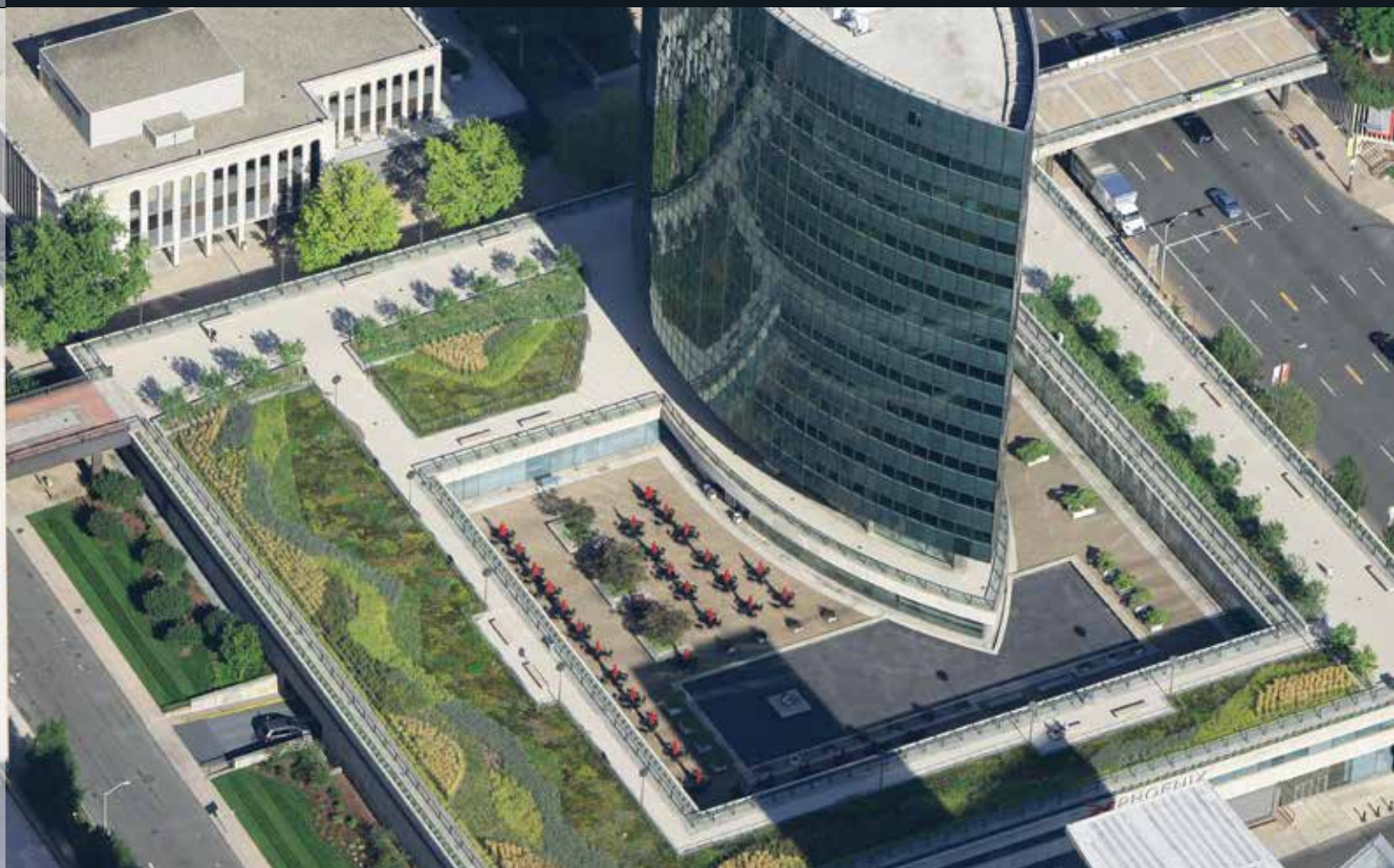


# Environmentally Responsible **Roofing** and **Waterproofing** Solutions



# High performance solutions to help meet environmental goals.



**Bright white Parapro Roof Membrane offers durable protection for this facility in Colorado.**

## **Innovation**

Whether it's a green roof system featuring vegetation, a roof system with depolluting granule surfacing, reusable insulation, or a white liquid-applied roof membrane, the roof can be part of the solution to today's environmental concerns. Issues such as the urban heat island effect, rising energy costs, poor air quality, stormwater runoff, and crowded landfills can all be positively impacted by roofing and waterproofing systems.

