LEED v4.1 (Leadership in Energy and Environmental Design) is a voluntary standard that defines high performance green buildings which are healthier, more environmentally responsible, and more profitable structures. Credits for certification can be earned in various categories, each with a unique focus on sustainable design: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation and design process.

KNAUF INSULATION products can put you on the right track for the highest result for certification.

<table>
<thead>
<tr>
<th>LEED Credit Category code</th>
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<tbody>
<tr>
<td><strong>Sustainable Sites</strong></td>
<td></td>
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<tr>
<td>Rainwater management</td>
<td>To reduce runoff volume and improve water quality by replicating the natural hydrology and water balance of the site.</td>
<td>Urbanscape products are a rainwater control system that helps reducing peak rate of runoff from the site. See annexe 1: Urbanscape Green Roof Performance Evaluation Tool.</td>
<td>3 points</td>
</tr>
<tr>
<td><strong>Sustainable Sites</strong></td>
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<tr>
<td>Heat Island Reduction</td>
<td>To minimize effects on microclimates and human and wildlife habitats by reducing heat islands.</td>
<td>Temperatures on the roof can be up to 45°C lower which reduce heat island effect and extend life of waterproofing (up to 50%).</td>
<td>2 points</td>
</tr>
<tr>
<td><strong>Sustainable Sites</strong></td>
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<td></td>
</tr>
<tr>
<td>Protect or restore habitats</td>
<td>To conserve existing natural areas and restore damages areas to provide habitat and promote biodiversity.</td>
<td>The Urbanscape vegetated roof is counted toward the overall restored area calculation.</td>
<td>2 points</td>
</tr>
<tr>
<td><strong>Sustainable Sites</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Space</td>
<td>To create exterior open space that encourages interaction with the environment, social interaction, passive recreation, and physical activities.</td>
<td>Vegetated roof is an open space qualified for its environmental benefits. The presence of green areas has a relaxing psychological effect, helps to reduce blood pressure and lowers the heartbeat.</td>
<td>1 point</td>
</tr>
<tr>
<td><strong>Energy and Atmosphere (EA)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Optimize Energy Performance</td>
<td>To achieve increasing levels of performance to reduce environmental and economic harms of excessive energy use.</td>
<td>Urbanscape products help reducing heating/cooling energy demand. See annexe 1: Urbanscape Green Roof Performance Evaluation Tool.</td>
<td>18 points</td>
</tr>
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**LEED version 4.1**

**PRODUCT DATA FOR CERTIFICATION**

**URBANSCAPE GREEN ROOF SYSTEMS**

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<td><strong>Materials and Resources (MR)</strong></td>
<td>To reward project including products with verified Life Cycle Assessment (LCA) and have environmentally, economically and socially preferable LCA.</td>
<td>Third party verified Environmental Product Declarations (EDPs) are available on line for URBANSCAPE Extensive Green Roof System.</td>
<td>2 points</td>
</tr>
<tr>
<td><strong>Materials and Resources (MR)</strong></td>
<td>To reward project including products verified to be extracted or sourced in a responsible manner.</td>
<td>The Knauf Sustainability Report follows the Global Reporting Initiative (GRI) structure and gives detailed information about the sourcing of raw materials and recycled content.</td>
<td>1 point</td>
</tr>
<tr>
<td><strong>Materials and Resources (MR)</strong></td>
<td>To reward project for which the products chemical ingredients are inventoried.</td>
<td>Green roll for Urbanscape products contains no ingredients listed on the REACH Authorization or Candidate list, nor Substances of Very High Concern list. See annexe2: REACH compliance letter.</td>
<td>1 point</td>
</tr>
<tr>
<td><strong>Indoor Environmental Quality (EQ)</strong></td>
<td>To provide workspaces and classrooms that promote occupants’ well-being, productivity, and communications through effective acoustic design</td>
<td>Noise attenuation originating for example from rainfall/hail on the roofs. It keeps the living space quieter and more comfortable. See annexe 3: Airborn Sound Insulation for Urbanscape Green Roof Systems.</td>
<td>1 point</td>
</tr>
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For additional information please contact **Sustainability@knaufinsulation.com**
**LEED version 4.1**

