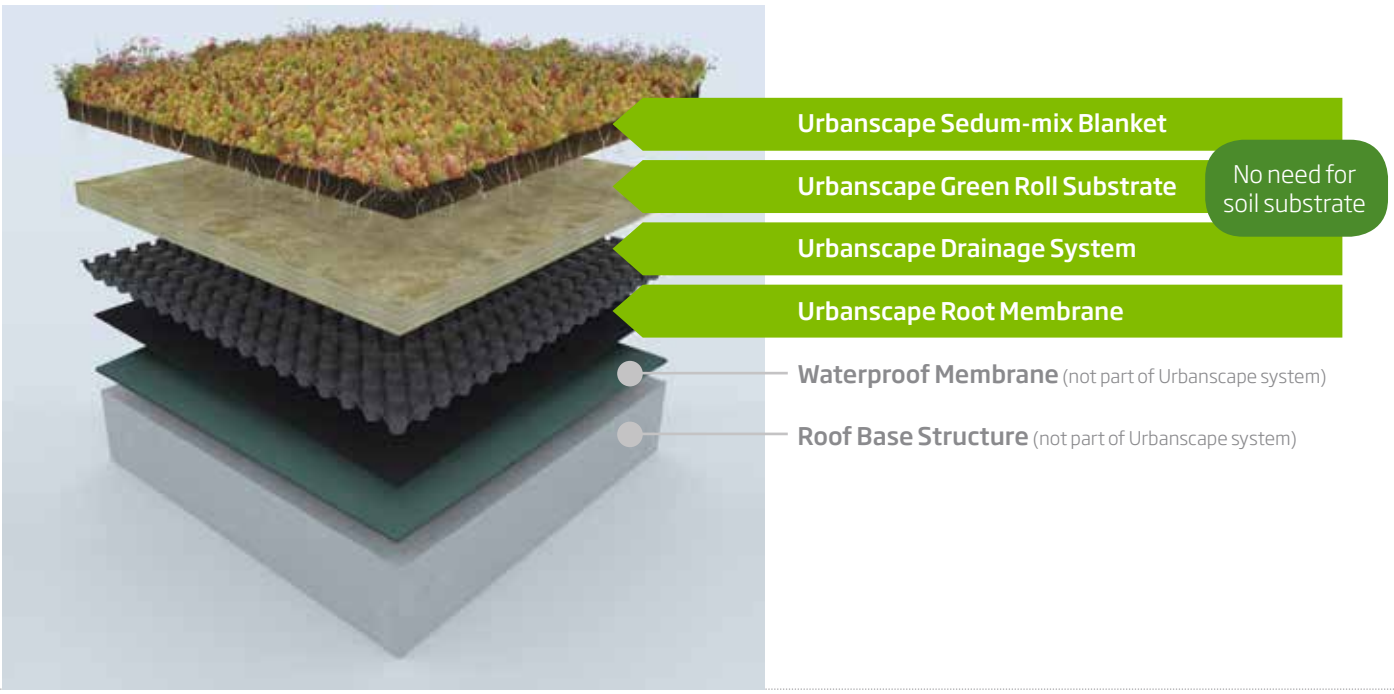
Economic Environmental Social

*National Research Council of Canada
**United States Environmental Protection Agency EPA - Reducing UHI: Compendium of Strategies

Urbanscape Green Roof System

Urbanscape is an innovative, lightweight and easy to install system with high water retention capacity designed specifically for green roofs on residential, non-residential and industrial buildings in urban areas.

Urbanscape Green Roof is a complete system, which consists of a root membrane, drainage system with buffer, Green Roll Substrate (made of a unique, patented and specially needled virgin rock mineral wool) - and a sedum-mix vegetation layer.