Many cities and states are now recognizing the environmental impact of a roof, and are implementing goals and initiatives to maximize the opportunity. But while the initiatives may be new, the concept isn't. At least not to Siplast.

**The second floor of the Skokie Library in Illinois features a green roof waterproofed with Teranap.**



Siplast's involvement with green solutions began in the 1970s with the development of Teranap, our original vegetated roofing product. Since then, Siplast's product offering has evolved to include a full range of environmentally responsible, high performance roofing and waterproofing solutions. These products meet a variety of criteria established by the U.S. EPA Energy Star program, California Title 24 Part 6, and the United States Green Building Council LEED v4 program.

## **Quality**

Siplast products are manufactured consistently to exacting standards. At all Siplast North American manufacturing facilities, stringent quality control tests are performed on every lot of material we produce to ensure Siplast products meet specified criteria. That's because although meeting current reflectivity, emissivity, and insulation standards is important, long term performance is paramount. As the company that developed SBS-modified bitumens in the 1960s, Siplast is committed to

the emphasis on quality, long-term solutions that has built our strong reputation as an industry leader and innovator. Additionally, we are committed to the continuous study of product design, product formulation, and application processes to improve performance and identify environmentally responsible opportunities.

### **Siplast RoofTag**

To enhance and expand our innovative Certificate of Analysis program, Siplast is proud to offer RoofTag: RF Technology for Roof Asset Identification. By choosing Siplast roof membranes with RoofTag RF chips factory-embedded in the sheets, owners and the design professionals they work with have a simple way to verify that the product quality specified matches that of the product installed. With RoofTag, access to Certificate of Analysis data, product information, and job information is possible by scanning the installed roof membrane. Once installed, building owners have a tool for roof asset management, with a unique opportunity to link the roof system in place with its history.

### **Application**

Siplast Roofing, Waterproofing, and Insulation Systems are installed exclusively by Siplast Select Contractors. These independent professionals have met the qualifications of the toughest contractor certification program in the industry – ours. Their proven skill and dedication have demonstrated time and again that they regard themselves as members of a team dedicated to installing great systems for their building owner customers.



Siplast Insulcel-RT provided a reusable insulation system for this 3,500-square Texas high school. A Paradiene 20 TS P/30 FR TG system was installed to finish the single-source project.



1,100 squares of Siplast's depolluting Eco-Activ Roof Membrane were installed to replace the PVC single ply roof on the signature dome of Maple Leaf Gardens in Toronto.



## Depolluting Roof Membranes

### Siplast Eco-Activ®

For building owners interested in an effective and efficient way to be environmentally responsible with their roof, Siplast offers the innovative Eco-Activ® Depolluting Roof Membrane. Eco-Activ is the designation given to any Siplast Paradiene or Parafor cap sheet surfaced with Noxite® Depolluting Granules.

Noxite is a photocatalyst, and reacts in the presence of UV light. When sunlight hits an Eco-Activ roof, Noxite absorbs UV light and behaves like a photovoltaic cell, generating electrical charges that accelerate the transformation of harmful nitrogen oxide molecules into harmless molecules. By-products from the decomposition of NOx molecules are carried away by rainwater, and have no measurable impact on the quality of run-off water. Eco-Activ Roof Membranes require no maintenance beyond that of standard, responsible roof management, and Noxite's depolluting functionality continues to work throughout the life of the roof.

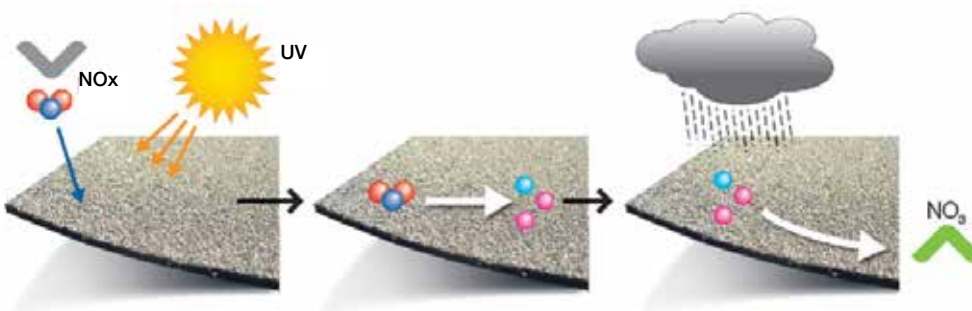
Yearly, 200 squares (20,000 square feet) of Eco-Activ membrane surfaced with Noxite Granules offset the nitrogen oxide pollution (NOx) produced by more than 50 passenger light vehicles.\* Offset rates differ by location, due to variances in prevailing atmospheric conditions and UV levels.

