

Siplast Paragreen Pre-Grown Vegetated Roof Systems

Benefits and Features - Comparisons with Grown-on Systems



The Siplast approach to general roof design is focused on three basic principles: simplicity, practicality, and conservatism. This design philosophy has extended to our vegetated roof systems offering. For extensive roof design, our emphasis is on pre-grown, vegetated mat systems. While modular or tray systems are very popular in the United States, their use in European countries, where green roofing is a more established and mature market, is relatively small.

The following are summary points that highlight the benefits of a Siplast pre-grown vegetated roof system, and compare pre-grown vegetated blanket systems with modular systems.

Features and Benefits

Siplast Paragreen Pre-Grown Vegetated Mat Systems

Pre-selected sedum blend. The Paragreen Pre-grown Vegetated Mat is typically grown with a mixture of 10-11 species of sedum that will naturally evolve to match the local climate. Paragreen mats are 85% covered with living vegetation upon delivery and installation. There is no need to contract a landscape designer for plant selection.

Lightweight. Paragreen Pre-Grown Vegetated Mats weigh a minimum 3-4 lb/sf; the total green roof assembly (including waterproofing system) weighs approximately 10-25 lb/sf, depending on the particular system components used.

Easy to install. The roofing contractor can be trained to install the pre-grown vegetated mats. Quite simply, placement of the pre-grown roof system is similar to installing sod on grade. A crew of size can install approximately 5,000 sf to 10,000 sf per day. (See photos 1-2.)

Nominal maintenance. Irrigation is typically required for approximately one month following installation of the Paragreen Pre-Grown Vegetated Mats. During the first year supplemental watering may be necessary during long periods of little to no rainfall. After the initial establishment, Paragreen sedums should be fertilized every spring and fall.

Sloped roof applications. Paragreen Pre-Grown Vegetated Mats can be installed on virtually any roof slope or roof shape, including barrel roofs and special "hills & valleys" type configurations. (See photos 3-4.)

Wind resistance performance. Paragreen Pre-Grown Vegetated Systems meet the wind design requirements of



Photo 1 - Ease of Application



Photo 2 - Ease of Application



Photo 3 - Sloped Roof Application



Photo 4 - Sloped Roof

ANSI/SPRI RP-14.

Fire resistance. Meets guidelines for resistance to ignition or fire hazard according to ANSI/SPRI VF-1.

Bird hazard. No additional bird risk for airport installations.

Weed resistant. Although some weeding is required initially, the vegetated systems have a natural resistance to weed encroachment.

United States Green Building Council LEED Credits.

Paragreen Pre-Grown Vegetated Systems contribute toward the following USGBC LEED credit points:

- LEED 2009 NC Sustainable Sites SS Credit 5.2 Site Development: Maximize Open Space. 1 Point.

- LEED 2009 NC Sustainable Sites SS Credit 6.1 Stormwater Design, Quantity Control. 1 Point.

- LEED 2009 NC Sustainable Sites SS Credit 7.2 Landscape & Exterior Design to Reduce Heat Island Effect. 1 Point. An exemplary point is awarded when 100% of the total roof area (excluding HVAC and skylights) is covered with a pre-grown green roof system.

- LEED 2009 EBOM Sustainable Sites: SS Credit 6.2 Landscape & Exterior Design to Reduce Heat Island Effect – Option B. 1 Point. An exemplary point is awarded when 100% of the total roof area (excluding HVAC and skylights) is covered with a pre-grown green roof system.

Guarantee. A Siplast Paragreen Roof Systems addendum is offered for all Paragreen systems provided, which includes vegetated cover, root barrier, drainage systems, and Paraguard Green Roof Perimeter Components.

Track Record. Teranap has a track record of over 30 years of successful waterproofing beneath green roof systems. Pre-grown vegetated roof systems have a track record of over 20 years of successful green roof installations in Europe.

Paragreen Pre-Grown Vegetated Mat Comparisons to Grown-on or Plug Systems

Virtually immediate and continuous green roof covering. The roof network of Paragreen Pre-Grown Vegetated Mats grows together shortly after installation. (See photos 5-8.)

Conversely, grown-on systems are not a continuous green cover. It may take from 18 months to 4 years for the installed plug plantings to form a contiguous green roof cover. A more consistent and intensive maintenance program is required to fully develop the plug sedums and other cover (see Low Maintenance section below). (See photos 10 - 13.)

Low Maintenance. Properly installed Paragreen Pre-Grown Vegetated Systems require little maintenance. During the first 3 to 4 weeks following installation, watering is required



Photo 5 - First Day of Installation



Photo 6 - Four Months After Installation



Photo 7 - Eight Months After Installation



Photo 8 - One Year After Installation

to enable the roots to develop into the growing medium. Once the roots have been established into the growing medium, fertilization is typically required twice annually (April and September). Conversely, grown-on systems take approximately 3-4 years to fully develop. During year one alone maintenance is typically done 7-8 times to water, weed, and replace dead plants. The maintenance requirements decrease approximately 1-2 times each following year, with maintenance in the fourth year being necessary 3-4 times. (See photos 14 -15.)

Easy access to the waterproofing membrane. The Paragreen Pre-Grown Vegetated Mats and root network can be cut open and simply rolled back for access and then placed back into position. The root network grows back together within a very short timeframe.

Irrigation. Once firmly established, Paragreen Pre-grown Vegetated Systems with growing medium greater than 3 inches do not need supplemental irrigation in most climates. Growing medium less than 3 inches may require only simple base drip irrigation methods within the soil layer, since the continuous mat system allows for free-flowing water throughout the root network.

Conversely, grown-on systems require a much more aggressive watering schedule during the 3-4 years of development to continue establishing the root network required to enable full coverage.

Cost. There has been much debate concerning the costs of pre-grown vegetated mats versus that of plug systems. While the initial material cost for plugs is noticeably less, the labor for installation and maintenance over the 3-4 years needed to fully establish the plug system negates any installation savings.

In addition, the Paragreen System is installed with the plant palette well established, so energy savings resulting from a complete vegetated roof can be realized virtually from day 1 following installation. The plug system contains a very small percentage of vegetation during the first 12-24 months following installation, so real energy savings cannot be realized for a considerable time period. (See photos 15-16.)

Contact Siplast for more information regarding Paragreen Vegetated Roof Systems and specifications.



Photo 10 - Grown-on System during installation



Photo 11 - Grown-on System after installation



Photo 12 - Grown-on System 18 months after installation



Photo 13 - Grown-on System 36 months after installation



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Photo 14 - Grown-on System 6 months following installation



Photo 15 - Paragreen Pre-grown Vegetated System - Energy Savings



Photo 16 - Grown-on System - Energy Savings?