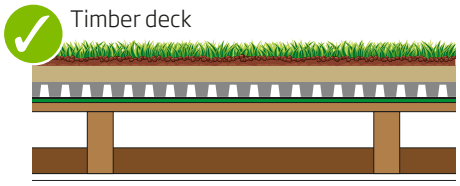


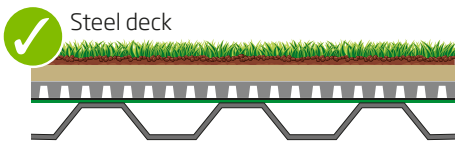
Types of roofs

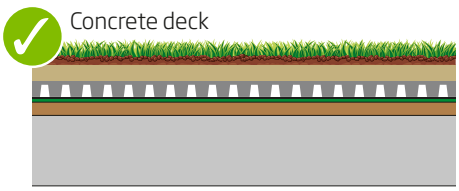
Urbanscape Green Roof System can be installed on any type of roof construction: on timber, steel, or concrete deck, inverted roof construction or any other type of material used on roofs. The green roof elements are the same in all cases, only the demands on the insulation and the position of waterproof membrane change.

Applications

Urbanscape is light enough to be installed in all these applications.







Urbanscape – Complete Solution

Urbanscape Sedum-mix Blanket

The biodegradable **Urbanscape Sedum-mix blankets** comprise eight to twelve different species of Sedum. The blankets boast at least 95% coverage upon delivery. Urbanscape vegetation blankets are produced in accordance with FLL guidelines. The sebaceous Sedum plants are adept at storing water in their leaves and are therefore extremely suitable for varying weather conditions.

Thickness	20-40 mm
Standard size	1 × 1.2 m
Max roll length	20-25 m
Weight dry	15 kg/m²
Weight saturated	23 kg/m²

Urbanscape Sedum-mix blanket

Urbanscape Green Roll Substrate

Urbanscape Green Roll is a super lightweight green roof substrate made solely of virgin rock mineral wool fibres specially needled to form a compact and dimensionally stable felt. Urbanscape Green Roll ensures excellent water retention and conservation in green roofs and is a good growing medium removing the need for traditional soil substrates. Urbanscape Green Roll Substrate is manufactured at a width of 1m, and with a thickness of either 20mm or 40mm.

Thickness	**20mm**
Water retention	17 l/m²
Weight	2.20 kg/m²

Thickness	**40mm**
Water retention	291/m²
Weight	4.40 kg/m²

Urbanscape Green Roll (HTC GR)

Urbanscape Drainage System with buffer

The **Urbanscape Drainage System with buffer** is a double sided drainage and reservoir board made from recycled high-impact recycled polystyrene with excellent load bearing capacity specifically designed for green roofs and is lighter andmore compact when compared to regular drainage layers. The panels are perforated on one side to allow high levels of water retention. This ensures the buffering of water in dry periods and rapid drainage of water in wet periods.

Height	25 mm
Width	1.1 m
Length	2.02 m
Rain water retention capacity	11.8 l/m²
Compressive strength	444 kN/m²

Urbanscape Drainage System with buffer

Urbanscape Root Membrane

Urbanscape Root Membrane is made from black LD Polyethylene regenerate foil which is used to prevent the roots penetrating in green roofs.

Average thickness	0.5 (+/-10%) mm
Width	4 (+/-2%) m
Length	25 (+/-3%) m
Size	2500 m²/pallet
Weight	0.5 kg/m²

Urbanscape Root Membrane

Installation guidelines for flat roofs

Equipment

- Scissors
- Hook cutter
- Drain basket
- Broom
- Suitable Personal Protective Equipment (PPE).

Installation & Maintenance Tips

Before installation

- For new build and renovation: check if the roof construction is strong enough to bear the extra weight of the green roof in wet conditions.
- For renovation: check if the existing waterproofing is in good condition. If the condition is poor, consider applying a new layer of waterproofing, compatible with the existing one. Always choose waterproofing with a root-resistance label.
- For new build: choose waterproofing with root-resistance label.
- Check the local green roof regulations. Special attention to local requirements for vegetation-free zone along edges, around airco-units, outlets, pipes etc.
- Comply with safety requirements for roof installation.