Siplast has achieved a UL Environment claim validation for Eco-Activ Roof Membrane's ability to remove an estimated 417-4,413 g NOx per roofing square over 20 years. For more information on the technology behind Eco-Activ, contact Siplast.

\* Based on studies using estimated conditions (sunlight, humidity, and NOx) for Los Angeles, and mileage of the average U.S. household vehicle (11,300 miles).



The Noxite process – from harmful NOx compounds to clean air.



With Noxite, any Siplast granule-surfaced sheet can reduce atmospheric pollution.

## Cool Roof Options

### Paradiene BW

Paradiene 30 BW and Paradiene 40 BW membranes are high performance SBS-modified bitumen finish plies surfaced with highly reflective, bright white mineral granules - not films or coatings. Both are available in FR and torch grade versions. Paradiene BW finish plies are California Title 24 Part 6 compliant, are CRRC rated, and qualify for LEED certification points as defined by the United States Green Building Council.

### Parapro Roof Membrane

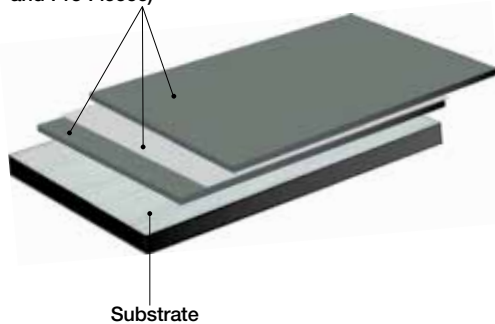
Jobs with difficult access, tight clearances, odd shaped penetrations, and exposure to certain environmental contaminants can be a challenge for even the best traditional roofing plies. In such cases, a liquid-applied Parapro System is an excellent option.

The Parapro System is built on advanced polymethyl methacrylate (PMMA) technology developed for demanding roofing and waterproofing applications. Parapro is VOC-compliant, solvent-free, isocyanate-free, and flame-free. It offers significant application

advantages over polyester and polyurethane liquid-applied products, including dramatically faster cure times and broader application temperature ranges. The finished application is seamless and fully reinforced. PMMA's properties make Parapro a smart choice for roof areas requiring resistance to foot traffic, UV, environmental contaminants, vegetable oils, animal fats, and other substances. White Parapro Roof Membrane is California Title 24 Part 6 compliant and qualifies for LEED certification points as defined by the United States Green Building Council.

### Parapro Roof Membrane

Waterproofing Layer  
(two waterproofing coats  
and Pro Fleece)



Liquid-applied Parapro PMMA Roof Membrane solved logistical challenges associated with reroofing this downtown highrise.

Parapro Roof Membrane created an energy efficient bright white roof on this resort in Hawaii.





### **Veral Aluminum**

Veral combines the proven waterproofing characteristics of SBS-modified asphalt and the stability and strength of glass mat/glass scrim with the protection and dramatic appearance of metal foil. The Veral System is composed of two sheet components – a smooth-surfaced base ply (Paradiene 20 or Irex) and Veral. The finish ply, Veral, combines a glass mat/glass scrim-reinforced SBS-modified bitumen base with a protective aluminum foil facing. For applications requiring a white finish ply, Veral Spectra is available. Veral Spectra's protective aluminum foil facing is factory coated with a high gloss white finish. Because metal and asphaltic materials expand at different rates, special features have been engineered into Veral's design. Using a patented embossing system, small control channels are built into the metal facing. A thin layer of low-melt asphalt is factory applied beneath these channels, allowing the metal to expand and contract independently of the modified bitumen base.

The Veral System is preferably applied by torching, which utilizes the closely controlled modified bitumen in the sheets. The finished assembly provides a strong, flexible, glass-reinforced membrane, completely shielded from the

elements. Energy efficient Veral Aluminum meets the reflectance requirements of the U.S. EPA Energy Star Program and qualifies for LEED v4 credit for reflectance and emittance.

### **Paracoat PMMA Roof Coating**

Paracoat Roof Coating brings the high performance advantages of PMMA to a roof coating designed to protect smooth and granule-surfaced roof systems from the effects of weathering and chemical attack. It is a multi-component, fast curing, flexible coating supplied in a standard color, white, which offers greater than 75% reflectance.