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<td>Indoor Environmental Quality (EQ) Thermal Comfort</td>
<td>To promote occupants productivity, comfort, and well-being by providing quality thermal comfort.</td>
<td>Green roof is a design alternative for thermal comfort strategy. Due to green roof’s cooling effect, and limiting sun radiation transfer through the roof there will be less heat radiation from the ceiling and air-conditioning will be minimized which will have positive comfortability feel and increased productivity for workers as well as more comfortable feel for the customer. See annexe 1: Urbanscape Green Roof Performance Evaluation Tool.</td>
<td>1 point</td>
</tr>
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</table>
Annexe 1: Urbanscape Green Roof Performance Evaluation Tool.
LEED version 4.1
PRODUCT DATA FOR CERTIFICATION
URBANSCAPE GREEN ROOF SYSTEMS

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Annexe 2: REACH compliance letter

Subject: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH); Regulation (EC) No 1907/2006.

Dear Customer

Thank you for your enquiry with regard to the following products:

- Urbanscape HTG Green Roll.
- Knauf Insulation has registered Mineral Wool Insulation, manufactured or imported by the following legal entities and used in the manufacture of the products listed above, under the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH); Regulation (EC) No 1907/2006:
  - Knauf Insulation D.O.O – Skoja Loka, Slovenia

The registered fibres meet the following definitions:

- EC number: 920-099-9
- Definition: Man made vitreous (silicate) fibres with random orientation with alkaline and alkali earth oxides (Na₂O+K₂O+CaO+MgO+BaO) content greater than 18% by weight and fulfilling one of the note Q conditions.
- Public name: MMVF note Q fibre
- Classification: Not classified (man made vitreous (silicate) fibre with and index number of 650-016-00-2 fulfilling one of the note Q conditions in the Classification, labelling, packaging regulations (CLP) (EC) No 1272/2008, as amended in regulation (EC) No 790/2009 and thus exempted from classification).

The registration is confirmed by the receipt of registration numbers for each of the listed legal entities by The European Chemical Agency (ECHA). The registration numbers are included on the relevant company product safety data sheets.

Knauf Insulation mineral wool products do not contain any substance of high concern (SVHC) in concentration above 0.1% w/w. Asbestos or Crystalline silica. Furthermore Knauf insulation mineral wool products do not contain any substances listed in the Annex XVII of the REACH regulation.

If you have any questions please do not hesitate to contact us; details below

Bruno Blik
Product Regulatory Affairs Manager
Knauf Insulation
SDS@knaufinsulation.com

URBANSCAPE HTC GREEN ROOF REACH DECLARATION - OCTOBER 2015
Annexe 3: Airborne sound insulation for Urbanscape Green Roof Systems
Evidence of Performance
Airborne sound insulation of flat roofs

Test Report
No. 15-002251-PR01
(P B X03-F01-04-en-01)

Client: Knauf Insulation, D.O.O.
Tinja 32
4220 Skofja Loka
Slovenia

Product: Flat roof as green roof
Designation: Urbanscape Green Roof

Cover:
- 20 – 40 mm Vegetation mat, m² = 23.0 kg/m²
- 20 mm Green roof substrate of mineral wool fibre, m² = 2.3 kg/m²

Insulation:
- 2nd separation layer: 12.5 mm Drainage system, m² = 0.72 kg/m²
- 1st separation layer: 0.5 mm LD PE-film, m² = 0.5 kg/m²

Vapour barrier:
- 2.5 mm EPDM, m² = 3.4 kg/m²

Supporting construction:
- 160 mm Reinforced concrete floor, m² = 400 kg/m²

Overall dimensions:
- 5,000 mm x 5,270 mm
- 216 – 236 mm

Area tested mass:
- 429.8 kg/m²

Result:
- Weighted sound reduction index $R_w$
- Spectrum adaptation terms $C$ and $C_p$

$R_w (C; C_p) = 55 (-3; -7)$ dB

ift Rosenheim
16.10.2015

Dr. Joachim Helling, Dipl.-Phys.
Head of Testing Department
Building Acoustics

Stefan Baier, Dipl-Ing. (FH)
Operating Testing Officer
Building Acoustics

For additional information please contact Sustainability@knaufinsulation.com