Materials storage

- Store all materials out of direct sunlight.
- Make sure that the weight of the materials does not exceed the load bearing capacity of the roof and building construction.

Installation

- Start installation within 24 hours from the delivery as the vegetation blankets shall not be kept more than a few days (including transport time) in rolls.
- Install the green roof in above freezing temperature and in low wind speed conditions.

Maintenance

- Fertilize the vegetation with the nutrients 1 or 2 times a year.
- The irrigation system shall be provided depending on the local climate conditions.
- Contact Urbanscape for a maintenance contract to ensure the best results of your green roof.

Step 1 : Roof preparation

Clean the roof with a broom. Check if the waterproof membrane is not damaged to ensure the water tightness of the roof.

Step 2 : Urbanscape Root Membrane

- When the waterproof membrane is not resistant to root penetration, should cover the roof with the Urbanscape Root Membrane.
- The root membrane should cover the waterproof membrane with at least 0.5 meter overlap on all sides. Lay membrane flat to avoid wind uplift.
- Cut out the root membrane where drain baskets must be installed. Do not cut directly on the waterproof membrane. For safety reasons and protection of the root membrane use a hook cutter. Do not use a sharp blade cutter or knife.

Step 3 : Urbanscape Drainage System

- Cover the total roof area with the drainage panels.
- Cut out the drainage panels where drain baskets must be installed. For safety reasons and protection of the drainage panels use a hook cutter. Do not use a sharp blade cutter or knife.

Step 4 : **Urbanscape Green Roll Substrate**

- Roll out Urbanscape Green Roll Substarte crosswise on top of the Urbanscape drainage panels. Install tightly side by side.
- Create a non covered area of 20cm from the edge of the roof, which will be used as a gravel area. (see Step 7).
- If necessary Urbanscape Green Roll can be cut to the right size (scissors preferable).

Step 5 : **Urbanscape Sedum-mix Blanket**

- Gently roll out the Urbanscape Sedum-mix blanket crosswise on Urbanscape Green Rolls Substrate.
- Start with the flap at the top. Check the position of the Urbanscape Sedum-mix blanket before rolling out.
- If necessary, the Urbanscape Sedum-mix blanket can be cut to the right size by scissors or a hook cutter.
- The Urbanscape Sedum-mix blanket must cover the total area of Urbanscape Green Roll Substrate. In case of installing gravel on the edges make sure that non vegetation area is maintained for at least 20cm from the edge of the roof.

Step 6 : **Drain basket**

- Place drain basket on drain pipes.
- Place the aluminium profile around the sedum and put the L side under the Urbanscape drainage panels.

Step 7 : **Gravel area**

- Fill up the space between edge of the roof and Urbanscape Sedum-mix blanket with gravel with a fraction size of 16-32mm.
- Make sure that Urbanscape root barrier is totally covered.
- The height of gravel should be at same level as Urbanscape Sedum-mix blanket.

Step 8 : **Post installation**

- Cut off the visible root membrane from the roof edge. Do not cut directly on the waterproof membrane. Do not use a sharp blade cutter or knife.
- Fill bare spots with pieces of vegetation.
- Water the vegetation until Urbanscape Green Roll Substrate is saturated.

About **Knauf Insulation**

Knauf Insulation is one of the leading and fastest growing manufacturers of insulation materials; our mission is to become the world leader in energy efficient systems for buildings. Building on over 30 years of expertise in energy efficiency, we are focused on providing a comprehensive range of solutions for residential and non-residential buildings and industrial customers.

We are committed to providing building materials that deliver real performance to improve sustainable construction; with the introduction of our new **Urbanscape** Green Roof System we are delivering on this commitment.

Knauf Insulation is active in more than 35 countries with 30 manufacturing plants and over 5000 employees across the globe.

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