### **PC-227 Elastomeric Roof Coating**

PC-227 Elastomeric Roof Coating is a 100% acrylic, white coating designed for use over Siplast roof systems. It reduces cooling energy and roof system life cycle costs by combining superior reflectivity with excellent durability, adhesion, and flexibility. Its asphalt bleed-blocking properties retard the leaching of asphalt, making it well suited for SBS-modified bitumen membrane systems. White PC-227 is California Title 24 Part 6 compliant, meets the U.S. Energy Star guidelines for energy efficiency, and qualifies for LEED certification points as defined by the United States Green Building Council.

Over 3,800 squares of aluminum Veral provide an energy efficient solution for this convention center in Florida.





A Siplast Teranap Vegetated Roof System was installed on this automobile manufacturing facility in Michigan, creating the world's largest green roof.

## Vegetated Roof Systems

### Teranap

Green roofs add a great deal of aesthetic appeal, utility, and environmental friendliness to a building project, but they also create significant waterproofing challenges. Siplast Teranap meets the needs of these demanding applications.

Siplast first applied its SBS-modified bitumen technology to vegetated applications with the introduction of Teranap. The fully adhered, two-ply Teranap System is based on proven roof membrane design. The elastomeric base ply, Paradiene 20 TG, is engineered to retain its elasticity through the rigors of deck movement. The top ply, Teranap, consists of a nonwoven polyester mat impregnated and coated with SBS-modified bitumen. Rolls of standard Teranap are 2 meters wide and 20 meters long. This coverage means a significant reduction in the number of seams as compared to projects using conventional modified bitumen waterproofing products. Teranap is also available in a 1-meter roll width for applications where a smaller roll is more practical and convenient, such as “set-back” roofs and high-rise projects. With fewer seams, and enhanced flexibility, elasticity, and puncture resistance, high performance Teranap will stand up to the intense demands of vegetated roof applications for years.

Teranap green roof applications can be specified with many landscape options, including both extensive green and intensive green assemblies.

### Parapro

The built-in root resistant capabilities of liquid-applied Parapro make it a natural choice for vegetated systems and planter waterproofing. The Parapro System is built on advanced polymethyl methacrylate (PMMA) technology developed for demanding waterproofing applications. Parapro is VOC-compliant, solvent-free, isocyanate-free, and flame-free. It offers significant application advantages over polyester and polyurethane liquid-applied products, including dramatically faster cure times and broader application temperature ranges. The finished application is seamless and fully reinforced. In addition to the benefits of PMMA, the liquid-applied Parapro System offers application efficiency for jobs with difficult access, tight clearances, and odd-shaped penetrations that can be challenging for even the best traditional sheet materials.



New York's Jacob K. Javits Convention Center features a 5,000-square green roof assembly that includes Siplast NVS Lightweight Insulating Concrete, Paradiene 20 HV TG, Teranap, pavers, and Paraguard Coping.



## Landscape Options

Both Teranap SBS-modified bitumen and PMMA liquid-applied Parapro can be specified with the landscape options illustrated here.

### Extensive Green Roofs

**Typical depth of growing medium: 2" – 6"**

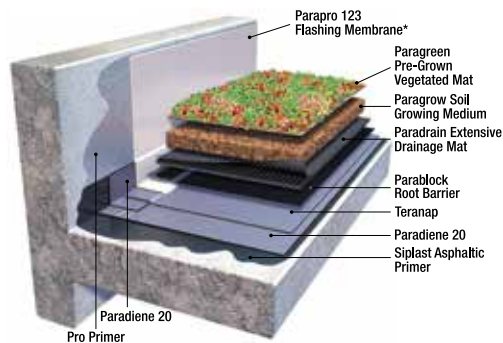
**Typical wet weight: 20 – 25 lb/sf**

For building owners who want an attractive green roof with minimal maintenance, an extensive system is an excellent choice. Extensive green roofs are characterized by low weight, low capital cost, and minimal maintenance. The growing medium is typically comprised of a mineral-based mix of sand, gravel, crushed brick, leica, and peat organic matter. Plant selections appropriate for extensive assemblies include sedum, grasses, wildflowers, and other low maintenance vegetation. Plants are watered and fertilized until they are established. At that point, minimal maintenance is required.

#### Extensive vegetated systems:

- Reduce/delay stormwater runoff.
- Help to mitigate the urban heat island effect.
- Require irrigation and fertilization during the establishment period.
- Require minimal maintenance after the establishment period.

