

Solstice® Liquid Blowing Agent Helps Philadelphia's Quest to be "America's Greenest City"

"Closed-cell spray polyurethane foam using Solstice LBA was the preferred solution to help the water treatment facility solve its roofing challenges, while contributing to the city's green initiative."

Jack Moore – Project Engineer, West Roofing Systems

The Challenge:

The Philadelphia Water Treatment facility Built-Up Roof (BUR) had been experiencing water leakage and weather damage due to aging.

The Solution:

A new closed-cell spray polyurethane foam (ccSPF) roof system from West Development Group using Honeywell Solstice® Liquid Blowing Agent, including a bright white top coat of silicone coating.

The Philadelphia Water Treatment Administration building roof is approximately 32,000 square feet and had been experiencing multiple leaks due to aging and weather damage. As facility management began exploring options to replace or repair the roof, the city's *Greenworks Philadelphia*¹ initiative was an important factor throughout the decision-making process. In 2009, Mayor Michael Nutter announced an ambitious goal for Philadelphia to become "America's greenest city." Among the program's targets is a reduction in city-wide building energy consumption, lower greenhouse gas emissions, and diversion of solid waste from landfills, and others.

CcSPF Roofing System: The Preferred Choice

After reviewing roofing system options, a ccSPF system from West Development Group (WDG), LaGrange, Ohio, was selected by the city's designers as the best solution for the project. West Roofing Systems, Inc. was awarded the installation contract through the city's competitive bid process. "We were very pleased to have the opportunity to work with Honeywell and the City of Philadelphia on this major project," said Jack Moore, West Roofing Systems.



Benefits of Spray Foam Formulations Using Solstice LBA

The roof was sprayed with 2 inches of ccSPF foam blown with non-flammable, non-Volatile Organic Compound (VOC) Solstice LBA. West Development Group and other spray foam producers are finding that Solstice LBA is an ideal replacement for HFC-245fa and other HFC blowing agents. Key advantages they see include:

- A significantly lower GWP of 1 (compared to a GWP of greater than 1000 for HFC alternatives). This makes it a superior environmental substitute with a GWP that is equal to that of CO₂ and orders of magnitude lower than traditional HFCs used in the industry
- Yield improvements of approximately 8-10%
- Excellent foam performance across a wide range of surface temperatures
- A slightly lower molecular weight so less material is required to make a system
- A higher boiling point and a lower vapor pressure which improves handling and yields smoother foam surfaces
- Better R-values

Reducing Landfill Waste

In support of the *Greenworks Philadelphia* target to reduce landfill waste, it was decided that the existing sound and dry BUR roof sections would be left in place. By recovering the existing roof with spray foam, it eliminated approximately 4,000 cubic feet of construction debris that would have otherwise been sent to the landfill.

Energy Efficiency Improvement

“This new ccSPF roof system is expected to increase the roof system R-value† to 22.5, which exceeds the state energy code (IECC 2009) requirement that follows an ASHRAE recommended minimum R-value of 20.89,” said Moore. This will improve energy efficiency, lower energy consumption and enhance building envelope performance.

A “Cool” Roof Solution

Another factor that was important to the project was the intent to apply a “cool roof solution” to help mitigate the Urban Heat Island Effect.²

This effect can be a considerable issue in metropolitan areas, where the lack of vegetated ground cover can lead to temperature differentials of 6-8° F. To help reduce the Urban Heat Island Effect, a bright white top coat of WDG 1500-HT silicone coating was applied to the surface of the spray foam to improve durability, help reflect the sun and lower roof surface temperature.

Moore also remarked on some additional positives of the spray foam choice, “During the time that this roof system was being applied, we experienced some cold temperatures. The ccSPF system formulated with Solstice LBA performed very well throughout the installation.”



Before



After (a slightly different angle)

Solstice LBA Fast Facts

- The world’s first 4th-generation blowing agent intended to replace HFCs, HCFCs and other less advanced alternatives
- A non-flammable liquid
- Listed under the U.S. Environmental Protection Agency’s Significant New Alternatives Policy (SNAP) to replace ozone depleting substances
- A WDG spray foam roofing system formulated with Solstice LBA is the first such system to receive a severe hail rating from FM Global, one of the world’s largest business insurers, through the insurer’s FM Approvals certification program.

Contact us to learn more about the benefits of Solstice LBA for your next spray polyurethane foam project.

Call **800-631-8138** or visit **www.honeywell-solsticelba.com**

1. Greenworks Philadelphia: http://www.phila.gov/green/greenworks/pdf/Greenworks_OnlinePDF_FINAL.pdf

2. Lawrence Berkeley National Laboratory: Heat Island Group – Cool Roofs: <http://heatisland.lbl.gov/coolscience/cool-science-cool-roofs>

† Check your SPF seller’s fact sheet for specific R-values when comparing SPF to other insulations.

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