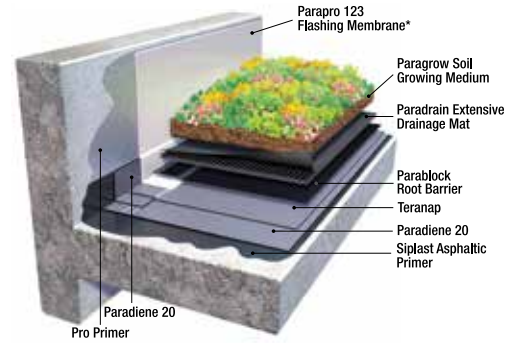
#### Teranap Pre-Vegetated Extensive



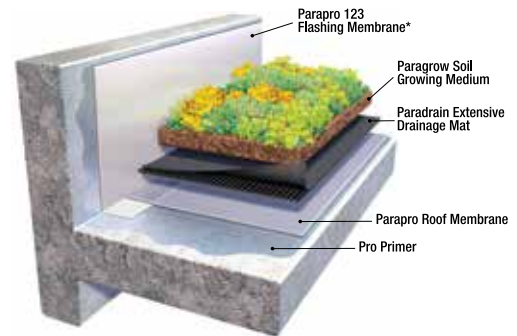
#### Parapro Pre-Vegetated Extensive



#### Teranap Extensive



#### Parapro Extensive



#### Pre-Vegetated Extensive Systems

**Typical depth of growing medium: 2" – 6"**

**Typical wet weight: 15 – 25 lb/sf**

Characterized as an Extensive system in terms of typical depth of growing medium and weight, a pre-vegetated system is the right choice for building owners who want the benefits of their green roof upon installation. Pre-vegetated sedum mats grown on farms can be installed quickly for immediate impact.

#### Pre-vegetated systems:

- Provide immediate greenscape at installation.
- Reduce/delay stormwater runoff.
- Help to mitigate the urban heat island effect.
- Require irrigation and fertilization during the establishment period.
- Require minimal maintenance after the establishment period.

\* Contact Siplast for flashing options.

The green plaza deck of this Connecticut office building is protected by Siplast Teranap and pavers.



## Intensive

Typical depth of growing medium: starts at 8"

Typical wet weight: starts at 50 lb/sf

Elaborately designed, park-like roofscapes intended for pedestrian access are possible with an Intensive vegetated system. Intensive systems can support a wide variety of trees, shrubs, plants, and flowers, as well as water features.

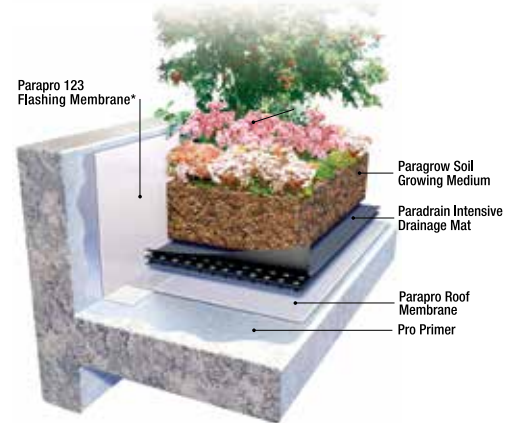
### Intensive vegetated systems:

- Reduce/delay stormwater runoff.
- Help to mitigate the urban heat island effect.
- Offer virtually unlimited design possibilities.
- Extend the livable space of a building.
- Require irrigation and regular maintenance.
- Must be engineered to conform to structural load requirements.

## Teranap Intensive



## Parapro Intensive



## Teranap Extensive



## Parapro Extensive



## Lawn

Typical depth of growing medium: 8" – 12"

Typical wet weight: starts at 50 lb/sf

To increase usable space, many owners opt for a Lawn system. By integrating pedestrian access areas with landscaped lawns, owners can offer a premium amenity to building occupants while enjoying environmental benefits.

### Lawn systems:

- Reduce/delay stormwater runoff.
- Help to mitigate the urban heat island effect.
- Extend the livable space of a building.
- Require irrigation, fertilization, and maintenance comparable to lawns at grade.



With proper system design and plant selection, building owners can enjoy a vegetated roof system that is low maintenance.



### Green Roof Accessories

In a single-source package, Siplast offers all of the components required for vegetated roof installations, including:

- Paragreen Pre-Grown Vegetated Mat.
- Paragrow Soil Growing Medium.
- Paradrain Extensive and Intensive Drainage Mats.
- Parablock Root Barrier.
- Paraguard Vegetated Perimeter Metal and Drain Protection Components.
- Pedestals and pavers.
- Filter fabric.
- Extruded polystyrene.

This high-rise luxury condominium tower on the beach at Marina Del Rey, California is protected by a complete Siplast System of torch grade Paradiene and Siplast Lightweight Insulating Concrete.

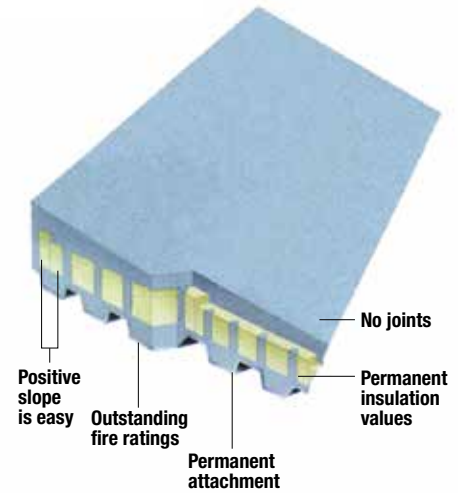


### Reusable Roof Insulation

#### Siplast Lightweight Insulating Concrete

Siplast Lightweight Insulating Concrete Systems combine the unique properties of lightweight insulating concrete and premium expanded polystyrene foam insulation board. The resulting roof insulation system has a smooth, monolithic surface ideal for roofing application. The system is very effective in moderating roof membrane temperatures, thereby extending the membrane's life. And unlike disposable rigid polyisocyanurate insulation, Siplast Lightweight Insulating Concrete is reusable. It can be reroofed indefinitely, which dramatically reduces both the environmental cost of filling landfills with discarded polyisocyanurate and the life-cycle cost of the roof. Siplast Lightweight Insulating Concrete Systems provide high performance solutions to industry concerns such as slope-to-drain, moisture resistance, high compressive strength, dimensional stability, and the ability to mechanically fasten the roofing membrane to the insulation. The systems offer solutions to regulatory concerns including fire and wind resistance, code approvals,

#### Siplast Lightweight Insulating Concrete



stable R-values, and environmental safety. Finally, Siplast Lightweight Insulating Concrete Systems provide solutions to building owners' requirements – they are economical, reroofable, fully guaranteed, and proven.

Siplast Lightweight Insulating Concrete is available in four mix designs: ZIC, NVS, Insulcel, and Zonocel. The four designs represent a range of compressive and tensile strengths, allowing a choice of system based on substrate and project circumstances. Each design encapsulates Insulperm Insulation Board in insulating concrete. This provides fire protection, prevents air infiltration, and bonds the system to the substrate.

Insulperm is a CFC-free expanded polystyrene insulation board of nominal 1 pcf density designed for use in Siplast Lightweight Insulating Concrete Systems. When installed in a stair-step configuration, it is the base for the system's slope-to-drain capability.

## **Solvent-Free Adhesives and Cements**

### **Siplast SFT Adhesive**

Siplast SFT Adhesive is a unique liquid adhesive designed for use with Siplast systems. SFT Adhesive is a single-component, solvent-free, moisture-cured, modified asphalt adhesive composed of a blend of proprietary polymers and asphalt. SFT Adhesive meets all roofing adhesive VOC regulations.

### **Siplast SFT Cement**

Siplast SFT Cement is a high strength adhesive designed for use with Siplast SBS-modified bitumen flashing systems. SFT Cement is a single-component, solvent-free, moisture-cured adhesive composed of a blend of proprietary polymers and modifiers engineered to cure completely in a variety of ambient conditions over various substrates. Siplast SFT Cement meets all roofing adhesive VOC regulations.

**The roof assembly chosen for this critical Dallas data center included over 5,800 squares of the Paradiene System installed over Insulcel RT Lightweight Insulating Concrete. The project was finished with Proform Gravel Stop.**




**Siplast**

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Siplast Eco-Activ roof membrane, surfaced with depolluting Noxite granules, provided a responsible environmental solution for this building in British Columbia.



Cover Photo:

Siplast Lightweight Insulating Concrete, Teranap and pavers create a beautiful and functional plaza deck on this mixed use building in Connecticut.



[www.siplast.com](http://www.siplast.com)

For information on Siplast Roofing and Waterproofing Systems, scan our QR code.